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Review Article

Case Finding in the Clinic: Refractive Errors

Kovin Naidoo OD MPH

Director, ICEE AFRICA
University of Durban-Westville
Department of Optometry
Private Bag X54001, Durban 4000
South Africa

Pirindhavelli Govender BOptom CAS

Research Co-ordinator
ICEE AFRICA

The detection of refractive errors includes effective screening programmes in the school or community. However, the lack of human and other resources often prevent such programmes from occurring. Therefore, patients with many conditions, both refractive and non-refractive, present at clinics. The separation of these patients into refractive and non-refractive conditions is important in the good organisation of eye care clinics, as members of the eye clinic team can then carry out their different duties more effectively.

General Considerations

Refractive error can be detected through the routine examination of patients who present to clinics, or through vision screening of the population at large. An added component is the screening of patients in the clinic setting and combining this with the eye examination. This process will thus incorporate a case history, visual acuity, pinhole visual acuity, retinoscopy and a subjective examination.

Complaints of frontal headaches, poor concentration in school, inappropriate viewing distances, presence of tropias (eye-turns), tilting of the head (high cylinders), and 'squinting'/peering are indicators of refractive error. The pinhole occluder assists in determining the best visual acuity possible with a refractive correction. History combined with visual acuity tests and visual acuity through the pinhole, should enable the clinician to determine if refractive error is the cause of the patient's problem.²

Retinoscopy is an effective tool in determining the presence of refractive error in adults. Retinoscopy with cycloplegia is the most appropriate method of determining refractive error in children, given the accommodative status of children.³

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tel: 00 44 20 7612 7972 email: admin@jceh.co.uk web: <http://www.jceh.co.uk>

A subjective refraction should include a binocular balancing technique and a full eye examination to detect other ocular abnormalities.

Detecting Refractive Cases

Patients referred from a screening programme

If the vision screening programme is known to have been established through proper protocols and training of staff, then the patients should be accepted in the clinic on the basis of the preliminary findings and a full refractive examination conducted. However, many screening programmes are incomplete, only using visual acuities and not a pinhole or +2.00D lens to detect latent hyperopia (hypermetropia). Such patients should be managed in a similar way to the self-presenting patients.

Patients not screened/self-presenting

Primary Level

Adults

All patients should be tested using a Snellen acuity test (E Chart) at distance. Those with <6/6 vision should then be further tested with a pinhole test. Should the vision improve to 6/6 then the patient is classified as having a refractive error. Those patients with no improvement to 6/6 with a pinhole, are classified as non-refractive and referred to a secondary level for a full eye examination.

Patients with a Refractive Error

1. Adults over 45 years of age

The Refractive Error Working Group (REWG)¹ recommends that patients with a distance acuity of 6/18 or better (binocularly) should be provided with reading glasses for near. Patients with a visual acuity less than 6/18 should be referred to the secondary level for a refraction.

Patients with specific occupational demands may also need to be referred to the secondary level for a full eye examination.

2. Adults less than 45 years of age

These patients will fall into the early presbyope or pre-presbyope category.

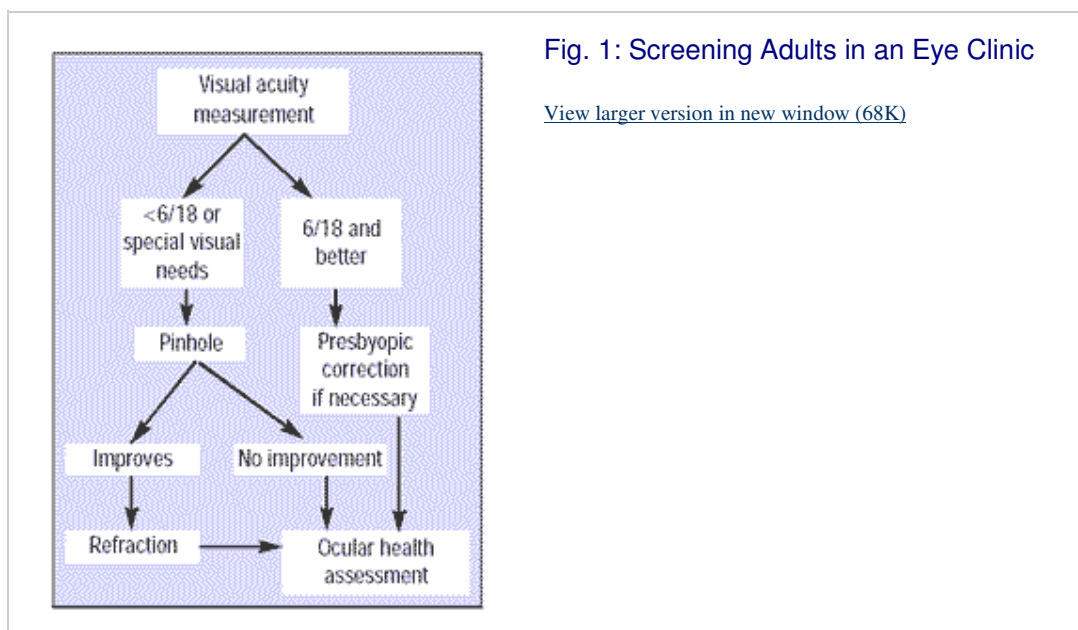


Fig. 1: Screening Adults in an Eye Clinic

[View larger version in new window \(68K\)](#)

Should there be no occupational demands, patients with 6/18 or better (binocularly) need not be referred for a refraction while those with occupational demands should be referred to the secondary level for a full eye examination. Patients with 6/18 and better but with near occupational visual demands should be dispensed presbyopic glasses ('readers').

3.Children

The REWG recommends that children be referred for refraction should they have a binocular visual acuity less than 6/12.3 They should be referred to the secondary level for a full eye examination (including a cycloplegic refraction).

Secondary Level

Many patients present directly to the secondary level clinics, a consequence of which is an unnecessary increase in patient numbers.

Ancillary personnel (clinic assistants) should screen patients and determine the appropriate management –prior to seeing the Eye Care Practitioner (ECP) –utilising:

- Snellen acuity (E Chart)
- Pinhole test for those with <6/6
- History –to determine age and symptoms
- Visual acuity with a +2.00 D lens for children.

Who is Referred for Refraction?

1. Adults

- All patients failing the Snellen acuity test, improving to 6/6 with the pinhole test but with less than 6/18 binocularly (Figure 1)
- Patients complaining of headaches and with decreased visual acuity that is improved with a pinhole
- Patients with occupational and special needs experiencing better visual acuity with the pinhole
- Patients who are presbyopic.

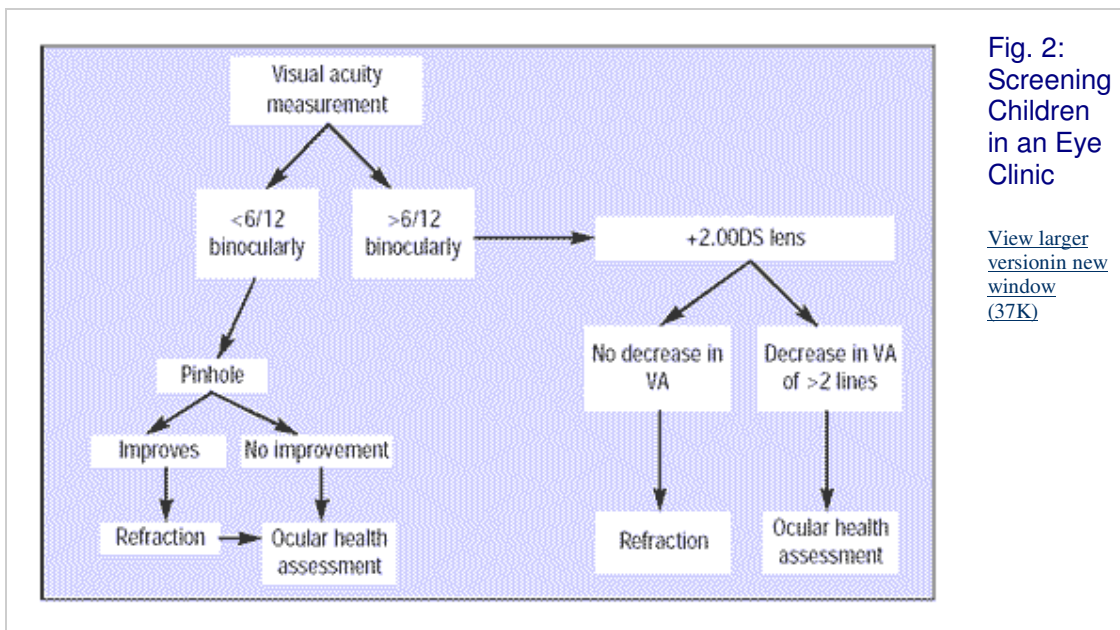


Fig. 2: Screening Children in an Eye Clinic

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2. Children

- All children failing the Snellen test (<6/12 binocularly) (Figure 2) but improving with the pinhole test
- Children with better than 6/12 vision but with no blurring of vision with a +2.00D lens
- Children who present with symptoms consistent with refractive error
- Children with tropias.

Screening: False Referrals

Given the percentage of false referrals, children referred for ocular disease evaluation should be referred from the ECP for refraction should no ocular disease be detected.

Malingers

Malingering could indicate behavioural and other problems or just a desire to wear spectacles and be like parents or friends.

Children failing the Snellen test and showing no improvement in visual acuity could, in fact, be malingers. Retinoscopy, with cycloplegia, is the best method to determine if a refractive condition exists.

The REWG recommends that children be considered myopic or hyperopic based on the following criteria:³

- Myopia: $\leq -0.50D$
- Hyperopia: $\geq + 2.00D$

Tests for malingering may also use the following techniques:

- Put plano lenses into the trial frame and observe any improvement
- Move the child closer to the chart and then take visual acuity. No improvement indicates malingering.

General Comments

Children with binocular vision of 6/12 or better, with a visual acuity difference between the two eyes of more than two lines on the chart, should be referred for a refraction as amblyopia is a consideration.

If patient numbers are low, the screening protocol could be applied for all patients attending the hospital or clinic, not just the eye clinic patients.

Conclusion

There is great variation in the availability of resources from region to region and country to country. Should the appropriate resources exist then consideration should be given to the 'lowering' of the referral criteria.

References

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- 3 World Health Organization. Elimination of avoidable disability due to refractive errors. (WHO/PBL/00.79). Geneva: WHO, 2000.