The Journal of Laryngology and Otology
September 1979. Vol. **93.** pp. 879–882

Open access audiometry

By W. F. NEIL and C. M. B. MURPHY (Reading)

THIS study of an Open Audiometry Service (run by the Audiology Unit at the Royal Berkshire Hospital) was initiated in order to determine whether the service was acting as an efficient screening programme and also to help decide if it should be continued.

An Open Access Service similar to those run in Radiology and Pathology was started in 1969. Since 1973 all patients referred have also been examined by one of the medical staff at the Unit and this has enabled a measure of the efficiency of pure screening audiometry to be made.

Method

Patients are referred direct to the Unit, using the form shown in Fig. 1. This has three carbon copies which are used (a) for sending back the result to the referring General Practitioner, (b) for the hospital notes and (c) for a separate file. This last has been used for analysing results.

The service is restricted to children, the older ones having pure-tone audiometry and the younger ones being tested in free field.

A level of 20 dB has been chosen as the norm and an audiogram with any one point below this is considered abnormal. The recommended ISO level is better than an average of 25 dB (Davis, 1965). Following audiometry, all children are examined by a registrar or consultant. Any ENT abnormality is recorded and a decision made about further therapy.

Results

1308 new patients were seen between September 1973 and May 1978, the age range being between 6 months and 13 years, with an average of 5 years. Most were between 3 and 8 years, indicating the common age range of childhood deafness. Most referrals were for suspected deafness or recurrent ear infections.

In 38·5 per cent (503) of patients, hearing loss was found on audiometry but a further 11·9 per cent (155) of patients with 'normal' hearing were found to have some ENT abnormality when examined. This latter group would, of course, have been passed as normal in a pure Open Access system.

A survey of the hospital notes of 395 patients, in whom an abnormality was found, showed that 95 per cent with an audiometric loss had serous otitis media and 5 per cent had a sensori-neural loss. It also showed that

https://doi.org/10.1017/S0022215100087831 Published online by Cambridge University Press

AUDIOMETRY

Please make an appointment for

Name.....

Address.....

.....

Date of birth

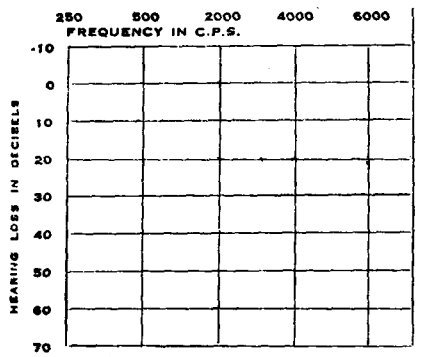
.....

Doctor's Name.....

Doctor's Address.....

.....

Please write clearly as the third copy will be returned



If this red line is crossed at any point E.N.T. referral is suggested, quoting the Red reference number.

FREE FIELD AUDIOMETRY

.....

.....

.....

.....

Date Tested

.....

SPEECH AUDIOMETRY

.....

.....

.....

.....

AUDIOGRAM

Remarks.....

.....

.....

.....

Right = O:

Left = X:

FIG. 1

Referral Form.

Diagnoses—made in Patients with 'Normal' Hearing.	
Serous Otitis Media but no hearing loss.	4·6%
Other E.N.T. Problems.	5·8%
Speech Problems.	1·5%
Total:	11·9%

FIG. 2

https://doi.org/10.1017/S0022215100087831 Published online by Cambridge University Press

28·8 per cent of those with serous otitis media responded to 'medical' treatment and the rest required operation.

Figure 2 illustrates the problems found in the 11·9 per cent (155) of patients with normal audiometry in whom an abnormality was found on examination.

The 1308 patients seen represent 34·8 per cent of the 3,761 new patients seen in the Audiology Unit during the period of study.

Discussion

While admitting that the study has not been of a pure Open Access system some useful conclusions can be drawn. The first question to be answered is—Is there a need for screening audiometry? As can be seen from the figures, over 40 per cent of the children referred have deafness, indicating a definite need for screening audiometry, and screening would obviously help the General Practitioner in deciding which children to refer to hospital.

Following from this is the question of whether screening audiometry should be carried out in hospital or in the community. Some of the children in this study were referred after failing audiometry at school and this group obviously needed a medical consultation and not just further audiometry. If this use of screening audiometry could be extended to younger children a hospital service would not be necessary. Already some General Practitioners in this area have audiometric facilities available, usually those working in Health Centres.

If the children studied had attended pure open access audiometry, approximately 40 per cent of them would have had a second hospital visit to attend outpatients which, in an area where 10–20 mile journeys to hospital are common, is a burden to both parents and children. The figure of 40 per cent abnormal results is similar to that given for Open Access radiology (Davidson, 1965). Having a barium study performed beforehand, for example, would save time when a patient is referred to Outpatients (Steiner, 1965) but an audiogram would need repeating because of the rapid change that may take place in hearing with serous otitis media.

In nearly 1 in 9 of the children, a condition which probably needed treatment would have been missed in an Open Access system, with consequent delay in diagnosis and treatment, again with the necessity for a further visit to hospital.

This last figure could have been improved by the regular use of impedance audiometry to identify those with serous otitis media but normal hearing. A figure of 5 per cent was given by Brooks (1974). He commented favourably on the use of impedance testing as a screen tool. This is a similar figure to our figure of 4·5 per cent for those with serous otitis media but with normal hearing.

Lewis *et al.* (1974), reporting on a screening programme, considered

https://doi.org/10.1017/S0022215100087831 Published online by Cambridge University Press

that impedance was a useful adjunct to audiometry. To be effective impedance audiometry should include reflex thresholds (Orchik *et al.*, 1978) and be combined with at least high frequency audiometry to avoid missing cases of sensori-neural hearing loss.

In our experience impedance testing was not used regularly enough, so no conclusion on its value can be drawn, but consideration could be given to using it together with audiometry in school screening programmes (British Medical Journal, 1974).

As can be seen from the figures, this system represented nearly 35 per cent of the work of the Unit and if those children with normal hearing could have been picked out by the community service before attending hospital, more of those with abnormalities could have been seen by the hospital service, allowing waiting times for clinic appointments to be reduced.

Conclusion

There seems to be an obvious need for screening audiometry to be done at a community level, so that hospital facilities would be better used as referral clinics to arrange treatment.

Acknowledgements

The authors wish to acknowledge the encouragement given by Mr. T. Heyworth in the preparation of this paper. Thanks are due to the Photographic Department, Royal Berkshire Hospital, for production of the Figs. and to Mrs. A. Turner for patiently typing the manuscript.

REFERENCES

BROOKS, D. N. (1974) *Proceedings of the Royal Society of Medicine*, **67**, 698.
British Medical Journal. (1974) *Leading Article*, **3**, 3.
DAVIDSON, J. W. (1965) *Journal of the College of General Practitioners*, **10**, 51.
DAVIS, H. (1965) *Transactions American Academy Ophthalmology and Otolaryngology*, **69**, 740.
LEWIS, A. N., BARRY, M., and STUART, J. E. (1974) *Journal of Laryngology and Otology*, **88**, 335.
ORCHIK, D. J., MORFF, R., and DUNN, J. W. (1978) *Archives of Otolaryngology*, **104**, 409.
STEINER, R. E. (1965) *Proceedings of the Royal Society of Medicine*, **65**, 448.

https://doi.org/10.1017/S0022215100087831 Published online by Cambridge University Press