

## COMMENTS ON THE CAM STIMULATOR FROM NEWCASTLE, N.S.W.

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The Cam Stimulator has been used in Newcastle since September 1978 on patients with various types of amblyopia and certain cases of learning disability. Patients included in this survey came from the normal case load during the period stated and were in no way selected to represent a particular research programme. Consequently most patients included already had conventional treatment for their amblyopia and learning disability and had failed to achieve a satisfactory result when the Cam Stimulator became available. Cam Stimulator treatment is generally employed in an effort to improve visual function over the spatial frequencies of the square wave gratings issued with the machine. Therefore visual acuity testing on the Snellen test type for distance and/or for near may not fully indicate any change in acuity due to Cam treatment because Snellen acuity is mainly concerned with high frequency discrimination.

Because the Snellen acuity seems an unsatisfactory way of monitoring the change in acuity after Cam stimulation a score for each eye on the Arden gratings prior to and following treatment sessions was carried out in all the cases.

Table 1 shows the number and type of 47 amblyopic patients treated with the Cam Stimulator between October 1978 and July 1979.

TABLE I  
Cam Stimulator Treatment Survey  
October 1978 – July 1979

	No.	%
1. Strabismic Amblyopia	23	49
2. Anisometropic Amblyopia	16	34
3. Combined Strabismic/Anisometropic Amblyopia	6	13
4. Deprivation Amblyopia	2	4
Total	47	100

In Newcastle many patients are examined and treated because of a learning disability. These children generally have good visual acuity (on Snellen testing) about 6/6–6/5 level and it is usually equal. At present occlusion and convergence exercises are the routine treatment. The purpose of this is to try to change the reference eye to the eye corresponding with the preferred hand.

61 patients with learning disability (suppression of the reference eye and crossed correspondence types) were also included in the Cam Stimulator treatment programme.

Table II shows the number of patients whose vision improved on the Snellen chart and/or on the Arden gratings as a result of Cam Stimulator treatment. The number of patients who had previously worn conventional occlusion is also shown. All

TABLE II  
Results of Treatment

Type	Previous Occlusion	Improved V.A. (Snellen)	Improved Gratings (Arden)
1. Strabismic Amblyopia	23	13 (60%)	17 (74%)
2. Anisometropic Amblyopia	16	10 (63%)	12 (75%)
3. Combined Strabismic/Anisometropic Amblyopia	6	2 (33%)	3 (50%)
4. Deprivation Amblyopia	2	2 (100%)	2 (100%)
Total 47	42	27 (57.5%)	33 (70%)

cases were under the age of twelve years at the time of treatment and all had central fixation in both eyes. The two cases of deprivation amblyopia were due to eye injury at about four years of age.

These were both successfully treated with initial conventional occlusion followed by Cam stimulation, each obtained equal visual acuity on Snellen testing for near and distance and on Arden Gratings.

It can be seen that most of the patients already had previous occlusion prior to Cam treatment, however 27 patients (57%) showed improved visual acuity (Snellen) and 33 (70%) gained improved score on Arden gratings.

Conventional occlusion, in certain cases of amblyopia whether total, part-time or minimal, appears to leave certain aspects of vision still defective, even when this is undertaken with good co-operation from patient and parents. The above results suggest that the Cam Stimulator may be still effective in improving visual acuity even when conventional methods have been only partially successful.

Of the 61 learning-disability children treated, 44 had previous occlusion, 7 (11%) showed improved visual acuity, and 46 (75%) showed improved score on Arden gratings. One would not expect much change in Snellen acuity, as good visual acuity in both eyes is characteristic in specific dyslexia and in many learning disability cases.

However it was pleasing to note the improved gratings score. Many patients reported definitely improved scholastic performance after the treatment.

In the entire group the number of treatments per patient varied between two and five with a mean of three. Weekly treatment was impossible for geographical and economic reasons. Sessions were once in four to six weeks, and in some cases spontaneous improvement occurred after a period of several months, even up to six months.

One patient with amblyopia and no binocular vision complained of diplopia intermittently when debilitated with 'flu, after two Cam sessions. Cam treatment was immediately discontinued and no further symptoms occurred - amblyopia is still present.

In the present series, encouraging results have been obtained, in cases of both amblyopia and learning disability.

It should be realised that Cam Stimulator treatment is a powerful stimulus and that it should be undertaken with due care and well defined purpose. As well as a treatment for amblyopia, it appears to be a useful adjunct to the present regime in cases of learning disability where it may be especially valuable for the teenagers who resent occlusion and are unwilling partners in any presently used treatment schedule.