

## ANTICONVULSANT MEDICATION IN A HOSPITAL FOR THE MENTALLY RETARDED - 18 YEARS ON

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### Introduction

Anticonvulsant drugs are widely used in mental hospitals, and epilepsy is a common condition in severely mentally retarded people. When epilepsy is severe and persistent, it may be associated with behaviour disorder and anticonvulsant therapy may be complicated by toxic side effects or cognitive impairment (Trimble and Reynolds, 1976). The mentally handicapped person may be especially prone to develop intoxication as a result of the medication and this can be increased by the use of two or more anticonvulsants in combination (Reynolds, 1975).

An earlier study examined the prescriptions for anticonvulsant drugs in a mental handicap hospital over a ten year period from 1972 to 1982 (Sheppard *et al.*, 1987). During that time there was a slight reduction in anticonvulsant prescription, with a

sharper fall in the prescription of phenobarbitone together with a parallel increase in the use of carbamazepine. However, polytherapy did not diminish. A survey in Liverpool from 1978 to 1987 (Lynch, 1989) shows similar trends and Fischbacher (1987) reported a sample from a large Edinburgh hospital.

The present study aimed to review drug use over a further eight year period to assess the continued trends in the same service, and to determine whether antiepileptic medication influenced the behaviour of the current inpatients with epilepsy.

### Method

All patients resident in Strathmartine Hospital, Dundee on 1st December, 1990 were included.

1. Epileptics on anticonvulsants were identified from the case notes and

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ward records. Information about drug prescriptions was obtained from the patients' drug prescription sheet, noting details of anticonvulsants and other drugs actually given on the day of the survey. Patients on leave from the hospital were excluded. The epileptic seizure records which are kept on special sheets were reviewed for the previous year and this was checked from the ward nursing notes. Seizures were classified as major, minor and unclassified. Major seizures were those of a generalised tonic-clonic type and minor seizures were non-convulsive seizures of all types. From the charts it was not possible to distinguish between absence and partial seizures and so both were classified as minor.

Other information about the patients was obtained from the case notes including ICD 9 diagnosis made by the responsible consultant, date of birth, date of admission and accidents.

2. The Aberrant Behaviour Checklist developed by Aman *et al.*, 1985 was used. This scale was designed to rate inappropriate and maladaptive behaviour in a residential setting and includes 58 items divided into five subscales. It was filled in by the charge nurse or other trained nurse who knew the patient well. Wherever possible a patient matched for age and degree of mental handicap was selected from the hospital population and these persons were also rated on the Aberrant Behaviour Checklist. This was possible for 47 of the 65 epileptics.

3. The information obtained was compared with that obtained from the previous survey of 1972 and 1982 (Sheppard *et al.*, 1987). Drug records for these years are preserved in the Drug Monitoring Unit and were checked again for details of prescribing.

## Results

TABLE I shows the total in-patient population changes between 1972 and 1990. There has been a sharp fall in the total population associated with an increased proportion of patients over the age of 60 years ( $\chi^2 = 7.5$ ,  $df = 1$ ,  $p < 0.01$ ) and an increase in the proportion of severely and profoundly mentally retarded people ( $\chi^2 = 6.31$ ,  $df = 1$ ,  $p < 0.01$ ). Eighteen of the patients reviewed in 1990 had been admitted since 1972.

TABLE II describes the proportion of patients prescribed anticonvulsants, the figure for 1990 being 26%, not greatly changed from the 1982 proportion. As in 1982 the majority of those receiving anticonvulsants suffered from severe or profound mental retardation.

TABLE III records the numbers of patients receiving various different anticonvulsants in 1972, 1982 and 1990. The proportion of patients on anticonvulsants prescribed carbamazepine increased from 40% to 72% between 1982 and 1990 (McNemar's test  $p < 0.01$ ) whereas phenytoin fell from 48% to 34% of the anticonvulsant patients, although this change was not statistically significant in the patients remaining in hospital. Phenobarbitone

**TABLE I**  
**Total of In-Patients in Strathmartine Hospital**

	1972	1982	1990
Number of in-patients	605	535	252
Number of males	331 (55%)	308 (58%)	135 (54%)
Number over 60 years of age	50 (8%)	72 (13%)	54 (21%)
Number with severe or profound mental retardation	225 (37%)	213 (40%)	125 (50%)

**TABLE I**  
**Patients receiving Anticonvulsants**

	1972	1982	1990
Number of patients receiving anticonvulsants (% of hospital population)	179 (30%)	130 (24%)	65 (26%)
Males receiving anticonvulsants (% of anticonvulsant recipients)	102 (57%)	77 (59%)	40 (62%)
Number with severe and profound mental retardation receiving anticonvulsants	87 (48%)	72 (55%)	42 (65%)

**TABLE III**  
**Details of Anticonvulsants Prescribed**

Drug	1972	1982	1990
Phenobarbitone	160	63	8
Primidone	24	6	2
Phenytoin	60	65	22
Carbamazepine	2	52	47
Sodium Valporate	0	22	15
Clonazepam	0	6	1
Clobazam	0	0	3
Other	21*	1	0

(\* includes Ethosuximide, Sulthiame, Beclamide, Troxidone, Paraldehyde)

prescriptions fell from 63 to 8 between 1982 and 1990 (McNemar's test  $p < 0.01$ ). The mean daily dose of the drugs changed little e.g. carbamazepine mean dose was 800mg per day in 1982 and 721mg per day in 1990. Plasma level control was widely used e.g. 95% of patients on phenytoin had had a recent check of plasma level.

TABLE IV describes the proportion of patients receiving one or more than one anticonvulsants. Although the proportion receiving more than one drug had decreased to 37% in 1990 the change was not statistically significant. Of the 41 patients on only one anticonvulsant, 25 had suffered no seizures in the past year as opposed to only 3 of the 24 patients

on more than one anticonvulsant ( $\chi^2 = 25.86$   $p < 0.0001$ ). All of the 6 patients who had more than fifty seizures in the previous year were on polytherapy.

TABLE V describes the main drug combinations 1982 and 1990. In 1990 the sodium valproate and carbamazepine combination makes a new appearance, with a further three patients receiving these two drugs together with phenytoin.

Aberrant Behaviour Checklist scores were available for 65 epileptics, 47 of whom were matched with controls (suitable controls were not available for the others). Mean scores on the Subscales were for epileptics: Subscale I (irritability) 10.35 (range 0-36); Subscale

**TABLE IV**  
Number of Different Anticonvulsants

	1972	1982	1990
One Anticonvulsant	102 (57%)	68 (52%)	41 (63%)
Two Anticonvulsants	66 (37%)	44 (34%)	15 (23%)
Three Anticonvulsants	10 (6%)	13 (10%)	9 (14%)
Four Anticonvulsants	1	5	0
<b>Total Patients</b>	<b>179</b>	<b>130</b>	<b>65</b>

**TABLE V**  
Drug Combinations

	1982	1990
Phenobarbitone and Phenytoin	21	4
Phenytoin and Carbamazepine	12	6
Sodium Valproate and Carbamazepine	0	8
Other	2	5

II (lethargy) 7.83 (range 0-32); Subscale III (stereotypy) 4.11 (range 0-19); Subscale IV (hyperactivity) 11.06 (range 0-40); Subscale V (inappropriate speech) 2.06 (range 0-11). For the 47 controls the mean Subscale scores were for Subscale I (irritability) 7.49 (range 0-25); Subscale II (lethargy) mean 5.51 (range 0-27); Subscale III (stereotypy) mean 3.09 (range 0-16); Subscale IV (hyperactivity) 8.30 (range 0-32); Subscale V (inappropriate speech) 1.79 (range 0-11).

The matched epileptics and controls showed significant difference on Subscale I (irritability) (Wilcoxon test  $p < 0.02$ ) and II (lethargy) (Wilcoxon test  $p < 0.01$ ). The frequency of seizures was not related significantly to scores on Subscale I (Spearman's  $Rho = 0.254$ ) or Subscale II (Spearman's  $Rho = 0.098$ ). There was no obvious relationship between the aberrant behaviour scores of the epileptic patients and type or combination of types of antiepileptic medication prescribed.

31% of the epileptics were also prescribed psychotropic drugs with 24 receiving neuroleptics, 11 anxiolytics and hypnotics and 4 lithium. Of the 47 epileptics with controls 19 were on antipsychotic drugs in contrast to 16 of the control patients. There was no significant association between accidents and epilepsy in this population.

## Discussion

The substantial decrease in the hospital population between 1972 and 1990 reflects a move towards community

care, and the characteristics of the population changed with an increased proportion of older and more severely mentally handicapped persons. There was, however, remarkably little change in the proportion of patients receiving anticonvulsants. Many patients with epilepsy were discharged and although severe epilepsy is a disability for independent living many such patients left to live in nursing or residential homes.

There was a decline in the prescription of phenobarbitone and primidone over the 18 year period in line with modern recommendations. A few patients remain on these drugs when they appear to be relatively well tolerated and where change to a more appropriate antiepileptic drug regime is considered to create a risk of seizure exacerbation or recurrence. There was a substantial fall in the number of and some reduction in the proportion of patients prescribed phenytoin although this was not statistically significant. Brodie (1990) suggested that there has been a move away from using phenytoin as a drug of first choice, partly because of its side effects. The narrow therapeutic range of phenytoin and the need for therapeutic monitoring is also a considerable disadvantage in clinical practice and non-equivalence of different preparations caused problems in the past in the same population (Stewart *et al.*, 1975).

Although the number of carbamazepine and sodium valproate prescriptions had fallen slightly, they rose as a proportion of epileptics in the hospital. The position of carbamazepine

as the most frequently prescribed drug is in keeping with its common position as an anti-epileptic drug of choice for epileptics with behaviour and/or cognitive problems.

The proportion of patients on only one anticonvulsant has risen slightly and not significantly over the 18 year period and 20 patients were still on polypharmacy. The drugs used in combination had changed in 1990 reflecting the trends in prescribing practice. All of the patients with very frequent seizures were on polypharmacy but this may be a reflection of the severity of epilepsy in this group rather than cause and effect. A desirable level of polypharmacy in this population is uncertain given the presence of very severe and brain damaged epileptics, although it is possible that some further reduction could be achieved. A national survey of families with a son or daughter with profound intellectual disability and multiple physical and sensory impairments who lived at home also shows a high prevalence of polytherapy; 28.9% of children and 44.2% of adults being in receipt of 2 anticonvulsants and 6.8% and 4.7%, respectively 3 anticonvulsants (Hogg, 1992).

The Aberrant Behaviour Checklist was empirically derived by factor analysis and covers five problem areas commonly encountered in moderately and profoundly retarded individuals. Unfortunately it was not possible to obtain controls for all the epileptics but a comparison of the available information seemed to indicate that the epileptic patients showed significantly higher scores

on the irritability and lethargy Subscales (but not on the hyperactivity stereotypy and inappropriate speech sections). This suggests that mentally handicapped epileptics tended to have more abnormal behaviour of certain types. The cause of this is not certain from the information available. Deb and Hunter (1991) had previously not shown a significant increase in psychopathology in mentally handicapped epileptics as compared to controls. The sample is too small and the epilepsy and its treatment too heterogeneous to permit definitive conclusions. The brain damage causing the epilepsy is unlikely as a cause since the controls were matched for severity of intellectual disability. Inspection of the data revealed no obvious relationship to seizure frequency. Hence, the most probable association is with the antiepileptic medication. However, this view must remain tentative until replicated by the study of a much larger and more homogenous sample of patients. Not surprisingly psychotropic drug prescription was common in the epileptics including antipsychotics in 37%, although these drugs may worsen epilepsy. However, a high proportion of controls also received psychotropic drugs.

In conclusion the prescription of anticonvulsant drugs remained at a high level in a mental handicap hospital in spite of many changes in the population. Drug prescribing trends have tended to follow modern prescribing practice although some of the older drugs were still in use and polypharmacy remained frequent.

## Summary

The prescription of anticonvulsants in a hospital for mentally retarded people was reviewed for the year 1990 by examining drug sheets and patient records. The information was compared with similar records obtained for the years 1972 and 1982. There was little change in the proportion of patients receiving anticonvulsants or polytherapy with these drugs. However, there was a considerable increase in the proportion of carbamazepine prescriptions and a reduction in phenobarbitone prescriptions. Changes in the hospital population were also described. The Aberrant Behaviour Checklist was used to compare epileptic patients with a control group and epileptics showed increased irritability and lethargy.

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