

hospital. There was a history of increasing uneasiness, with onset of delusions and hallucinations of a paranoid nature, especially during the previous seven days.

A diagnosis of myasthenia gravis had been made in June 1971, and the patient had been established on a regime including 'Mestinon', prostigmin and atropine. For a few weeks before she was seen the myasthenia appeared to become uncontrolled and the dosage of anti-myasthenic drugs had been increased.

When admitted she was hallucinated, deluded, depressed and very anxious. The degree of fear she showed seemed so unusual that we wondered for a considerable time whether her condition could be a toxic state caused by the anti-myasthenic drugs, but there was no element of confusion. Within three days the psychotic symptoms and signs disappeared; her myasthenia, which had at times seemed quite severe, came under control, and she was discharged home on 13 November 1972, after trial weekend leave. She had apparently recovered from the psychotic episode, and the myasthenia was under control with almost exactly the same dosage of anti-myasthenic drugs as before the acute psychosis. She had had no anti-psychotic treatment other than her admission to the hospital and general nursing care.

Within three days of discharge she relapsed and had to be re-admitted. She had once again become hallucinated, deluded and terrified. The myasthenia was again out of control. This time she was treated with phenothiazines and later with antidepressives. The anti-myasthenic drugs were continued. The symptoms of both disorders again abated very rapidly, and after a more prolonged period of observation and trial leave, she was discharged on 18 January 1973, and has done well since.

We are now left wondering whether it was the schizophrenic illness that caused the myasthenia to go out of control, because the latter fluctuated *pari passu* with the former. (Unit No. 13365/72.)

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AN EXPLANATORY STATISTICAL MODEL FOR PLASMA LEVELS OF IMIPRAMINE AND DESMETHYLIMIPRAMINE DURING LONG-TERM THERAPY

DEAR SIR,

In 1967, in this *Journal*, Moody, Tait, and Todrick (1) presented plasma levels of imipramine and desmethylimipramine (DMI) in 24 patients receiving long-term imipramine therapy. Because of 'considerable variations in the plasma imipramine and DMI levels', they concluded that these levels 'were not primarily related to the dosages (of imipramine) given'. We have considered Moody's conclusion of a lack of dose response and have addressed ourselves to the problem of identifying what factors relate to the plasma levels.

In addition to plasma levels, Moody presented sex, age, weight, dose, time after commencement of therapy, and other drugs the patients were taking. To enable us to compare dosages for persons of different body weights, we expressed dosages as $Q = \text{dose/weight}$, with units mg./lb. A regression model of the following form is fitted by the method of least squares:

$$Y = Q(aS + bA + cT)$$

where a , b , and c are constants to be determined

S is the patient's sex: +1 for males, -1 for females

A is the patient's age (years)

T is the patient's time after commencement of therapy (months)

Y is the patient's plasma level of imipramine, DMI, or total (mcg./l.).

The concurrent mediation was not considered because of its variety, and a lack of knowledge of how it can be incorporated into the mathematical model.

The regression analysis yielded estimates for coefficients and their probabilities are as below:

The multiple correlation coefficient R , which is the fraction of the total variation explained by the model, was computed. For imipramine, DMI, and total, the observed R s (unadjusted for the mean) were 0.83, 0.92, 0.93 respectively, and all are significant at the 1 per cent level.

Category	Imipramine	DMI	Total
(a) Sex	-2.94 (P = 0.860)	-67.34 (P = 0.019)	-70.28 (P = 0.045)
(b) Age	1.57 (P < 0.001)	3.55 (P < 0.001)	5.12 (P < 0.001)
(c) Time	2.35 (P = 0.249)	9.91 (P = 0.005)	12.26 (P = 0.006)

With regard to the possibility of a dose response relationship for the plasma levels, we considered fitting the above model with Q deleted. The result was that the mean square errors for imipramine decreased from 2,821 to 2,749, while for DMI and total there was an increase from 7,341 and 11,367 to 9,229 and 13,149 respectively. Thus there appears to be no apparent linear dose response relationship for imipramine plasma levels, while it is likely that such exists for DMI and total levels.

We also observed an interesting lack of correlation between imipramine and DMI levels in the long-term therapy. The correlation between imipramine and DMI for the 24 patients is 0.263, which is not significant. Furthermore, when the plasma level of DMI is allowed to compete with QS, QA, and QT in entering the model for imipramine, small non-significant partial correlations are observed; and identical results hold when the plasma level of imipramine competes for describing DMI plasma levels.

A review of the literature since 1967 turned up no other paper reporting long-term blood levels in imipramine therapy.

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REFERENCE

1. MOODY, J. P., TAIT, A. C., and TODRICK, A. (1967). 'Plasma levels of imipramine and desmethylimipramine during therapy.' *Brit. J. Psychiat.*, **113**, 183-93.

A DAY HOSPITAL'S FUNCTION IN A MENTAL HEALTH SERVICE

DEAR SIR,

It has been a great pleasure to read Dr. Morrice's paper (*Journal*, March 1973, pp. 307-14) describing aims, aspirations, methods and ideology very closely approximating to my own.

I very much associate myself with Dr. Morrice's views that a Day Hospital can and should function as an integrating centre between hospital and community services. With this in mind I have, since 1967, organized once monthly multi-disciplinary clinical co-ordinating meetings, comprising a buffet lunch and either a speaker, a case presentation, or a free discussion meeting. The purpose is to provide a forum for professionals and other parties working in the mental health field in this area to meet each other personally, discuss mutual cases and problems, acquaint themselves with latest developments and learn from each other and the speaker. The meetings are very informal and at least one third of the time is spent in discussion. The speakers come from a wide field of interest, and include the regular participants—for instance, a consultant colleague, a marriage guidance counsellor, a Family Planning Association doctor, a group therapist at an approved school, a general practitioner, the head of the Department of Employment disablement resettlement services, a medical officer from a student health service social worker attached to a general practice, and others.

The growing popularity of these meetings has proved the need for such a facility. A level of multi-lateral communications and a degree of cordiality have resulted, which are otherwise not easily achieved.

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