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ANTIPSYCHOTIC DRUGS IN COMMUNITY-BASED SHELTERED-CARE HOMES*

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Abstract—This research describes the extent of use of antipsychotic drugs in sheltered-care and examines the effect of these drugs by dosage, age group and psychopathology on rehospitalization and social integration.

Data were collected from a large sample of former mental patients representative of all non-retarded mentally ill between 18 and 65 living in community-based sheltered-care in California.

Findings suggest that antipsychotic drugs, when used with limited medical supervision, have detrimental effects on the social functioning of the least disturbed. While antipsychotics may short circuit the psychotic process and thereby reduce mental hospital readmissions, social programming is necessary to promote better social functioning.

INTRODUCTION

The shift of the mentally ill from hospital to community was to improve their care and prognoses by minimizing exclusion from everyday life. Community care is intended to stabilize or improve social functioning by fostering social ties and by providing access to and presence in a normal social environment. The administration of antipsychotic drugs is an important and pervasive treatment measure in community care, and to be concerned with the former mental patient's quality of community life is inevitably to be concerned about the effects of antipsychotic drugs.

Clearly, the clinical trial is the best method for determining the effects of medications. However, clinical trials are expensive, difficult to design and have failed to address the ex-patient's quality of life. In the absence of such data, it is useful to have other systematic findings available upon which to form interim judgments and to guide further research, even if such findings are in no sense definitive and must be hedged with the caveats which typically accompany correlational data. In this paper, we draw on data from a large, interview-based study of California's sheltered-care population to address the extent of antipsychotic drug administration, and the effects of these drugs by dosage on rates of rehospitalization and levels of social integration for individuals of different ages with various degrees of psychopathology, mental hospital experience and current medical supervision.

ANTIPSYCHOTICS AND THE TREATMENT OF MAJOR MENTAL DISORDER

Antipsychotic medications have become the treatment of choice for major mental disorder in the

United States. Although chemotherapy does not cure mental disorder it has been proven effective in the control of overt symptomatic and useful in terminating acute psychotic episodes [1]. The introduction and common use of antipsychotic drugs has aided in limiting hospitalization [2] and maintaining mentally ill people in the community [3]. Thus, the administration of antipsychotic drugs has been praised as an economic mode of intervention. Antipsychotics are also credited with decreasing the suffering associated with mental disorders and reducing the burden of discomfort the mentally ill impose on their families.

Recently, however, researchers have noted liabilities of the widespread use of antipsychotic drugs [4]. Crane, in his critical analysis of the clinical use of psychopharmacology, points out that the unanticipated effects of psychoactive drugs (e.g. tardive dyskinesia) may limit their use in psychiatry [5]. Scheff has questioned the policy implications of widespread pharmacotherapy (a "chemical straight jacket") and has explored the risks and benefits of routine chemotherapy for psychoses, concluding that risks have not been adequately appraised [6].

Studies which indicate that drug taking diminishes rates of readmission to hospital note that drugs are not effective for all groups of patients [7]. While most patients taking drugs have lower rates of rehospitalization, a substantial percentage of patients who do not receive drugs also remain out of hospital and, conversely, many patients on medication need rehospitalization [8]. In an important study by Rappaport, follow-up information on young, male "non-chronic" schizophrenics demonstrated that patients given a placebo at hospital intake had significantly better post-hospital adjustment than patients who received drugs [9]. This three-year study raises serious questions about the widespread prescription of antipsychotic drugs. Not only might the drugs be inappropriate for some patients, but they may decrease their chances of later adjustment.

Research is needed to evaluate which groups of the mentally disturbed benefit substantially from antipsy-

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chotic medications and which groups might not need them. Dosage levels must also be carefully examined to determine optimal amounts of medication.

Recent research has addressed dosage. Gardos *et al.*, in an extensive review of dose response studies, contend that it is pointless to describe the clinical effects of antipsychotic drugs unless dose level is specified [10]. Attention is rarely paid to this issue in the psychopharmacological literature, however. As late as 1969, Klein and Davis surveyed the literature and found no study of the phenothiazine treatment of schizophrenics which utilized dose response curves [11]. Recent studies which do attend to dose levels report that for certain groups there is no significant difference between patients on high or low doses. Prien and Klett found that long-term schizophrenic patients receiving the equivalent of 300–600 mg of chlorpromazine showed no significant change in their clinical condition when their dose was reduced to 300 mg [12]. Prien and Cole, in a study of 838 chronic schizophrenics, reported that in older, more chronic patients there was no advantage to higher dosages of antipsychotics [13]. Clark and Davis [14] and Gardos *et al.* [15] report similar findings.

METHODOLOGY

This study derives from a larger project in which we explored the lives of community-based sheltered-care residents in California [16]. In 1973 interviews were conducted with a probability sample of 499 sheltered-care residents representing California's 12,430 non-retarded mentally ill between the ages of 18 and 65 living in community-based sheltered-care.

To obtain this sample we constructed a statewide list of facilities, facility addresses, and the number of beds in each facility. Residents meeting the above criteria (non-retarded, etc.) were sampled with equal probability; that is, resident selection was equal to the overall sampling fraction, S , which was defined as a function of:

T = the probability of selecting a given area;

U = the probability of selecting a given facility;

V = the probability of selecting a given resident in a facility so that:

$$S = T \times U \times V.$$

A two stage cluster sample was completed in the Los Angeles and San Francisco Bay areas because of the concentration of residents in these locations. These areas were sampled with a probability of 1; facilities within these areas were sampled probability in proportion to the number of beds in them; all residents in facilities were sampled using systematic random sampling procedures. No substitutions were made for refusals or for those residents too disturbed to be interviewed. For the remainder of the state a three stage cluster sample was completed. Counties and facilities were sampled probability in proportion to the number of beds they contained. Further methodological details are available elsewhere [17].

Information about the type and dosage level of medication prescribed for each sheltered-care resident was collected as part of the larger study. Since medication is formally supervised in almost all facilities

(93%), we often speak of the dosage "taken" rather than prescribed. Although strictly speaking these are not equivalent, due to the importance of the medications to facility operators the prescribed and ingested amounts are generally the same.

The major instruments and the measure of social functioning used were the Social Integration Scales [18]. These scales were developed to measure the internal and external integration of residents of sheltered-care facilities. The items which comprise the scales theoretically assess five dimensions of resident social involvement: (1) presence; (2) access; (3) participation; (4) production; and (5) consumption.

The internal integration scale assesses the resident's degree of involvement, on all five dimensions, within his facility or in activities sponsored by the facility. The external integration scale assesses the resident's involvement outside and independent of the facility. The obtained index of external integration measures the amount of time an individual spends independently outside the facility (presence); his access to goods and services, places, and social contacts available to other community members (access); his participation in community, facility and social activities (participation); his contributions to the community through work or study (production); and his use of the community's goods and services (consumption). Internal integration reflects a similar assessment of involvement within or mediated by the facility. A factor analysis of the social integration scale items yielded 7 subscales for the external integration scale and 5 subscales of internal integration. The average α for these subscales was 0.79 and 0.73 for external and internal integration respectively.

Psychological disturbance was measured by the Overall and Gorham Brief Psychiatric Rating Scale (BPRS) [19]. Interviewers were trained social workers with at least a year's experience with psychotic patients. With the aid of films of released mental hospital patients, they were trained to assess levels of disturbance using the BPRS. In a sample of joint and independent ratings of residents by psychiatrists and our interviewers, we found 90% agreement between raters on the assessment of psychopathology.

No reliable diagnostic information was available for residents in the sample, though it is reasonable to assume that the great majority of those taking anti-psychotic medications were schizophrenic.

Using Hollister's guidelines, each antipsychotic drug was converted into a relative potency dosage equivalent of 100 mg of chlorpromazine (CPZ) [20]. In this manner we were able to analyze dosage levels. Few drug studies report the actual dosage levels of their subjects [21]. Therefore, we had few guidelines for comparing consumption patterns in other mentally ill populations with that in our own sample. Based on the dosage, range, and distribution reported in these studies, we divided our residents' dosage levels into three categories: low (less than 300 mg CPZ equivalent dosage), moderate (300–600 mg CPZ), and high (over 600 mg CPZ). Our analysis used both the categorical and the raw equivalency scores.

Before moving to our findings, a word should be said about our correlational approach. Correlation does not indicate causation, and this method is less desirable than the controlled experimental design.

However, most controlled studies have employed the inadequate criterion of mental hospital readmission and have failed to examine the effects of varying drug dosages due to design limitations. Our less elegant study considers the impact of drugs and the effects of differential dosages on individual social functioning. Though our findings are in no sense definitive, they complement those from clinical trials and define areas for future research.

FINDINGS

Eighty-eight percent of our sample were taking drugs of some type (either psychiatric or nonpsychiatric) and 76% were taking antipsychotic drugs at the time of the interview. Of those on antipsychotic drugs, 38% were on more than one and 99% were taking at least one of the three most frequently prescribed drugs. The most common antipsychotic drug prescribed for this sample was thioridazine (Mellaril®); 48% were taking it. The dosages ranged from 15 to 900 mg, with most patients (7%) taking 200 mg per day. Thorazine was the second most prescribed antipsychotic drug; 33% were taking daily dosages ranging from 25 to 4000 mg; 4.5% of the group were at the 200 mg level, which was the modal category. The third most commonly prescribed drug was Stelazine; 28% of the residents were taking daily dosages ranging from 2 to 98 mg. Of the sample, 9% were taking Prolixin. The other drugs were distributed as follows: Navane®, 5%; Compazine®, 2%; Quidé®, 2%; Haldol®, 2%; Serentil®, 0.7%; Tarcatan®, 0.3%; Trilafon®, 0.1% and Tindal®, 0.2%.

DOSAGE LEVEL AND RECOMMENDED DAILY DOSAGE

Dosages for those residents on antipsychotics ranged from 10 to 3400 mg. CPZ equivalents. We compared these dosage levels to the recommended daily dosages of Hollister [22] and the American Medical Association's Drug Evaluations [23]. Compared with Hollister's recommended daily dosages for psychiatric outpatients (50–400 mg), 60% of those in our study were medicated at the recommended level, 39% were above the recommended level, and only 1% were below the advised level. Compared with the American Medical Association's Drug Evaluations (30–1000 mg), 89% of the sample were within the recommended level, 10% were above it, and only 1% were below.

DOSAGE LEVEL, AGE AND CHRONICITY

Using our own categorization, 17% of our medicated respondents were taking high dosages of antipsychotic drugs (more than 600 mg CPZ), 26% were taking moderate dosages (300–600 mg CPZ), and 33% were taking low dosages (less than 300 mg CPZ).

Sixty-four per cent of our sample were over 40 years of age. Research by Prien and Cole has suggested that high doses of antipsychotic drugs are of limited effectiveness for those over 40 [24]. Our data demonstrate that the clinical practice of doctors in California is consistent with this research. Only 17% of those over 40 years old were prescribed drugs at

high dosage levels (more than 600 mg per day), compared with 31% of those under 40.

Prien and Cole's research also suggests that high doses of antipsychotics are less effective with patients with more than 10 years of hospitalization [25]. While only 17% of our sample were on high dosages of drugs, 27% of the group under 40 years old with more than 10 years of hospitalization were on high dosages. Also, while only 17% of the sample over 40 were prescribed high dosages of drugs, 27% of the group 40 or older with more than 10 years of hospitalization were taking high dosages of antipsychotic medications. It appears that many residents for whom research does *not* recommend high dosages of antipsychotics are in fact receiving them.

REHOSPITALIZATION

Twenty-two per cent of our sample were rehospitalized during the year previous to the interview. We found that only 68% of the rehospitalized residents were taking antipsychotics, whereas 78% of those who were not rehospitalized were receiving them. While this difference is not statistically significant, it is generally in line with other findings which have suggested that antipsychotics reduce the necessity for readmission. We did not find dosage level to be an important factor here: we found no significant difference in dosage levels between those who were rehospitalized and those who were not.

SOCIAL INTEGRATION AND THE ANTIPSYCHOTICS

External integration

Initial analysis of the data revealed little relationship between external integration scores and the use of antipsychotic medication ($r = -0.05$). In an attempt to relate levels of antipsychotic medication to levels of external integration, we controlled for resident psychological disturbance.

The Brief Psychiatric Rating Scale (BPRS), based on 16 psychiatric symptoms, was employed as an index of resident psychological disturbance. The sum of BPRS ratings on all 16 symptoms was divided into three categories, with category three characterizing the most disturbed residents and category one the least disturbed.

An analysis of variance of the means of external and internal integration scores within BPRS categories indicated that more disturbed residents had significantly lower levels of both external and internal integration (see Table 1). The more disturbed groups also received higher drug dosages (see Table 2).

Drug dosage and external integration controlling for psychological disturbance. The correlation between external integration and drug dosage was considered within BPRS categories. We found a negative relationship between antipsychotic drug dosage and external integration in the least disturbed group and a positive relationship between drug dosage and external integration in the most severely disturbed group (see Table 3). Still, the causal direction of these relationships remained undetermined. That is, for the least disturbed group of residents, did higher dosages reduce social integration or, in fact, was drug dosage

Table 1. Mean social integration scores within BPRS disturbance category

BPRS disturbance category	Social integration scale			
	External integration means		Internal integration means	
	Mean	Sample <i>n</i>	Mean	Sample <i>n</i>
(1) Least disturbance	0.303	103	0.163	103
(2) Mild disturbance	-0.066	221	0.080	221
(3) Severe disturbance	-0.256	73	-0.322	73
	<i>F</i> = 8.058		<i>F</i> = 5.532	
	<i>P</i> < 0.01		<i>P</i> < 0.01	

Table 2. Mean Hollister equivalent CPZ dosage within BPRS disturbance category

BPRS disturbance category	Sample <i>n</i>	Mean dosage	
(1) Least disturbance	103	267.9	<i>F</i> = 6.366
(2) Mild disturbance	221	339.9	<i>P</i> < 0.01
(3) Severe disturbance	73	489.5	

Table 3. Correlations between Hollister equivalent CPZ dosage and external integration within BPRS disturbance category

Zero order correlations	BPRS disturbance category		
	Least disturbed	Mildly disturbed	Severely disturbed
External integration by dosage	-0.23*	-0.04	0.34†
Internal integration by dosage	-0.23*	0.05	0.12
Partial correlations			
External integration by dosage controlling for level of disturbance within BPRS disturbance groups	-0.24*	0.04	0.39†
Internal integration by dosage controlling for level of disturbance within BPRS disturbance groups	-0.22*	0.05	0.12
Sample <i>n</i>	103	221	73

* Significant correlations, *P* < 0.05.

† Significant correlations *P* < 0.01.

reduced as residents achieved higher levels of external integration? In the most disturbed group of residents did higher dosages lead to better external integration or were higher drug dosages given to patients with higher levels of external integration to reduce their community involvement and potential threat?

Before attempting to establish the direction of the above relationships, we sought to account for any confounding effects which resulted from judging level of disturbance while individuals were medicated. We took account of this effect by obtaining the partial correlation between external integration scores and drug dosage levels, controlling for BPRS ratings within the disturbance group. Thus we obtained an assessment of the relationship between external integration and drug dosage after symptom assessments had explained all the variation they could in the latter two variables.

The use of this procedure strengthened our results (see Table 3). The partial correlation between external integration and drug dosage for the most disturbed group equaled 0.39 (*P* < 0.01); in the least disturbed

group this partial correlation equaled -0.24 (*P* < 0.05).

Supervision. Establishing causal priorities. The BPRS groups differed significantly in their levels of social integration and the amount of drugs they received. To test the possibility that prescription procedures explained this relationship—that is, to ascertain whether dosage was adjusted by treatment personnel to the patient's level of overt psychological disturbance and by inference to his level of social integration—we divided the individuals in each BPRS group into supervised and unsupervised sub-groups.

As noted earlier, 93% of the facility operators said that they adhered to a formal procedure for supervising the medication of their residents. The supervision of ingestion, however, is not the same as the supervision of medication dosage and indication. It is this latter type of supervision that we will consider here. If the resident was not in therapy, and the operator did not seek medical help for resident psychological problems, there was little likelihood of active dosage supervision. Supervision of medication dosage and

the indication of medication dosage adjustments, therefore, was based on one or both of two conditions. A resident was considered to be under medical supervision if (1) he or she was currently in group or individual therapy, and/or (2) lived in a facility in which the operator reported that a psychiatrist or general practitioner would be called when residents attempted suicide, spoke nonsensically, saw or heard things, talked to themselves or felt that others were talking about them. Given these criteria, 59.5% of the residents had medical supervision. Just under half of these residents (28.4% overall) met the medical supervision criterion by virtue of individual and/or group therapy.

We observed that within each of the BPRS groups there were no significant differences in the age, sex, or marital status of supervised vs unsupervised residents. Further, average antipsychotic drug levels did not differ with supervision.

Considering the lack of differences between the supervised and unsupervised residents within each disturbance group, we treated this situation as a natural experiment. We thus developed three alternate hypotheses to explain the negative correlation between drug dosage and external integration which we observed in the least disturbed BPRS group (category 1) and three alternate hypotheses related to the positive correlation found between dosage and external integration in the most disturbed BPRS group (category 3).

With regard to the least disturbed residents, we hypothesized that if a physician reduced a resident's drug dosage as his external integration increased, and thus was responsible for the negative correlation, that finding would remain significant in the supervised group but would not be significant in the group that did not have medical supervision. Alternately, we hypothesized that should the negative correlation remain significant for the group without supervision but be insignificant for the group with supervision, we would assume that higher drug dosages depress external integration. In this situation we would assume that the insignificant correlation in the supervised group indicates that physicians manage to prevent

negative effects of higher drug dosage on external integration.

Finally, we hypothesized that if higher drug dosage depressed external integration regardless of medical supervision a significant and negative correlation would obtain in both the supervised and unsupervised sub-groups.

Our findings, displayed in Table 4, indicate that a significant negative partial correlation of -0.417 ($P < 0.01$) was found for the least disturbed, unsupervised group (9% of the sample). There was no significant partial correlation between dosage and external integration for the least disturbed, supervised group. It seems likely, therefore, that higher drug dosages reduce the external integration of the least disturbed, unsupervised sheltered-care residents. Supervision, on the other hand, apparently mitigates the negative effects of medication.

We also developed three hypotheses pertaining to the most disturbed group of residents (category 3 on the BPRS). These were: (1) that a positive correlation between dosage and external integration for both supervised and unsupervised residents would indicate that drugs, with or without adjustment, facilitate external integration; (2) that a positive correlation in the supervised group and a lack of correlation in the unsupervised group would indicate that with supervision drugs facilitate external integration; and (3) that a lack of correlation in the supervised group and a positive correlation in the unsupervised group would suggest that drugs facilitate external integration for this latter group of residents, and that external integration is being restrained in the supervised group of severely disturbed residents. That is, for these residents external integration can be undesirable because of their real or imagined threat to social order.

This last hypothesis was supported by the data. The partial correlation between dosage and external integration, controlling for symptom assessments, was not significant for the most disturbed, supervised group, but the partial correlation for the most disturbed, unsupervised group (0.65) was significant at the $P < 0.01$ level (see Table 4). Antipsychotic drug

Table 4. Partial correlations[‡] of CPZ equivalent dosage and external integration controlling for symptom assessments within medical supervision and BPRS disturbance groups

	BPRS disturbance groups		
	Least	Mild	Severe
CPZ equivalent dosage by external integration controlling for symptom assessments			
Supervised residents	-0.158	0.063	0.136
Unsupervised residents	-0.417†	-0.013	0.653†
Sample and population <i>ns</i>			
Sample <i>n</i> supervised	70	115	43
Sample <i>n</i> unsupervised	33	98	28

* Significant at $P < 0.05$.

† Significant at $P < 0.01$.

$$‡ r_{12.3} = \frac{r_{12} - (r_{13})(r_{23})}{\sqrt{1 - r_{13}^2} \sqrt{1 - r_{23}^2}}$$

where variable: 1 = external integration, 2 = dosage mg CPZ, 3 = BPRS rating.

dosage seems to increase the external integration of more disturbed residents but supervision appears to constrain this effect.

Internal integration

The overall association between antipsychotic dosage level and internal integration is slightly negative though not significant ($r = -0.05$). In the most disturbed group we obtained a positive, though insignificant partial correlation between internal integration and drug dosage, controlling for symptom assessments. Given the trend observed in the external integration analysis—i.e. the tendency of the relationship between external integration and drug dosage to change from negative to positive with increased resident psychopathology—we divided the most disturbed group into two sub-groups according to their degree of disturbance. Looking at the relationship between internal integration and drug dosage, controlling for current symptom assessments for the most severely disturbed subset of the disturbed group (8% of the sample), we found a significant and positive partial correlation equal to 0.28 ($P < 0.05$). Drug dosages for residents who scored lowest on the BPRS (i.e. the healthiest group) were significantly and negatively related to internal integration scores. The partial correlation between internal integration and drug dosage controlling for symptom assessments in the least disturbed group was equal to -0.22 , $P < 0.05$.

To establish the causal direction of our observed correlations, we again controlled for whether dosage was medically supervised (see Table 5). The negative relationship between dosage and internal integration held for the least disturbed, unsupervised residents, and there was no significant relationship between dosage and internal integration in this resident group when dosage was supervised. Thus, for the least symptomatic residents, unsupervised higher dosages appear to hinder intrafacility social functioning.

The relationship between drug dosage and internal integration remained positive though insignificant in both the supervised and unsupervised groups of the most severely disturbed. It appears that antipsycho-

tics have a minimal effect on the internal integration of these residents.

AGE, CHRONICITY AND SOCIAL INTEGRATION

To examine the relationship of age and chronicity to social integration and antipsychotic drug use we divided the sample into four categories: (1) under 40 with fewer than 10 years in a psychiatric institution ($n = 103$); (2) under 40 with 10 years or more in an institution ($n = 13$); (3) over 40 with fewer than 10 years of hospital time ($n = 140$); and (4) over 40 with 10 or more years in a psychiatric facility ($n = 59$). Research has demonstrated the generally beneficial effect of antipsychotic drugs for those under 40 with relatively few years of hospitalization [26]. We wished to determine whether this held true for the California sheltered-care population.

When we considered only the relationship between external integration and drug dosage, our data indicated a weak negative relationship for young residents with short histories of hospitalization. This was found for residents in medically supervised and unsupervised situations. However, when we controlled for severity of symptomology this relationship became weak and positive due to the significant and strong positive relationship between drug dosage and severity of symptomology for young residents with short histories of hospitalization ($r = 0.38$, $P < 0.01$). This relationship was insignificant and negative among older residents with substantial hospital time living in non-medically supervised facilities ($r = -0.24$). Among residents over 40 with more than 10 years of hospitalization living in medically supervised facilities the relationship between drug dosage and symptomology was insignificant and positive ($r = 0.29$).

It seems that antipsychotic drug prescription for the young with little hospital experience has specific reference to symptomology, whereas prescription for those who are older and have more hospital time is done more as a matter of course and with an assumption of underlying disorder.

Table 5. Partial correlations† of CPZ equivalent dosage and internal integration controlling for symptom assessments within medical supervision and BPRS disturbance groups

	BPRS disturbance groups			
	Least	Mild	Severe	Severest subgroup of severe group
CPZ equivalent dosage by internal integration controlling for symptom assessments				
Supervised residents	0.014	0.092	0.182	0.170
Unsupervised residents	-0.546*	0.014	-0.012	0.419
Sample and population ns				
Sample <i>n</i> supervised	70	115	43	19
Sample <i>n</i> unsupervised	33	98	28	14

* Significant at $P < 0.05$.

$$\dagger r_{12.3} = \frac{r_{12} - (r_{13})(r_{23})}{\sqrt{1 - r_{13}^2} \sqrt{1 - r_{23}^2}}$$

where variable: 1 = internal integration, 2 = dosage mg CPZ, 3 = BPRS rating.

In the older, more chronic sub-group (those over 40 with more than 10 years of hospitalization) we found a very strong, highly significant negative correlation between antipsychotic medications and internal integration (the partial correlation for symptomology was -0.36 , $P < 0.01$), and a small negative correlation for external integration. Using a logic similar to that previously employed to establish causal direction, we controlled for whether or not the resident lived in a facility which provided for the medical supervision of drugs. We find that medical supervision is instrumental in preventing the negative impact of antipsychotics on the internal integration of residents over 40 with more than 10 years of hospitalization. While the partial correlation between internal integration and drug dosage controlling for symptomology was not significant in supervised facilities, it was equal to -0.59 ($P < 0.01$) in unsupervised settings. Also, while the partial correlation between external integration and drug dosage controlling for symptomology was significant in neither supervised nor unsupervised facilities for those over 40 with more than 10 years of hospitalization, it approached significance in the unsupervised facilities ($r = -0.31$). In short, a lack of medical supervision of drug dosage seems to have a negative effect on the older, chronic population.

CONCLUSIONS

We must emphasize once again that correlation is not causation and that our findings need further exploration by clinical trial. However, our results are disturbing in view of the extensive use of antipsychotics and the current emphasis on drug treatment to promote the social integration of released mental hospital patients.

Our findings can be summarized in five major points:

(1) Antipsychotic drugs are used widely, but in and of themselves fail to promote desired types of social integration among sheltered-care residents.

(2) Dosage level makes little difference in rates of rehospitalization.

(3) High dosage levels of antipsychotics, when unsupervised, have a negative effect on the external and internal integration of the least disturbed and the older and more chronic residents in sheltered-care.

(4) Prescribed dosage is unrelated to symptomology for older and more chronic residents.

(5) Medical supervision seems to prevent the negative effects of antipsychotics on the social integration of sheltered-care residents.

If antipsychotic drugs continue to be used extensively in community care, procedures must be implemented to prevent their disabling side effects (such as tardive dyskinesia, parkinsonism, and akathisia) as well as their deleterious effects on the social integration of relatively asymptomatic and older, long-term ex-patients. Such procedures should at minimum include adequate supervision of drug dosing for all former patients. Insuring such supervision may not be very difficult. Medical supervision can be facilitated by training community-based sheltered-care operators to call upon general practitioners or psychiatrists for help with residents' psychiatric problems.

Though our findings concerning the use of antipsychotics and rehospitalization are equivocal, the withdrawal of medication from asymptomatic schizophrenics may well lead to higher rehospitalization rates [27]. Still, although medication can impede psychotic process it can also substantially inhibit social functioning. In the absence of more research on the relationship among personal characteristics, diagnosis, treatment settings, and types of medical and psychosocial intervention (see, for example, the Soteria project [28]), this is a double bind which will haunt us for some time to come. Our results imply the need for more selectivity and care in the prescription and monitoring of antipsychotic drugs. To maintain a patient on the same drug and dosage without modification unless there is a problem—the procedure we found most common in sheltered-care—reduces the patient's chances of being successful on lower dosages, or getting off the drug for rest periods. At minimum, the chronic population over 40 and the young and relatively asymptomatic might benefit from dosage reductions or drug "holidays".

In sum, we believe that as a goal of community care social integration must be viewed apart from drug treatment and not as its necessary or even usual consequence. Our findings urge caution and a necessary emphasis on social programming in addition to pharmacotherapy.

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