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Neuroleptic Medication and Prescription Practices with Sheltered-Care Residents: A 12-Year Perspective

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ABSTRACT

Objectives. Most adult residents of sheltered-care facilities (board and care, family care, psychosocial rehabilitation, and other supported housing arrangements) for the chronically mentally ill receive neuroleptics. These facilities house over 300 000 mentally ill residents, but neuroleptic prescription practices with this population have not been studied.

Methods. A probability sample (n = 393) of all adult former psychiatric patients in sheltered care in California was surveyed in 1973; 94% of the located survivors (n = 243) were reinterviewed 12 years later.

Results. In 1973, 79% received neuroleptics; in 1985, 76%. Polypharmacy decreased, and the elderly remained less medicated than adults. Yet, mean daily neuroleptic doses doubled, more persons received higher doses, and 62% reported adverse effects. Furthermore, high dosing was attributed to psychiatrists rather than other physicians, even when controlling for residents' clinical and sociodemographic characteristics.

Conclusions. Neuroleptic drugs became the staple pharmacological treatment for mentally ill sheltered-care residents. While physicians more cautiously medicated the elderly, they had not reduced doses by 1985, even after a decade of treatment. The specialty of the prescriber was an important factor in preference for high-dose treatment. (*Am J Public Health.* 1992;82:846–852)

Introduction

More than three quarters of the adult residents of sheltered-care facilities with a history of mental hospitalization are prescribed neuroleptic drugs.[1] Because long-term use of neuroleptics, which delays relapses in over 50% of schizophrenic patients,[2] also poses great risk of persistent tardive dyskinesia,[3] researchers and professional associations have recently urged clinicians to exercise caution when prescribing these drugs.[4,5] This study describes psychiatric drug prescriptions in a cohort of residents in sheltered care (board and care, family care, halfway houses, and psychosocial rehabilitation facilities). Specifically, we consider prescription practices in the mid-1980s to determine how they changed from the early 1970s.

A partial consensus concerning the use of neuroleptics emerged in the 1980s around four issues. First, although medications such as antiparkinsonians or antidepressants are commonly added to neuroleptic regimens, the simultaneous prescription of more than one neuroleptic or more than three psychotropics has been particularly criticized.[6,7] Second, there has been considerable interest in low-dose strategies,[8–11] which are sometimes associated with higher relapse rates but usually with improved social functioning and fewer adverse effects.[12–15] Third, although high- and low-potency neuroleptics are considered equally effective,[16,17] maintenance treatment with injected depot preparations has been recommended[10,14,18] to circumvent most patient noncompliance and ensure exact dosage delivery. Fourth, since the likelihood of noncompliance, adverse effects, and errors in administration increases with the frequency of administration, once-a-day dosing has been recommended for oral maintenance treatment.[19–21]

Most experts writing in the mid-1980s recommended general adherence to these four prescription practices, but the subject has not been studied extensively in recent years and the literature abounds with contradictory anecdotal impressions.[22,23] No study has examined prescription practices in a cohort of former patients living in community-based sheltered-care settings. This is an important omission, for these facilities have become the placement of choice in the mental health system, housing 300 000 to 400 000 mentally ill adults.[24]

Methods

This 12-year longitudinal study first involved face-to-face, structured interviews in 1973 with 393 residents of 211 sheltered-care facilities in 157 census tracts in California, a self-weighting probability sample of all 18- to 65-year-old formerly hospitalized ex-patients (n = 12 430) in sheltered care in the state.

The sample was obtained by dividing the state into three master strata: Los Angeles County, the nine-county San Francisco Bay Area, and all other counties. In the first two, facilities were stratified by

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size and a sample was drawn of facilities with probabilities proportionate to bed capacity. In the third stratum, a cluster sample was designed, selecting two counties from the northern and two from the southern part of the state with probability proportionate to size. From each pair, samples of facilities were selected, also with probability proportionate to size. Residents were sampled within facilities, using systematic random sampling from specially prepared field listings.[25]

Follow-up data were collected in 1985. Of the 393 former residents, 360 (91.6%) were located and 33 (8.4%) were not. Of the former residents located, 270 (68.7%) were alive and 90 (22.9%) confirmed dead. Of the survivors, 253 (93.7%) were interviewed, and 243 (90%) yielded complete drug information. This study focuses on psychotropic drug prescriptions to these 243 survivors (61% of the original sample). Table 1 shows no differences between the two samples except for the survivor sample being younger and having more women and fewer Blacks than the original, due to higher death rates among the elderly, men, and Blacks.

In 1973 and 1985, drug prescription data (name of drug, dosage, times per day, number and frequency of injections) were obtained from respondents and their residence managers or physicians. All active prescriptions at the time of the interview were recorded. Self-reported dosages were confirmed by checking prescription bottles. Neuroleptic dosages from both years were converted into oral chlorpromazine equivalents (CPZeq) using Hollister's[26] scale. For the injectable, long-acting fluphenazine decanoate, CPZeq was determined by a first equivalence to daily units of fluphenazine hydrochloride, using the rule endorsed by the manufacturer of Prolixin® and by other psychopharmacologists[27,28]: 12.5 mg of fluphenazine decanoate injected every 3 weeks is equivalent to 10 mg of fluphenazine hydrochloride daily. Unless otherwise noted, all dosages are reported in mg/day CPZeq.

Information on adverse drug effects was obtained only during the 1985 study, with respondents asked to rate the severity of 13 effects from "absent" to "very severe."

Chi-square tests, two-tailed *t* tests, and multiple regression analysis were performed on the data using the SPSSx statistical package. Significant results are reported when $P < .05$.

TABLE 1—Characteristics of Chronic Mentally Ill Patients (n = 393) Living in Sheltered-Care Facilities in California in 1973, and Cohort Survivors with Psychotropic Drug Data (n = 243)

Characteristic	Total, %	Survivor Sample, %
Sex		
Male	57.0	53.5*
Female	43.0	46.5
Age, y		
18 to 35	27.0	32.9*
36 to 45	15.5	17.7
46 to 55	30.3	30.5
56 to 65	27.2	18.9
Ethnic group		
Black	13.0	10.0*
White	76.0	77.6
Other	11.0	12.4
Education, y		
0–6	9.6	9.2
7–12	66.8	67.6
13 or more	23.6	23.1
Marital status		
Single	58.1	60.9
Married	4.9	5.3
Formerly married	37.1	33.7
Employment		
Works for cash or other benefits		
Never	73.6	71.0
At least rarely	26.4	29.0
Months in current sheltered-care facility		
1	5.6	5.2
2 to 12	35.8	36.9
13 to 24	18.0	17.2
25 or more	40.6	40.8
Has spent a continuous period of 2 or more years in a state psychiatric hospital (pre-1973)		
Yes	40.5	43.5
No	59.5	56.5
Psychiatric admission in the past year (pre-1973)		
Yes	21.7	23.9
No	78.3	76.1

*Significantly different ($P < .05$) from the nonsurviving group.

Results

Cohort Status

In 1973, 213 persons (87.6%) received a psychotropic drug prescription, compared with 206 (85.2%) 12 years later.

In 1973, 79% of the residents were prescribed neuroleptics, 81% of women and 77% of men. By 1985, 76% received these drugs, and women were significantly more likely to be prescribed neuroleptics (82% vs 71%, $\chi^2 = 3.8$, $df = 1$, $P < .05$), the only significant gender difference detected in the prescription of any psychotropic. Table 2 shows how many patients were prescribed how many drugs per class.

Diagnosis and medication. Lifetime modal diagnoses based on hospital discharge data were determined for 209 of the 243 sample members. Most (79%) received diagnoses of schizophrenic disorders, the rest substance abuse (5%) or other disorders (16%). Modal diagnoses for 162 (88%) of those on neuroleptics in 1985 were: schizophrenia or other psychoses (87%), affective disorder (6%), and other disorders (7%).

Diagnoses were available for 26 (93%) of 28 persons prescribed an antidepressant in 1985. Only 5 (20%) had any diagnosis of affective disorder noted in their lifetime hospital records. Of 9 persons prescribed lithium at follow-up, only 2 had any such diagnosis. There were no sex or age differences in the likelihood of receiving these drugs without the diagnosis.

Neuroleptic drugs. Ten different neuroleptics were prescribed in 1973, eight at follow-up. Of 192 persons on neuroleptics in 1973, 164 (85%) still received them 12 years later. In the interval, only thio-

TABLE 2—Number of Drugs in Each Class and Number and Percentage of Persons Receiving Psychotropic Drugs, by Drug Class

Drug Class	1973			1985		
	No. of Drugs in Class	No. Using Each Class	% Using Each Class	No. of Drugs in Class	No. Using Each Class	% Using Each Class
Neuroleptic	10[a]	192	79.0	8[a]	185	76.1
Antiparkinsonian	5	98	40.3	7	90	37.0
Anticonvulsant	2	26	10.7	3	16	6.6
Sedative–hypnotic	8	20	8.2	2	10	4.1
Antidepressant	4	15	6.2	7	28	11.5
Anxiolytic	2	10	4.1	2	7	2.9
Lithium	1	2	0.8	1	9	3.7
Antisenility	0	0	...	1	3	1.2
Stimulant	0	0	...	1	1	0.4

[a]Fluphenazine hydrochloride and fluphenazine decanoate are counted as a single drug.

TABLE 3—Patients Receiving Each of the Six Most Popular Neuroleptics (n = 243)

Neuroleptic	1973			1985		
	%[a]	Range	MDD ± SD	%[a]	Range	MDD ± SD
Thioridazine	35	20–900	254 ± 185	22	20–800	192 ± 163[b]
Trifluoperazine	28	4–100	20 ± 16	17	2–200	25 ± 36
Chlorpromazine	25.5	15–1200	276 ± 239	11.5	30–2250	392 ± 440
Fluphenazine hydrochloride	8	1–20	8.5 ± 6	14	2–200	38 ± 42
Thiothixene	4	6–60	22 ± 16	6	4–40	11.5 ± 10
Fluphenazine decanoate	2.5	750–1500[c]	375 ± 306[c]	7	300–4500[c]	2040 ± 1171[c]
Haloperidol	2	1–60	20 ± 23	11.5	1–50	19 ± 14
Others[d]	4	...	...	2.8	...	...

Note. MDD = mean daily dose.
[a]Total exceeds 100% as patients may have received more than one drug.
[b]$t = 1.97$, $df = 30$, $P < .05$.
[c]In mg/day chlorpromazine equivalent.
[d]In 1973, these are piperacetazine, prochlorperazine, reserpine, and acetophenazine. In 1985, they are chlorprothixene and perphenazine.

ridazine's mean daily dose (MDD) showed a significant reduction (see Table 3).

Prescription Practices

Polypharmacy. In 1973, the mean (±SD) number of drugs prescribed per person was 1.9 (±1.2), reduced to 1.7 (±1.2) in 1985 ($t = 2.13$, $df = 242$, $P = .03$). However, the proportion receiving three psychotropics dropped from 21.4% to 13.2%. Over the study interval, 34% received the same number, 38% received fewer drugs, and 28% received more drugs. Table 4 highlights a reduction of multiple neuroleptic prescriptions, from 29% of the whole sample prescribed two or more neuroleptics in 1973 to 13% by 1985.

Among the medicated elderly, 51% were prescribed one drug, 27% two drugs, and 23% three or more. The comparable percentages for the younger group are 31%, 44%, and 25%, respectively ($\chi^2 = 8.83$, $df = 2$, $P = .012$).

Neuroleptic drug dosage. Among those prescribed neuroleptics in both 1973 and 1985, the MDD (±SD) increased from 512 (±435) mg in 1973 to 963 (±1603) mg in 1985 ($t = 3.64$, $df = 163$, $P = .0001$). Six percent were prescribed the same dose both years, and the rest were evenly split between decreases (46%) and increases (48%). After excluding fluphenazine decanoate, a significant MDD increase was still observed, from 461 (±371) mg to 790 (±1480) mg ($t = -2.72$, $df = 143$, $P = .007$).

The range of neuroleptic dosages increased from 30 to 3400 mg in 1973 to 20 to 11 300 mg in 1985. While only 4 persons (1.6%) in 1973 were prescribed doses over 2000 mg daily, this had increased to 20 persons (9%) by 1985, of which only 3 resided in institutions (where dosages are typically higher). The proportion receiving over 1000 mg daily doubled over the study interval, from 11% to 23%.

Long- and short-acting injectables. In 1973, 6 people (2.5%) received neuroleptics by injection, all of them of fluphenazine decanoate. At follow-up, 22 people (9%) received injections, 16 (7%) of the decanoate products and the others of short-acting neuroleptics.

The MDD of those receiving injections in 1985 was four times greater than that of those receiving oral prescriptions: 2691 (±2585) mg vs 662 (±1130) mg ($t = 3.73$, $df = 21$, $P = .0001$). The mean age in the first group was 46 (±11) years, compared with 55 (±12) years for others ($t = 3.26$, $df = 182$, $P = .001$). They were also prescribed an average of 3 (±1.3) psychotropic drugs, compared with 1.9 (±0.9) for those on oral neuroleptics ($t = -3.70$, $df = 24.16$, $P = .001$).

Age, gender, and dosage. In 1973, the MDD (±SD) among the neuroleptized elderly was 308 (±424) mg (range: 50 to 2060 mg). By follow-up, this had increased to 484 (±753) mg (range: 25 to 4500 mg) but was still less than half that prescribed to persons under 60 (1154 [±1793] mg). This elderly-to-adult dose ratio follows

well-established guidelines to prescribe one third to one half the usual adult dose.[29] However, whereas 36% of elderly on neuroleptics in 1973 were receiving low (under 150 mg) daily doses and 27% were receiving high doses (over 300 mg), by 1985 these proportions were reversed. Over the study interval, increases in MDDs were significant among both men and women, but changes in dosage were not related to gender.

High- and low-potency neuroleptic. Of those prescribed neuroleptics both years, 40% remained on the same potency at follow-up, 18% switched from low to high, and only 5% went from high to low. Most who started neuroleptic treatment after 1973 were prescribed high-potency drugs at follow-up.

During both study periods, high-potency agents were prescribed at significantly higher CPZeq doses than low-potency drugs, and this relative difference had greatly increased by 1985. The high-potency to low-potency dose ratio went from 1.74:1 in 1973 to 5.3:1 in 1985 (excluding fluphenazine decanoate at follow-up, the ratio was 4.6:1).

At follow-up, people receiving neuroleptics of both potencies (n = 25) were (1) more likely to be prescribed antiparkinsonians (56% of them and 52% of the high-potency group, compared with 32% of the low-potency group; $\chi^2 = 7.16$, $df = 2, P = .03$); (2) prescribed more psychotropic drugs on average (3.2 [±0.9], compared with 1.9 [±1.1] for those on high-potency drugs and 1.6 [±0.8] for those on low-potency drugs [F = 21.4, $P = .0001$]); and (3) prescribed drugs more frequently (2.9 [±1.1] times per day, compared with 2.4 [±0.9] for those on high-potency drugs and 2.1 [±1] for those on low-potency drugs [F = 3.9, $P = .02$]). No significant age or sex differences between the three groups were noted.

Daily dosing schedule. The mean maximum daily dosing schedule decreased nonsignificantly from 2.2 (±1.3) times in 1973 to 2.0 (±1.3) times in 1985.

Practice Differences between Psychiatrists and Other Physicians

At follow-up, the medical specialty of the current prescribers of 115 (73%) of the patients on neuroleptics in 1973 and 1985 was known. For people (n = 84) with prescriptions from psychiatrists, the MDD (±SD) increased from 483 (±440) to 1087 (±1648) mg ($t = -3.46$, $df = 83$, $P = .001$), while for those (n = 31) with prescriptions from nonpsychiatric physicians, the MDD (±SD) decreased from 1973 to 1985 from 431.5 (±377) to 263 (±295.5) mg ($t = 2.06$, $df = 30$, $P = .048$). No difference existed between dose levels of these two groups in 1973. This same pattern was observed for the 48 people over age 59 in 1985. For the 20 elderly with prescriptions from other physicians in 1985, the MDD (±SD) decreased from 495 (±447) to 202 (±196) mg ($t = 2.88$, $df = 19$, $P = .009$). For the 28 with prescriptions from psychiatrists, the MDD (±SD) increased from 339 (±231) to 667.5 (±780) ($t = -2.24$, $df = 27$, $P = .033$).

TABLE 4—Psychotropic Drug Combinations

Drug Combination	Prescriptions 1973 n	1973 %	1985 n	1985 %
No neuroleptic	51	21.0	58	23.9
Neuroleptic × 1	121	49.8	154	63.4
Neuroleptic × 2	66	27.2	27	11.1
Neuroleptic × 4	5	2.0	4	1.6
Total	243	100.0	243	100.0
No psychotropic drugs	30	12.3	37	15.2
Neuroleptic × 1 only	78	32.1	81	33.7
Neuroleptic(s) + antiparkinsonian only	68	28.0	61	25.1
Neuroleptic(s) + antiparkinsonian + 1 other psychotropic	21	8.6	17	7.0
Neuroleptic(s) + lithium only	0	0.0	5	2.1
Neuroleptic(s) + anticonvulsant only	6	2.5	2	0.8
Neuroleptic(s) + sedative-hypnotic only	5	2.1	1	0.4
Neuroleptic(s) + other drug combinations	14	5.8	17	7.0
Other drug combinations	21	8.6	22	9.1
Total	243	100.0	243	100.0

More problematic patients may be referred primarily to psychiatrists, so we sought to determine whether their patients differed from those seen by other physicians. We found no significant differences between them in total time spent in the hospital, number of hospitalizations between 1973 and 1985, Brief Psychiatric Rating Scale (BPRS) scores in 1985, or type of residence in 1985. However, those with prescriptions from psychiatrists were younger (mean age of 52.55 years vs 58.31 years; $t = 2.86$, $df = 155$, $P = .005$).

To predict CPZeq dose at follow-up, we entered the following variables in a multiple regression: age, 1973 BPRS score, 1985 BPRS score, 1973 CPZeq dose, number of hospitalizations, location in an institutional setting in 1985, and whether the neuroleptic was prescribed by a psychiatrist or other physician in 1985. Our model explained 22% of the variance in 1985 CPZeq dose (F = 5.87, $df = 7.148$, $P = .0000$). Significant predictors were the number of hospitalizations ($t = 2.06$, $P = .04$), age ($t = -1.99$, $P = .05$), and who prescribed the neuroleptic ($t = 2.46$, $P = .01$). Psychiatrists were more likely to prescribe at higher doses, even after taking all other factors into account.

We also examined people (n = 41) who were receiving over 1000 mg/day CPZeq, considered excessive by American Medical Association standards.[30] Of these 41, the specialty of the prescriber was available for 27 people. Of these 27, 26 (96%) were prescribed their neuroleptic by a psychiatrist. Mean age among those 26 was 47.5 years and mean time since their last hospitalization was 7.2 years.

Most neuroleptic dose-level differences observed here result from a psychiatric preference for high-potency drugs. Of those people with neuroleptic prescriptions from psychiatrists, 72% received high-potency drugs, compared with 46% of those who saw another type of physician ($\chi^2 = 6.82$, $df = 2$, $P = .0329$).

Adverse Effects

Of the 185 people on neuroleptics in 1985, 62.5% reported at least a mild degree of 1 or more of 13 adverse effects; 26.7% reported experiencing 1 to 2 effects, and 35.8% reported 3 to 13 effects (see Table 5).

Age, gender, and adverse effects. For each adverse effect except weight gain/loss, a greater proportion of people under 40 years reported discomfort. Dry mouth/throat, inability to sit still, depression/apathy, skin rashes, and loss of sex drive were reported significantly more by

TABLE 5—Prevalence of Self-reported Medication Side Effects, 1985

Side Effect	Degree of Severity: Mild n	Mild %	Moderate n	Moderate %	Severe or Very Severe n	Severe or Very Severe %	Total %
Dry mouth or throat (n = 175)	27	14.6	21	11.4	19	10.2	36.2
Restlessness/can't sit still (n = 176)	19	10.3	21	11.4	10	5.4	27.1
Weight gain/loss (n = 172)	18	9.7	14	7.6	9	4.9	22.2
Diarrhea/constipation (n = 175)	21	11.4	8	4.3	12	6.5	22.2
Depression/apathy (n = 173)	18	9.7	11	5.9	6	3.2	18.8
Dizziness/weakness (n = 175)	18	9.7	8	4.3	9	4.8	18.8
Skin rash/sensitive to sun (n = 175)	12	6.5	15	8.1	5	2.7	17.3
Problems staying awake (n = 178)	15	8.1	8	4.3	4	2.1	14.5
Sight/eye problem (n = 173)	8	4.3	9	4.9	9	4.9	14.1
Loss of sex drive (n = 171)	4	2.2	10	5.4	10	5.4	13.0
Body rigidity/stiffness (n = 175)	9	4.9	4	2.2	8	4.3	11.4
Spasms of head/neck/mouth/jaw (n = 176)	4	2.2	7	3.8	3	1.6	7.6
Nausea/vomiting (n = 175)	9	4.9	3	1.6	2	1.1	7.6

younger patients. Women and men did not differ in the number of side effects they reported, but women were significantly more likely to report dizziness/weakness, changes in weight, and sight or eye problems.

Adverse effects and prescription practices. Scores of the severity ratings of all 13 adverse effects were summed to produce a total score (possible range: 0 to 52) ranging from 0 to 30 (mean [±SD] = 4.56 [±0.1]). Most people (38%) scored 0; 27% scored from 1 to 4, 20% from 5 to 12, and 15% from 13 to 30. Exactly half the sample reported two mild or one moderately severe side effect. Both the number ($r = .17$, $P < .01$) and the severity ($r = .17$, $P < .01$) of adverse effects showed modest positive correlations with neuroleptic dosage but no significant relationship with neuroleptic potency.

Discussion

Between 1973 and 1985, some psychotropic prescription practices with sheltered-care residents were modified while others remained unchanged. On the positive side, nearly 40% of the sample received fewer drugs at follow-up. Multiple neuroleptic prescriptions were reduced by more than half. The proportion of people prescribed neuroleptics and antiparkinsonians stayed the same over the 12-year period, confirming that these drugs constitute the staple pharmacological treatment for long-term patients. Similarly, the elderly continued to receive, on average, half the neuroleptic dosage prescribed adults. However, overall changes in neuroleptic dosage patterns contrast with published statements such as "unquestionably, concern about tardive dyskinesia has led to more conservative use of antipsychotic drugs; i.e., more careful selection of patients for long-term therapy and the use of lower doses."[22]

We found that 85% of those prescribed neuroleptics in 1973 received them 12 years later and observed substantially higher mean daily doses across age, sex, and ethnic categories. Nearly half of those prescribed neuroleptics both years experienced a dose increase in the interval. Nearly 10% received over 2000 mg CPZeq daily, an extreme dose usually accompanied by polypharmacy and more frequent drug administration. Reflecting their current acceptance as specific treatments for affective disorders, antidepressants and lithium were increasingly prescribed, but most commonly as adjuncts to neuroleptics.[21]

The large increase in MDD is associated with growing use of high-potency neuroleptics. This longitudinal study of long-term sheltered-care patients confirms reports from cross-sectional studies that higher CPZeq doses are prescribed when using high- vs low-potency neuroleptics.[31,32] In this sample, the high- to low-potency ratio is two times that reported in previous studies. This should be of concern, since some evidence suggests that, compared with moderate doses of neuroleptics, higher doses of high-potency drugs frequently produce neurotoxicity and inferior antipsychotic effect.[30,33]

These patterns of dissimilar dosing might be explained by the fact that low-potency agents carry an increased risk of inducing autonomic dysfunction and systemic toxic reactions that are less common or severe when lower doses are used.[34] Some authors[33] find good evidence that high CPZeq doses are not more beneficial than moderate doses but believe that "the recently popular aggressive use of high-potency neuroleptic agents in high doses is to increase the degree and speed of therapeutic response." Our findings indeed suggest that prescribers (primarily psychiatrists) are opting for drugs permitting large dose increases. The higher incidence of extrapyramidal effects associated with these drugs may be considered more acceptable than the autonomic and other physical effects associated with high doses of low-potency drugs.

Patients who had medication switched from low potency to high potency may have been poor responders initially who showed improvement with a drug change and a dose increase. On the other hand, studies indicate that only a small proportion of poor responders at conventional dosages will respond at substantially higher doses.[35,36] That nearly 40% were prescribed the same neuroleptic 12 years apart may denote a stable clinical profile and the patient's acceptance of drug treatment. However, if clinicians should aim to decrease total exposure to neuroleptics, that 60% were switched is disturbing, since nearly two thirds who were switched received a higher CPZeq dose. A possible development of tolerance to neuroleptics could explain increased doses over time in the same individuals, especially if treating physicians remained the same, but we possessed no data on this variable. Possibly, increase in MDD with high-potency neuroleptic was a response to observations in

the late 1970s supporting high doses and rapid neuroleptization in hospital settings,[37] a practice currently in relative disfavor. Patients may have been discharged on higher doses that, in turn, increased during the next hospitalization or convinced clinicians that higher doses were relatively safe. We expect that these attitudes changed during the late 1980s, when concerns about toxic effects of potent neuroleptics were raised[38]: the continuation of our follow-up study to include 20-year evaluations in 1993 will either support or disprove this interpretation.

Nevertheless, in both 1973 and 1985, 4 in 10 patients received neuroleptic doses under 300 mg CPZeq per day, confirming that many chronic schizophrenic patients in the community can be maintained in lower dose ranges.[13,39,40] On the other hand, low-dose strategies must be complemented by community services that can respond effectively to signs of impending relapses. Unfortunately, the level of services available for this population may make low doses appear impractical to prescribers.

One subset of prescribers, nonpsychiatric physicians, appears to follow more cautious guidelines than their psychiatric colleagues, perhaps because of the former's lesser familiarity with neuroleptics and managing adverse effects. We could not locate similar observations in the literature; these practice differences require further investigation.

Nearly 40% of our respondents reported moderate to very severe adverse effects. Restlessness, body rigidity, or orofacial spasms—effects indicative of extrapyramidal symptoms—were reported by 33% of the sample. Several studies suggest that self-reports of extrapyramidal symptoms yield false negative results,[41,42] but our rates are consistently similar to those reported in a multicenter study[42] of 2391 patients on neuroleptics that used self-reports and observer reports.

Dose-related adverse effects typically caused by low-potency agents—such as dry mouth—may be easily recognized and managed by a dose reduction or a switch to high-potency agents. In turn, extrapyramidal symptoms typically induced by high-potency agents—such as akathisia—imitate schizophrenic symptoms[40] and may be managed by reducing the dose but also by prescribing antiparkinsonians. That subjects on high- and combined-potency treatment received significantly higher CPZeq dosages and more psychotropic drugs would seem to support observations from at least one study[43]: when diagnosing neuroleptic-induced extrapyramidal symptoms, clinicians inevitably added an antiparkinsonian rather than reduce the neuroleptic dose.

Clinicians who prescribe neuroleptics to long-term patients may thus err on the side of overtreatment. However, the elderly as a group receive about half the neuroleptic dosage younger patients receive, which suggests clearly that clinicians recognize the need to mitigate neuroleptics' negative effects on the most fragile patients. On the other hand, clinicians appear to respond to the opposing pressure to "do everything possible" to forestall relapses.[13] Since psychotropic drugs often constitute the only tool of the prescriber, this opposing pressure might translate to a reluctance to prescribe less. □

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