WHAT THE TRANQUILIZING DRUGS ARE DOING TO THE POPULATION IN MENTAL HOSPITALS

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For fifty years the trend of the patient population in the New York State Mental Hospitals had been steadily upward. There was a slight drop during the height of World War II, but the rising trend quickly made up for the momentary hesitation. Then after this almost perfectly steady increase lasting for decades, in July 1955 something happened. The trend reversed. The population in the hospitals started to go down.[1] Today, three and one-half years later, the trend is still downward. It has been as steadily downward in the last three and a half years as it was steadily upward in the preceding fifty years. What caused this shift? Can we on the basis of statistical data assign a cause to this dramatic and long hoped for effect?

The patient population in a mental hospital is the net balance resulting from patients entering and patients leaving. It is a function primarily of how long patients stay in the hospital. In any analysis of a change in mental hospital population it is necessary to look first at each factor which affects the size of the population and see how it has changed. The major factors are: first, number of patients admitted; second, number of patients dying; third, number of patients released alive and; fourth, number of released patients returning to the hospital. If the change in patient population can be shown to be the result of a single one of these four factors then the search for a cause can be quickly narrowed to the things which can affect that factor.

Let us look first at the number of patients admitted. Over the years the number of admissions has been steadily increasing. Since 1910 the number of admissions per year to the New York State Mental Hospitals has increased from 7,066 to a high of 23,286 in 1958. From 1950 to 1957 the number remained relatively stationary fluctuating between 20,140 and 21,828. Hence we may say quite categorically that the decrease in resident patients did not occur as the result of a decrease in the number of patients admitted to the hospitals. This does not rule out the possibility that there might have been changes in the characteristics of the patients admitted which could have some effect on their length of stay, but it does mean that the changes which occurred did happen to patients who did enter the hospitals. Hospital data should therefore be able to shed light on the nature of these changes.

In regard to the possibility that the characteristics of the patients admitted have changed, we will discuss this in regard to age and diagnosis groups a little later. The other important characteristic of admissions affecting release is the legal type of admission. In 1955, 74% of the admissions were court certifications. In 1958 only 58% were court certifications. The biggest increase occurred in admissions by Physicians Certificate which increased from 1 to 11 per cent. This method of admission is used primarily for elderly patients who do not object to hospitalization and whose families desire it. These patients would previously have been court certified. This shift should have no effect on releases. The other type of admission that increased was the voluntary certificate. The per cent of patients admitted on this form increased from 7 to 15 per cent. This increase may have had some effect on releases. In absolute numbers the increase was from 1,534 to 3,372 over the four year period.

Table 1

Selected Statistics of Patients in New York Civil State Mental Hospitals

Fiscal Year Ending in	Resident Patients End of Year	Admissions	Deaths
1958	91,191	23,286	9,421
1957	92,409	21,828	8,555
1956	92,862	21,454	8,345
1955	93,314	21,459	8,078
1954	90,893	21,577	8,056
1953	88,868	21,309	8,120
1952	86,298	20,140	7,680
1951	84,608	20,420	7,629
1950	82,906	20,903	7,432
1945	72,700	16,502	6,779
1940	71,160	16,614	5,959
1935	59,828	14,540	5,164
1930	47,330	11,504	4,195
1925	40,281	9,436	3,726
1920	35,848	8,511	3,679
1915	33,155	7,934	3,036
1910	30,445	7,066	2,536

Table 2

Selected Statistics on Movement of Patients

New York Civil State Mental Hospitals by Age Group

Fiscal Year Ending March 31	Resident Patients End of Year	Admissions	Deaths	Releases* Alive	Returns from Convalescent Care	Net Releases Alive
			All Patients			
1958.....	91,191	23,286	9,421	19,334	5,120	14,214
1957.....	92,409	21,828	8,555	18,011	4,896	13,115
1956.....	92,862	21,454	8,345	17,060	4,280	12,780
1955.....	93,314	21,459	8,078	14,362	3,968	10,394
			Patients Less Than 65 Years of Age			
1958.....	62,049	16,334	1,892	17,591	4,664	12,927
1957.....	63,299	15,124	1,686	16,373	4,404	11,969
1956.....	64,211	14,646	1,757	15,530	3,809	11,721
1955.....	65,703	14,847	1,758	13,040	3,534	9,506
			Patients 65 Years of Age and Older			
1958.....	29,142	6,952	7,529	1,743	456	1,287
1957.....	29,110	6,704	6,869	1,638	492	1,146
1956.....	28,651	6,808	6,588	1,530	471	1,059
1955.....	27,611	6,612	6,320	1,322	434	888

*Direct discharges plus placements on convalescent care.

Many of these would have been court certified if attitudes and policies had not changed. It doesn't seem reasonable to expect that a change in legal status from court certification to voluntary would cause an earlier release in all cases. It might in some cases. In others it might work the other way. All in all changes in legal status are not large enough to be a conclusive cause of the change.

Next let us look at the number of patients dying in the state hospitals. This number has also increased over the years. It has increased from 2,536 in 1910 to 9,421 in 1958. The ratio of deaths to admissions has stayed remarkably constant over these years. It has only varied from 36 to 43 per hundred over this 48 year period. This is a meaningful relationship since many deaths occur among elderly patients shortly after their admission. Since deaths have increased we must admit that they have played a factor in the decrease in resident patients. This is probably best put as a negative factor. If deaths had not increased there would have been a smaller decrease in resident patients.

We will have to examine this increase in deaths in more detail to see how it has affected the resident population in the last 4 years. Perhaps the first thing is to examine the age distribution of the deaths that have occurred. The increase in the number of deaths has occurred in the 65 years of age and older group. Interestingly enough the decrease in the resident patient population has occurred in the less than 65 years of age group. The decrease in this age group cannot be attributed to excess deaths. If the deaths in the over 65 group had not increased it would only have meant a larger increase in the number of patients 65 years of age and older. We can then conclude that the increase in deaths is not the factor in the decrease in resident patients less than 65 years of age.

The third factor to look at is the change in the number of patients released alive. Both the psychiatric condition of the patient and legal considerations affect releases from mental hospitals. There are several ways patients may be released. Patients may be completely discharged directly from the hospital. More commonly patients are released from the hospital on convalescent care status. This status allows them to return if necessary to the hospital with no difficulty during the period of convalescence. If, however, the patient adjusts satisfactorily outside the institution, he is then discharged.

We will call the sum of the releases by these two principal methods(direct discharges and placements on convalescent care) releases alive. The figures for releases alive in the last four years show an amazing increase from 1955 to 1958. The number of releases alive has increased from 14,362 to 19,334. This is an increase of almost 5,000 in the annual number of patients released alive in four years. Over 4,500 of this increase is in the less than 65 years of age group. This then would seem to be the factor that caused the decrease in the resident patients. However, before we conclude that an increase in releases alive was the principal cause of the drop in population, we must look at the fourth factor, returns to the hospital If these additional released patients returned to the hospital almost immediately, then they could not be the cause of the population decrease.

From 1955 to 1958 the number of patients

returned from convalescent care did increase. In 1955 there were 3,968 such returns and in 1958 there were 5,120. This is an increase of about 1,150. Since there was an increase of 5,000 in releases alive over this same period, then the net increase in releases alive is really about 3,800. On the basis of these data, I think we can conclude that the decrease in resident patients was due primarily to an increase in patients released alive.

We now can get to the major point of interest in this paper. What factors are associated with this increase in releases? If the use of tranquilizing drugs is one of these factors, how important is it?

In Table 3 the distribution of releases alive by age group for each of the last four years is shown. These data show that the increase in releases alive has occurred among all age groups in a rather steady pattern over the four years. Expressed on a rate basis as the number per 100 patients under treatment the same steady pattern of increase appears. When put in index number form using the 1955 age specific release rates as bases we can see that the release index for all ages reached 130 in 1958. At the same time the indices for the age groups from 15 to 54 had increased even more. The youngest age group (less than 15) and the age groups above 54 had increased less. The greatest increases have occurred in the age groups from 15 to 54 years.

Now let us look at these same releases alive distributed by diagnostic category in Table 4. The releases alive of schizophrenic patients increased from 6,427 in 1955 to 8,970 in 1958. On a rate basis this represents an increase from 10.7 per hundred under treatment to 15.0. For patients with alcoholic psychoses the rate increased from 29.6 to 31.6. For patients with senile psychoses or psychoses with cerebral arteriosclerosis the rate increased from 4.7 in 1955 to 5.3 in 1958. For patients with all other diagnoses the rate of releases alive increased from 20.6 to 26.1 in the

Table 3

Releases Alive* from New York Civil State Mental Hospitals by Age

Age Group	Fiscal Year Ending March 31			
	1958	1957	1956	1955
Total	19,334	18,011	17,060	14,362
Less than 15	353	250	220	130
15-24	2,246	2,009	1,938	1,705
25-34	4,298	4,036	3,936	3,293
35-44	4,521	4,238	3,991	3,318
45-54	3,773	3,494	3,327	2,748
55-64	2,400	2,346	2,118	1,847
65-74	1,281	1,187	1,108	957
75 and over	462	451	422	364
Release Rates (per 100 under treatment)				
Total	16.7	15.7	14.9	12.8
Less than 15	23.5	21.2	24.4	18.9
15-24	44.4	43.0	41.0	31.9
25-34	36.4	33.5	31.4	24.3
35-44	26.3	24.2	21.8	17.7
45-54	17.4	16.1	15.0	12.9
55-64	10.7	10.6	9.7	8.9
65-74	6.4	6.1	5.8	5.4
75 and over	2.9	2.8	2.8	2.6
Index Number (1955 Base)				
Total	130	123	116	100
Less than 15	124	112	129	100
15-24	139	135	129	100
25-34	150	138	129	100
35-44	149	137	123	100
45-54	135	125	116	100
55-64	120	119	109	100
65-74	119	113	107	100
75 and over	112	108	108	100

*Direct discharges plus placements on convalescent care.

Table 4

Releases Alive* from New York Civil State Mental Hospitals by Diagnosis Group

Diagnosis Group	Fiscal Year Ending March 31			
	1958	1957	1956	1955
Total	19,334	18,011	17,060	14,362
Schizophrenia	8,970	8,478	7,863	6,427
Alcoholic Psychoses	1,747	1,643	1,561	1,456
CASSP/	1,164	1,096	1,052	970
All Other	7,453	6,794	6,584	5,509
Release Rates (per 100 under treatment)				
Total	16.7	15.7	14.9	12.8
Schizophrenia	15.0	14.2	13.0	10.7
Alcoholic Psychoses	31.6	31.3	30.4	29.6
CASSP/	5.3	5.1	4.9	4.7
All Other	26.1	24.3	23.6	20.6
Index Number (1955 Base)				
Total	130	123	116	100
Schizophrenia	140	133	121	100
Alcoholic Psychoses	107	106	103	100
CASSP/	113	109	104	100
All Other	127	118	115	100

*Direct discharges plus placements on convalescent care.
/Psychosis with cerebral arteriosclerosis plus senile psychoses.

same period.

On an index number base we see that the greatest improvement, from 100 to 140 occurred in the schizophrenic group. The smallest improvements occurred among the patients with alcoholic psychoses and with the psychoses associated with old age.

Can we conclude anything from these improvements in the rate of release alive? We must first recognize that there has been some improvement in all age groups and in all major diagnosis groups. The improvement has been general. It has increased most in the relatively young age groups and in the schizophrenic group, but it has affected all classes of patients. The cause or causes therefore must be general. They must affect all groups of patients. What things have occurred in the hospitals which meet these criteria? To the best of my knowledge there have been three major developments within the New York State Mental Hospital system that could be possible causes of the observed changes. They are all interrelated and it is very difficult to separate them neatly. They are: first, the introduction of the tranquilizing drugs; second, the intensive treatment program; and third, the open hospital policy.

Experimentation with the tranquilizing drugs began in the New York State Mental Hospitals in 1953. In February 1955 after a six months large scale trial, general use of tranquilizing drugs began. On March 31, 1955, 7,000 patients were on tranquilizing drugs. The figure had increased to 20,000 on March 31, 1956, 28,000 on March 31,1957 and 42,000 on March 31, 1958. This last figure represented 46% of the patients in the hospitals on that date. The drugs have been used on all categories of patients. However, they have been used most extensively in the younger age groups (except for the youngest) and in the non-organic psychoses (principally schizophrenia). These are the categories that have shown the largest improvement in release rates.

The intensive treatment program provided additional treatment personnel in the reception services of the hospitals to insure that every patient admitted received the maximum benefits from known treatment modalities in the crucial initial period after admission. This program began in 4 hospitals in 1956. It was extended to an additional 4 in 1957 and finally in 1958 it was started in the remaining 10 hospitals. This treatment program makes extensive use of the tranquilizing drugs, hence it seems almost impossible to separate the effects of the two programs. However, the intensive treatment program did not begin until 1956 and then only in four hospitals of the 18 in the department. The overall increase in releases cannot be ascribed solely to this program It almost certainly has had an important effect

but it can not have been the decisive one.

The open hospital policy is not new. In the nineteenth century many American mental hospitals were operated as open hospitals. It was only in the late nineteenth century and the early part of this century that closed or locked hospitals became the rule in this country. The New York State hospitals have always had some open wards. These were usually either so-called convalescent wards or workers wards. In the convalescent wards were patients almost ready to be released, in the workers wards were patients working in the hospital industries. Other patients living on closed wards were given honor cards which allowed them the freedom of the grounds under specified conditions. The experience of the British mental hospitals in recent years with unlocked wards led to a resurgence of interest in this policy as a therapeutic technique. In April 1956 about 6% of the 93,000 patients in New York State mental hospitals were in open wards or on ground parole. Late in 1956 deliberate attempts to apply the open door policy in the hospitals were begun. In April 1957, 8% of the patients were on open wards By October 15% were on open wards. In April 1958 the proportion had risen to 43% and in October 1958 had reached 58%. The tranquilizing drugs have played an important part in the success of this program. They have helped reduce the amount of violent behavior and helped make possible a tremendous drop in the use of restraint and seclusion. The use of these has decreased 90% from 1954 when about 25 patients per 1,000 average daily resident patients were in some form of restraint or seclusion. Now the rate is less than 3 per 1,000.

These three programs have brought about a revolution in the care of the mentally ill. They all involve the use of the tranquilizing drugs. In our analysis of population trends we must admit that we cannot separate out the effects of these drugs alone. We have to consider the effect of these drugs when used as part of an expanded and enlightened treatment plan.

Since admissions have remained steady,deaths increased only slightly, releases alive increased markedly and since returns have increased only slightly we can, I believe, safely conclude that the effect of the tranquilizing drugs when used as part of an expanded treatment plan has been to reduce the patient population in the New York Civil State Hospitals. What then of the future? Can we assume that the population will continue to decline indefinitely until there is no more need for mental hospitals? Or is the population in the hospitals merely undergoing a readjustment, a clearing up of a backlog, which will be followed by a renewed increase? Or will it hit a plateau at some lower or higher level and stay there? All of these are possibilities. The forecasting problem in this area is an unsolved one. The evidence so far is scanty. However it is possible to note some straws in the wind.

To do this it is necessary to look first at the present age and duration distribution of the patient population in the hospitals. Of the 91,191 patients in the New York State mental hospitals 23,283 have been there for 20 or more years. Another 19,500 have been there from 10 to 19 years. Thus 42,783 or 47% of the patients have been in residence at least 10 years. Until some major research breakthrough occurs, it is not likely that any great number of these patients who have been in the hospital for these periods of time will be released. Most of them may be in residence for the rest of their life. Every year some patients enter the 10 or more years duration category as they reach the 10th anniversary of their admission to the hospital. As long as more patients enter this category by staying in the hospital than leave it by death or release the size of the chronic patient load will continue to increase. This phenomenon is still going on.

In 1955, 41,829 were in this category. In 1956 the number rose to 42,347 and it continued to increase till it reached 42,783 in 1958. The growth of the long term chronic patient load has slowed down but it hasn't stopped yet.

Since the total population is decreasing while the population in the category of "duration of residence more than 10 years" is increasing,it means that the category of patients in residence less than 10 years must be decreasing very rapidly. This indicates that in the future the number of patients entering the over 10 years duration group must decrease.

To check this let us look in Table 5 at the distribution of patients less than 65 years of age by time since admission. The total number of these has declined from 65,707 in 1955 to 62,049 in 1958. At the same time those in residence 20 or more years has increased from 12,677 to 13,792. This is an increase of 9%. At the same time the number of patients under 65 in the 10-19 year distribution group dropped from 16,646 to 15,289; in the 5-9 year duration group dropped from 11,590 to 11,206; and in the 1-4 year duration group from 15,656 to 12,859. As time goes on the number of patients entering the longer duration groups must decrease and eventually the number in the longest duration group in the under 65 years of age group must decrease.

In the over 65 age group the situation is a little different. Patients move into the longer duration groups of this age group in two ways. They can age in by passing their 65th birthday. They can do this into any duration group except the shortest. They can also enter a longer duration group by virtue of time spent in the hospital beyond the age of 65. Thus the increase of the 20 years and over duration group from 8,394 in 1955 to 9,491 in 1958 is the result of patients over 65 years of age in the 10-19 duration group moving to it as well as patients under 65 years of age in the 20 and over duration group passing their 65th birthday. As a result of these two types of flow all of the duration groups except the shortest have shown increases since 1955.

What can we expect in the future. First, for the patients less than 65 years of age, I think we can expect continued decreases in each duration

Table 5

Resident Patients in New York Civil State Mental Hospitals

by Age Group and Time Since Admission

Fiscal Year Ended March 31	Time Since Admission (years)					
	Total	Less than 1	1-4	5-9	10-19	20+
1958.....	91,191	12,674	20,304	15,430	19,500	23,283
1957.....	92,409	12,483	21,436	15,735	19,927	22,828
1956.....	92,862	12,361	22,310	15,844	20,375	21,972
1955.....	93,314	13,051	23,089	15,345	20,758	21,071
Less than 65 Years of Age						
1958.....	62,049	8,903	12,859	11,206	15,289	13,792
1957.....	63,299	8,575	13,782	11,566	15,803	13,573
1956.....	64,211	7,937	14,887	11,835	16,318	13,234
1955.....	65,707	9,138	15,656	11,590	16,646	12,677
65 Years of Age and Older						
1958.....	29,142	3,771	7,445	4,224	4,211	9,491
1957.....	29,110	3,908	7,654	4,169	4,124	9,255
1956.....	28,651	4,424	7,423	4,009	4,057	8,738
1955.....	27,607	3,913	7,433	3,755	4,112	8,394

group except for the less than 1 year group. This latter group should increase as a result of increased admissions. There should be an increase for a few years of the 20 and more years duration group. Then it should start to drop along with the others.

This means a substantial drop in resident patients less than 65 years of age in the future. What this means for these patients is that the average stay has been and will continue to be drastically reduced. There will be no substantial number of them entering the hospitals in their 20's and staying the rest of their lives. There will no doubt always be some patients in this category, but the vast majority will be able to return to the community. They may have to return to the hospitals for short stays several times during their lives but they should not have to spend their entire lives there.

Now let us consider the patients 65 years of age and older. In the next 10 years I believe this number will continue to increase. If we assume that admissions will continue at the same rate, I would assume about 5,000 in the less than 1 year duration group; 8,000 in the 1-4 year group; 6,000 in the 5-9 year group; 6,000 in the 10-19 year group and 14,000 in the 20+ duration group. This would mean a total of 39,000 in the over 65 years age group. This would be an increase of 10,000.

These estimates are based on the assumptions of a continued increase in the number of patients in the older age groups admitted to the hospitals as well as on a continued improvement in the treatment procedures for these elderly patients. It must be remembered, however, that the main result of improved treatment for elderly patients may be longer hospitalization. In many cases the patient's condition may be improved, death can be postponed for long periods but the patient may not be well enough to leave the hospital. Thus the average stay in the hospitals for older patients admitted may well be increased.

In addition many long term patients now in the hospital will continue to be there 10 years from now. By then nearly all of them will be more than 65 years of age. All of these factors will tend to increase the number of older patients in the hospitals for at least 10 years.

At some time in the future, perhaps 20 years from now, we can look to the day when the backlog of long term mental hospital patients has been cleared up. Then we can expect really substantial reductions in the mental hospital population. However, two factors working to increase the patient load should not be overlooked. One is the increase in the general population. Particularly the increase in the number of aged in the population. Unless there is a tremendous expansion in the field of community psychiatry or in the provision of alternative facilities which will eventually reduce the admission rates, we may have so many patients admitted that even with better treatment and shorter stays the mental hospital population will start to rise again.

Second is the possible expansion of the classes of patients treated in mental hospitals. If narcotic addicts, non-psychotic alcoholics, and other types of patients different from those now received are admitted to the mental hospitals, then of course major decreases in population are most unlikely.

A note on methodology should be inserted in this paper. The proper way to study the population of an institution such as a mental hospital

is through cohort analysis.[2,3] That is, one should follow each homogeneous group of admissions throughout the time any of its members remain in the hospital. We are now doing this for all patients admitted to New York State Hospitals since 1954. We have not found it possible to do this for patients admitted prior to this date because of gaps in the record system. On the basis of preliminary data from cohorts of patients admitted since 1954, the conclusions concerning length of stay and release derived in this paper seem to be fully confirmed.

Summary

For fifty years until 1955 the patient population of the New York State mental hospitals had climbed steadily from 28,000 to 93,000. Early in 1955 the large-scale use of tranquilizing drugs began in these hospitals. In the three years since then the patient population has decreased to 89,000 in spite of an increase in admissions. The issue is whether the relationship between the use of tranquilizing drugs and the population drop is coincidental or causal. Evidence is given to show that the population decrease is due primarily to an increase in the number of patients released and that this increase in releases is probably related to the use of these drugs.

The future patient population is estimated on the basis of present trends. The characteristics of the resident patient population will continue to change rapidly. In general, patients will stay for much shorter periods of time. There will be an increased proportion of aged patients in the hospitals. The use of tranquilizing drugs is being accompanied by an intensified treatment program and by an expansion of the open hospital policy. In summary, the mental hospitals will continue to shift their emphasis from custodial care to active treatment.

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