

A study to determine the potential of certain nursing home residents for rehabilitation is reported. While the evidence generally indicates that it is not socially productive to direct extensive rehabilitation efforts to such groups, evidence is provided of the need for an orientation toward rehabilitation for the staffs of nursing homes in relation to the care provided to all residents.

THE REHABILITATION POTENTIAL OF NURSING HOME RESIDENTS

Jonas N. Muller, M.D., M.P.H., F.A.P.H.A.; Jerome S. Tobis, M.D., F.A.P.H.A.; and Howard R. Kelman, Ph.D.

WHETHER or not patients living in nursing homes may be rehabilitated depends upon the accepted definition of rehabilitation for this population, the potential among the patients for achievement of the rehabilitated state in response to treatment, and the practical possibilities for applying the treatment. This report deals with an attempt to define the rehabilitation potential of a group of public assistance recipients living in nursing homes.

The definition of successful rehabilitation included the maintenance of self-care activities at a higher level than that maintained by an "untreated"* population. The achievement of higher levels of self-care and social function was, of course, sought where indicated. The tool used to determine the capacity of this population to respond to rehabilitation efforts was the rehabilitation team itself, instructed to attempt every therapeutic device that could be applied to achieve at least the self-care goals. The results of this effort were compared with initial

ratings as well as with final ratings achieved by an untreated sample from the same population. All public assistance recipients residing in nursing homes in Manhattan who had any degree of specific self-care impairment, who were not moribund, and who reasonably could be expected to live for a year of observation were eligible for study. This study, then, does not concern itself with the problem of restoring to higher levels of function those persons disabled, for example, by cardiac, pulmonary, renal or hepatic insufficiency but without specific neuromuscular or musculoskeletal impairments limiting self-care.

Some 2,000 patients were screened in 15 proprietary nursing homes to obtain a sample of some 400 patients (Table 1). Almost 60 per cent of the 2,000 patients had no evident deficit in activities of daily living (ADL). Rehabilitation efforts were contraindicated, usually for medical reasons, for one-half of the group with self-care impairments, leaving only 20 per cent of the original population available for trial. Of this group of about 400 patients, only 250 actually remained in the study for the full observation

* That is: receiving only the routine treatment available to any public assistance recipient in New York City nursing homes.

Table 1—Estimated ADL Deficits, Rehabilitation Indication and Change in ADL Status of Welfare Recipients in New York City Proprietary Nursing Homes

Patient Population	Project Sample		Nursing Home Total Population (1958)
	Number	Per cent	
A. Total Patients: Welfare Recipients	2,000	100	4,500*
1. Without ADL deficits	1,170	58	2,610
2. With ADL deficits—rehabilitation contraindicated	430	22	990
3. With ADL deficits—rehabilitation not contraindicated	400	20	900
B. Total Patients with ADL Deficits Rehabilitation Not Contraindicated:	400	100	900
1. Population loss (1 year)	150	38	342
2. Population survivors (1 year)	250	62	558
C. Total Survivor Patients with ADL Deficits—Rehabilitation Not Contraindicated:	250	100	558
Number of patients treated and untreated: improved or maintained ADL status—1 year†	180-215	72-86	402-480

* Figures extrapolated from percentages obtained from project sample.

† Totals vary according to each of five ADL criteria (locomotion, transfer, toileting, feeding, and dressing).

period. Among the 150 persons leaving the study population, about one-half died, and somewhat less than one-half were either transferred to facilities outside the study or became too ill to participate. A small proportion refused further services and evaluation after treatment had been started (Table 2).

The subsamples establishing the two treatment populations and one of the control populations, of about 100 patients each, consisted of stratified random samples. An additional matched sample was drawn from homes in which no treatment was being offered to control for the possibly pervasive effect of such treatment for the nursing home as a whole. The differences noted in the nature of the population losses in the four groups do not suggest biases which might have altered or accounted for the results.

Patients were screened by psychiatrists and then rated in a relatively standard-

ized way by a team not otherwise connected to the project. The evaluations at the end of one year were carried out in the same way using the same ADL rating system. Clinical evaluations were made by the treatment teams and records kept of patient status, treatment prescription and responses, and the environment of treatment. Sociodemographic data describing the population were acquired and psychological tests devised to study differences in learning capacity and motivation for self-care among treated patients.

Over-all, little difference in outcome was demonstrated between treated and untreated populations. Loosely, one might say that about one-quarter of each population deteriorated over the year, a quarter improved, and about one-half remained the same regardless of treatment. These proportions ranged from 74 per cent maintaining status in feeding (the

Table 2—Patient Status at End of One Year

Patient Status	Total	
	Number	Per cent
In Nursing Home (Patient refusal)	284	69.8
(Ruled out by D. W. Dr.— project staff)	(16)	(3.9)
	(13)	(3.1)
Deceased	76	18.6
Hospitalized (Acute, chronic, State, Rehabilitation center*)	30	7.4
Transferred to Other Facility (Home for aged, other nursing home, own home, left New York City, hotel)	14	3.4
Unknown	3	0.7
Total	407	100

* Does not include group C referrals.
All percentages are approximate.

one critical self-care activity for survival) to nearly 50 per cent maintaining status in locomotion for the population as a whole. [If one doubts the significance of change measured as plus or minus only one unit difference between initial and final test scores,* the proportion of patients showing no more than one unit difference ranges from 74.6 per cent (locomotion) to 93.8 per cent (feeding) according to the area of activity under test (Table 3).]

However, in order to obtain the most optimistic picture of potential response to rehabilitation efforts, the initial and final scores of treated and untreated groups were compared for any change (Table 4). In locomotion, 20 per cent

of the treated population which remained in the study showed improved test scores while 20 per cent of the untreated group showed improvement. In transfer, 10 per cent improved in each of the populations; in dressing 18 per cent of the treated improved as compared with 23 per cent of the untreated; in feeding 10 per cent of the treated and untreated patients showed better final scores; and in toileting again the proportion of untreated patients improved—23 per cent—is close to the 21 per cent of treated patients.

The possibility of improvement in scores rests upon having initial scores below the highest rank. Almost 60 per cent of this population had maximum initial scores in feeding and in transfer. However such scores do provide an opportunity for either maintenance of status or deterioration. In transfer, 20 per cent of the treated and untreated patient groups showed lower scores, while 72 per cent of the treated and 68 per cent of the untreated group remained the same over the course of the year. Sixty-seven per cent of treated patients maintained their same score in feeding, while 78 per cent of untreated patients remained in status quo. In each of the ADL areas very similar proportions of treated and not treated patients showed lower final scores. Some of the score differences in maintenance or worsening may appear sizable but none are statistically significant.* As noted earlier, these differences are not consistent in direction and do not appear to be clinically significant. (The differences tend to disappear if the test requires more than plus or minus one as an indication of true clinical change.) Comparisons of the populations remaining with those lost to final evaluation reveal no differences which might have affected scores favorably.

Since no meaningful differences were noted between treated and untreated populations in test scores, a conclusion

* Using a 7-point scale for locomotion and a 5-point scale for the other four activities.

* (Chi square values on areas of maximum difference reveal $p=0.20$ to 0.50 .)

Table 3—Distribution of Differences Between Initial and Final Test Scores: All Groups (Excluding Losses) According to Self-Care Area

Difference in Scores*	Locomotion		Transfer		Dressing		Feeding		Toileting	
	No.	%	No.	%	No.	%	No.	%	No.	%
-4	3	1.2	4	1.7	0	0	3	1.2	0	0
-3	12	4.9	8	3.4	6	2.5	2	0.8	2	0.9
-2	27	11.0	14	5.7	9	3.7	4	1.6	12	4.9
-1	35	14.3	17	7.0	37	15.0	30	12.3	49	20.2
0	120	48.9	169	69.8	143	58.1	180	74.1	125	51.7
+1	28	11.4	21	8.7	32	13.0	18	7.4	45	18.5
+2	12	4.9	4	1.7	12	4.5	5	2.1	8	3.3
+3	7	2.9	4	1.7	7	2.9	1	0.4	1	0.4
+4	1	0.4	1	0.4	0	0	0	0	0	0

* + = 1st score < 2nd score
 0 = 1st score = 2nd score
 - = 1st score > 2nd score

may be reached that the potential is practically nil for response to a maximum rehabilitation effort among public assistance recipients with physical impairments limiting self-care and living in Manhattan proprietary nursing homes. Certainly there were individual patients who responded to treatment. However, the figures show that for the population as a

whole there were as many individuals who improved without specific rehabilitation team treatment, at least in ADL scores, as improved with such treatment. Clinical reports and daily observations in most of the nursing homes indicate that no special or different treatment was provided from other sources to these "improvers" not treated by our teams. There

Table 4—Per cent Distribution of Differences Between Initial and Final Scores: All Self-Care Areas According to Whether Treated or Untreated (Excluding Losses)

Group	Difference*	Self-Care Area														
		Locomotion			Transfer			Dressing			Feeding			Toileting		
		+	0	-	+	0	-	+	0	-	+	0	-	+	0	-
Treated† (N=88-91 according to self-care area)		20	50	30	12	72	16	18	56	26	10	67	23	21	56	23
Not Treated‡ (N=151-155 according to self-care area)		20	48	32	13	68	19	23	59	18	10	78	12	23	48	28
All Groups (N=242-246 according to self-care area)		20	49	31	12	70	18	21	58	21	10	74	16	22	52	26

* + = 1st score < 2nd score
 0 = 1st score = 2nd score
 - = 1st score > 2nd score

† Includes group B patients and those group C patients who were treated in hospitals.

‡ Includes patients in group A and D, and untreated C group patients (refusals).

These groups, A, B, C, and D, are described in detail in Muller, J. N. Rehabilitation Evaluation—Some Social and Clinical Problems. A.J.P.H. 51:403-409 (Mar.), 1961.

is no suggestion that they were treated differently, for example, from the "worseners" or those who remained the same in the same groups.

In reviewing the characteristics of improvers as compared with worseners, a multivariate analysis (to be reported on at a later date) shows no cluster of predictive variables among the almost 100 characteristics recorded. Our data then do not permit prediction of self-care change. It was noted clinically that "improvers" required less nursing care and absorbed more physical and occupational therapy services than "worseners." The implication is that "worseners" were "sicker" in common meaning of that term. This accords with the clinical judgment of the treatment teams that the general physical condition of the patient was the major factor standing in the way of positive response to a rehabilitation treatment effort.

This judgment provided one of the clues to any future consideration of the health service needs of nursing home populations. This present study had established one grouping by definition in advance of the screening—persons limited in ADL mainly by neuromuscular or musculoskeletal impairments. The screening process had identified two other major groupings based on general physical condition and having quite different needs for services. Almost 25 per cent of the population was mainly limited by overwhelming medical problems although specific neuromuscular or musculoskeletal impairments were present. The largest

group, about 60 per cent of nursing home residents, had no such impairments but was restricted in activities and required care in relation to cardiopulmonary or other medical problems.

The rehabilitation potential of this majority of New York City nursing home residents was not explored because the eligibility for a rehabilitation effort was defined in the limiting terms of physical impairments restricting activities of daily living. Several recent physiatrially-based studies of nursing home populations have similarly defined the group of patients eligible for rehabilitation consideration, and have had similar findings of a low potential. The weight of evidence indicates that it is not socially productive to direct extensive rehabilitation efforts toward such groups in nursing homes. However, the study teams report many evidences of the need for a general rehabilitation orientation on the part of nursing home staffs in relation to the care provided to all residents. The very high prevalence of incontinence in the study population—over 50 per cent of patients incontinent of bladder or bowels or both—with much of it responsive to rehabilitation nursing care is one of the more dramatic examples. Finally, study and demonstration seem called for in regard to the potential for improved function in such large nursing home subgroups as those with cardiac or pulmonary insufficiency. The knowledge and skills of rehabilitation medicine will make a significant contribution to such studies.

Dr. Muller is professor and chairman, Department of Preventive Medicine, and Dr. Kelman is assistant professor, Departments of Preventive Medicine and of Physical Medicine and Rehabilitation, New York Medical College. Dr. Tobis is chief, Division of Physical Medicine and Rehabilitation, Montefiore Hospital, New York, N. Y.

This paper was presented before a Joint Session of the National Rehabilitation Association and the Medical Care Section of the American Public Health Association at the Eighty-Ninth Annual Meeting in Detroit, Mich., November 16, 1961.

This report is based on a National Institutes of Health Project No. RG 5547. The project was supported also by the New York State Department of Health and by the Benjamin Rosenthal Foundation.