Factors Influencing CVA Patients To Seek Rehabilitative Care

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FEW COMMUNITIES anywhere in the world provide public health workers with all the resources desirable to maintain optimum public health. Since this situation will prevail for some time, efforts are increasing to improve the efficiency of available programs and reduce the need for immediate expansion. One way of raising efficiency is to insure that future participants will be those who need and will benefit most from the programs.

The first step is to study current participation in each public health program and to compare the participants with the population group for whom the program was designed. Later, the difficult but crucial phase is to identify the reasons for inadequate use and to take all practical steps to insure more ideal participation in the future.

In the field of chronic illness, in which early diagnosis and care are widely urged, evidence is increasing that the socioeconomic and behavioral patterns of long-term patients, their families, and their physicians tend to prevent satisfactory use of existing medical knowledge and community facilities (*1–9*). In at least some areas of the United States, for example, rehabilitation centers are inefficiently used because patients wait too long before applying for admission (*7*). This harmful delay is the main issue in this report.

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The purpose of this study is to test the hypothesis that, following the onset of cerebrovascular accidents, patients applying most rapidly for rehabilitative care tend to be those with few resources for staying in a more homelike environment. The hypothesis implies that prompt applicants seem neither to have a positive desire to be rehabilitated nor to represent the group likely to benefit most from rehabilitative care; rather, they consist of patients whose socioeconomic and medical circumstances play a large part in their applying to, what may seem to them, one of their last resources for care.

Background for Study

Although Baltimore has two progressive medical schools, its general hospitals have not developed well-organized rehabilitation programs for their disabled patients. This function is served by Montebello State Hospital, administered by the Maryland State Health Department, which admitted its first chronic disease patients in 1953. This facility admits Maryland residents of all income groups; its monthly charges for care range from no charge for indigent patients to somewhat more than $400 for those with high incomes, with intermediate charges assessed according to ability to pay.

Patients with the primary diagnosis of a cerebrovascular accident (ISC 330–334) form the largest group of applicants and admissions. Of 1,193 such patients applying to Montebello during 1956–61 (who sustained a high mortality while awaiting admission), Montebello admitted the 616 it judged most suitable for re-

habilitation. The waiting time between application and admission, ranging from 2 days to 24 weeks, averaged 4 weeks.

This paper correlates the period between onset and application with certain characteristics of the applicants and of their illness. The date when Montebello received each application form was noted as the "date of applying." For some patients, the "period of delay" between onset and application included a period of several days taken by the welfare department in certifying ability to pay. For most patients, this certification was not complete on receipt of the application.

The application forms, partially filled out by relatives or by social workers, with medical information added by the applying physician, provided the bulk of the information for this study. For the factor of disability on admission, analysis is confined to the smaller group of 616 patients admitted to Montebello, for whom both the application forms and the hospital records provided information.

Relationship to Age

Of 1,020 cerebrovascular accident patients applying to Montebello for care during 1956–61, 42 percent applied with reasonable promptness, within 4 weeks of onset of their accidents; 36 percent waited 5 to 50 weeks before applying; the remaining 22 percent delayed for 51 weeks or more, certainly an excessive period of delay (table 1). Half of all applicants applied within 8 weeks of onset (median number of weeks before applying). Even this shorter period of delay would be excessive for some cases.

Table 1. Application pattern of cerebrovascular accident patients, by age, Montebello, 1956–61

Age (years)	Number	Percent applying within—			Median weeks before applying
		1–4 weeks	5–50 weeks	51+ weeks	
All ages	[1] 1,020	41.9	36.0	22.1	8
Under 55	202	40.6	43.1	16.3	9
55–64	286	36.7	36.3	26.9	11
65–74	314	43.9	34.7	21.3	7
75 and older	195	45.1	31.8	23.1	6

[1] Includes 23 applicants of unknown age. Omits 173 applicants with unknown number of weeks between onset of accident and application for rehabilitative care.

The median period between onset and application rose slightly from 9 weeks for those under 55 years to 11 weeks for those 55 to 64 years old (table 1). Applicants above 64 years were more prompt than younger groups. Thus, 50 percent of those 75 years and older applied within 6 weeks of onset.

Persons between 55 and 64 years of age, whether white or nonwhite, male or female, were slowest to apply, while patients 75 years and older applied most rapidly (table 2). (The one exception to this generalization is the long delay of elderly nonwhite women; however, this delay is not statistically significant since it is based on only 14 patients.) With rising age, the speed of applying varied less for white males than for other race-sex groups.

While knowledge of and interest in rehabilitation may vary at different ages, the maximum delay in the 55–64 year groups is difficult to explain solely on this basis. Another cause of the consistent variation with age may be the differing capacity of families to care for patients at home. Thus, a reasonable proportion of patients between 55 and 64 years of age have spouses who are sufficiently active to provide care; furthermore, their children have also reached an age when many may provide care, at least temporarily, for older parents. Below 55 years, fewer patients may have adult children; above 64 years, fewer patients may have living husbands or wives.

Table 3 shows the application pattern among patients with and without marital partners at home. Without marital partners at home, patients of less than 75 years applied more rapidly for care than their married contemporaries. However, from age 75 and older, patients with a spouse at home were the more prompt applicants. Although not statistically significant ($P>0.05$), this tendency may require fuller consideration if confirmed in larger numbers of applicants in future years. Possibly long-term hospitalization becomes more acceptable to elderly patients, or a spouse at home may stimulate rather than retard the application.

Patients aged 55–64 years were slow appli-

cants whether or not they had a spouse at home. Thus, while age and marital status have interrelated effects on the speed of applying, each seems also to have a separate, independent effect.

Perhaps also related to the varying delay with age is the tendency for greater disability with rising age. Montebello's physical medicine and rehabilitation staff use a standardized scoring procedure to assess disability on admission, which aided in studying the relationship (*10–14*). This instrument gives 100 points to the patient able to do 11 selected activities of daily living, 0 points when no activity can be completed, and intermediate scores to patients with intermediate degrees of disability. These scores were available only for applicants who were actually admitted to Montebello. However, the results on disability in all applicants, both those admitted and not admitted, are likely to be in the same direction, if not of the same size.

Table 2. Application pattern of cerebrovascular accident patients, by age, race, and sex, Montebello, 1956–61

Race and sex	All ages [1]	Under 55	55–64	65–74	75 and older
White					
Male:					
Number applying	359	77	102	108	68
Percent applying within 4 weeks	36. 5	32. 5	34. 3	38. 0	42. 6
Median weeks before applying	11	11	13	10	8
Female:					
Number applying	368	60	75	138	91
Percent applying within 4 weeks	44. 0	46. 7	36. 0	45. 6	47. 2
Median weeks before applying	8	6	12	6	5
Nonwhite					
Male:					
Number applying	147	31	55	34	22
Percent applying within 4 weeks	44. 2	45. 2	36. 4	47. 1	54. 5
Median weeks before applying	7	6	11	5	4
Female:					
Number applying	143	34	53	34	14
Percent applying within 4 weeks	16. 8	44. 1	43. 4	52. 9	28. 6
Median weeks before applying	6	6	9	4	39

[1] Includes 21 applicants of unknown age. Omits 176 applicants of unknown race or with unknown number of weeks between onset of accident and application for rehabilitative care.

Table 3. Application pattern of cerebrovascular accident patients, by age and by presence or absence of spouse at home, Montebello, 1956–61

Marital status	All ages [1]	Under 55	55–64	65–74	75 and older
Spouse at home					
Number applying	470	124	163	130	53
Percent applying within 4 weeks	37. 9	38. 7	31. 9	38. 5	52. 8
Median weeks before applying	10	9	12	9	4
No spouse at home					
Number applying	482	68	114	168	132
Percent applying within 4 weeks	45. 4	47. 1	44. 7	48. 8	40. 9
Median weeks before applying	6	5	7	5	7

[1] Excludes 243 applicants of unknown age, unknown marital status, or with unknown number of weeks between onset of accident and application for rehabilitative care.

Of admitted patients aged 65 years and older, 72 percent were so disabled that they scored less than 50 points; in contrast, only 41 percent of patients less than 65 years had similarly low scores (table 4). By comparing older and younger patients with similar ranges of disability, the possibility is tested that the greater disability of older patients encouraged their more rapid application. For each range of disability, the elderly group applied for care more rapidly. This difference by age was marked for the severely disabled (0–20 points) and for those scoring 50 or more points. In those scoring 25–45 points, however, age made little difference in the application pattern, and there appeared to be no consistent trend for the more disabled to apply more promptly. Thus, differences in disability were probably not crucial in producing the correlation between speed of applying and age.

Table 4. Application pattern of cerebrovascular accident patients, by age and disability score on admission, Montebello, 1956–61

Age (years)	All scores [1]	0–20	25–45	50 or more
64 and under				
Number applying	276	38	74	164
Percent applying within 4 weeks	35. 5	36. 8	39. 2	33. 5
Median weeks before applying	11	10	10	12
65 and older				
Number applying	206	51	97	58
Percent applying within 4 weeks	41. 7	41. 2	41. 2	43. 1
Median weeks before applying	7	7	9	7

[1] Omits 134 admissions: patients without disability scores (usually because of death soon after admission); with unknown number of weeks between onset of accident and application for rehabilitative care; and those of unknown age.

Variation With Sex

White women applied for care more promptly than white men at all ages (table 2). Data, however, are inconsistent for the less numerous nonwhite applicants; only between the ages of 55 and 74 did nonwhite women apply more rapidly.

White women in all marital groups also applied more promptly than white men (table 5). The sex difference for married patients may arise in part because women provide care for disabled partners longer than men do. The reason is not clear, however, why women in all

Table 5. Application pattern of cerebrovascular accident patients, by race, sex, and marital status, Montebello, 1956–61

Race and sex	Total [1]	Married, spouse alive	Single	Widowed, divorced, and separated
White				
Total:				
Number applying	727	365	89	209
Percent applying within 4 weeks	40. 3	37. 3	46. 1	44. 5
Median weeks before applying	10	11	7	7
Male:				
Number applying	359	212	41	74
Percent applying within 4 weeks	36. 5	34. 0	41. 5	40. 5
Median weeks before applying	11	12	9	9
Female:				
Number applying	368	153	48	135
Percent applying within 4 weeks	44. 0	41. 8	50. 0	46. 7
Median weeks before applying	8	9	5	6
Nonwhite				
Number applying	290	111	39	99
Percent applying within 4 weeks	45. 5	40. 6	46. 2	52. 5
Median weeks before applying	7	8	6	4

[1] Omits 176 applicants for whom race, marital status, or number of weeks between onset of accident and application for rehabilitative care was unknown.

Table 6. Application pattern of cerebrovascular accident patients, by race and monthly payment for care, Montebello, 1956–61

Race	Total [1]	Monthly payment		
		None	$1–100	$101 or more
White				
Number applying	727	166	140	185
Percent applying within 4 weeks	40. 3	34. 3	40. 0	42. 7
Median weeks before applying	9	11	9	8
Nonwhite				
Number applying	230	99	61	23
Percent applying within 4 weeks	45. 5	38. 4	39. 3	43. 5
Median weeks before applying	7	9	9	8

[1] Includes 236 white and 107 nonwhite applicants who did not complete the procedure for estimating ability to pay. Omits 176 applicants with unknown number of weeks between onset of accident and application for rehabilitative care or of unknown race.

marital groups apply more rapidly than men. Possibly men resist long-term hospitalization more strongly than women, as was found in tuberculosis control. Thus, inability or unwillingness to care for women patients at home may partly, but not solely, cause their more rapid applications to Montebello.

Relationship to Race

In comparable age-sex groups, nonwhites applied more rapidly than whites (table 2). Only in the small group of women aged 75 years and older did the reverse occur. When subdivided into different marital groups, the nonwhites again applied more promptly (table 5). Thus, the fact that 50 percent of white applicants had living marital partners, in contrast to 38 percent for nonwhites, explains only partially the shorter delay in nonwhites.

A possible second reason for the racial difference in speed of applying is that families of nonwhite applicants, usually of lower socioeconomic status, may have greater difficulty in caring for patients at home. To test this possibility, the application patterns of white and nonwhite patients whose families could pay approximately the same amount for hospital care are compared (table 6). As expected, more white than nonwhite applicants could make some payment for care. Among those making some payment, nonwhites and whites applied with about equal promptness. Of those making no payment, however, the nonwhites applied more promptly. Even when indigent, white families may have better facilities than nonwhites to care for patients at home. The study data suggest, therefore, that the lower socioeconomic circumstances of the nonwhites encourage their more rapid applications.

Effects of Marital Status

As reported in previous sections, the presence of a living spouse considerably delayed applications for care except in patients 75 years and older; this delaying effect occurred in both sexes and both races. The combination producing the most delay in seeking care is apparently

Table 7. Application pattern of cerebrovascular accident patients, by marital status and disability score on admission, Montebello, 1956–61

Disability score	Total [1]	Married, spouse alive	Single	Widowed, divorced, and separated
45 points or less				
Number applying	264	132	37	90
Percent applying within 4 weeks	39. 8	31. 1	56. 8	45. 6
Median weeks before applying	9	12	4	6
50 points or more				
Number applying	223	125	23	70
Percent applying within 4 weeks	35. 9	36. 0	52. 2	32. 9
Median weeks before applying	11	11	4	11

[1] Includes 10 patients of unknown marital status. Omits 129 admissions with unknown disability scores (usually because of death soon after admission) or with unknown number of weeks between onset of accident and application for rehabilitative care.

being white, male, and having a wife living at home.

The additional possibility exists that severity of disability may differ in patients with living marital partners and those without. To test this possibility, the application pattern among different marital groups with similar ranges of disability is compared (table 7). Disability was somewhat less severe in the married applicants. Thus 49 percent of patients with living spouses and 42 percent of those without had disability scores of 50 or more For both disability groups, having a living marital partner was associated with an increased delay in applying; the increased delay was particularly noticeable in those with more severe disability (scoring 45 or less). However, differences in severity of disability apparently played little part in the relationship between marital status and the promptness of applying to Montebello. Only the widowed, divorced, and separated applied more promptly when more disabled.

Effects of Income Status

Higher income groups of both races tend to apply more promptly than lower income groups, with whites showing the greater variation (table 6). This tendency is small, but completely the reverse of that in patients applying during 1956–59 (*7*). A comparison of the monthly payments for applicants during the first 4 years and the last 2 years of the current study period shows that indigent patients have applied more slowly in recent years, while higher income patients have applied more promptly (table 8).

Two administrative changes in Montebello are related to this reversal. During 1958, Montebello's program, previously limited to the indigent and medically indigent, became available to all income groups. Also, until 1959, before an applicant was accepted for admission, families were required to be certified, as to ability to pay, by the welfare department, an agency associated in the public's mind with indigence and charity. However, from 1959 on, families were merely required to have an appointment to see a welfare department worker before the patient was accepted.

Both before and after these changes, Montebello received most applications before the patient's financial certification was completed. However, it seems possible that higher income families and patients accepted the requirements instituted in 1959 more readily than the earlier ones. Certainly such patients have formed the majority of applicants in the last 2 years, while previously they had formed the minority.

These administrative changes do not explain why indigent families have applied more slowly in the last 2 years; the cause of this situation is uncertain. However, the study data on income suggest that part of the delay in applying relates to local attitudes toward Montebello and its procedures, rather than to more general attitudes toward cerebrovascular accidents and rehabilitation.

Side of Disability

To describe the effect of one aspect of disability on speed of application, applicants are subdivided by age and by side of paralysis (table 9). Both younger and older patients applied more promptly when disabled on the right side of the body. Thus, among hemiplegics under 65

Table 8. Application pattern of cerebrovascular accident patients, by monthly payment for care, Montebello, 1956–59 and 1960–61

Period of application	Total [1]	Monthly payment		
		None	$1–100	$101 or more
1956–59				
Number applying	395	218	94	83
Percent applying within 4 weeks	37.7	38.5	38.3	34.9
Median weeks before applying	8	7	8	11
1960–61				
Number applying	279	47	107	125
Percent applying within 4 weeks	41.6	23.4	41.1	48.8
Median weeks before applying	8	18	8	5

[1] Omits 519 applicants for whom number of weeks between onset of accident and application for rehabilitative care is unknown or who did not complete procedure for estimating ability to pay.

Table 9. Application pattern of cerebrovascular accident patients, by age and side of body disabled, Montebello, 1956–61

Age	Total[1]	Side of body disabled		
		Right	Left	Bilateral
64 years and less				
Number applying	488	204	210	35
Percent applying within 4 weeks	38.3	42.2	35.2	34.3
Median weeks before applying	10	8	11	15
65 years and more				
Number applying	509	214	180	38
Percent applying within 4 weeks	44.4	48.1	43.3	34.2
Median weeks before applying	7	5	7	16

[1] Includes 116 applicants with no side affected or with side affected unknown. Omits 196 applicants of unknown age or with unknown number of weeks between onset of accident and application for rehabilitative care.

years, 42 percent of those with right-sided body impairment and 35 percent of those with left-sided applied within 4 weeks. Since right-sided disablement of the body more often is accompanied by speech difficulties, such patients form the more difficult group for home care.

While the more rapid application of hemiplegic patients with disability on the right side of the body is thus understandable, the marked delay in applying for care of those with bilateral disability is more difficult to explain. It may be conjectured that such patients must spend longer periods in hospitals for acute illness before applying to Montebello. More study is needed, however, to develop an acceptable explanation.

Discussion and Conclusions

Difficulty in caring for patients outside the hospital may cause many applications to Montebello but only partly explains the study results. This explanation is compatible with the more prompt applications of the elderly, the nonwhite, and hemiplegics disabled on the right side and also may account for the delay related to having a spouse at home. The difficulties of home care do not clearly explain, however, why men apply more slowly than women, even when they have no spouse at home, why those aged 55–64 are slowest to apply among married persons, or why high income groups are applying more rapidly and in larger numbers than in earlier years.

There may be factors associated with maleness and youth that cause resistance to early institutionalization even when rehabilitation is the stated goal. The increased promptness of high income applicants suggests that Montebello is gradually coming to be regarded as a facility for all income groups, not only the indigent.

However, there is little evidence of an active selection of patients suitable for rehabilitation. The typical prompt applicant to Montebello is elderly, nonwhite, and seriously disabled. More rapid applications should be coming from white patients and also from less disabled persons who can respond better to rehabilitative measures (*15*). If rehabilitation becomes more widely understood and culturally desirable and Montebello becomes a better known resource in Baltimore, future comparisons of actual with ideal applicants may be closer.

Meanwhile, the staff of Montebello tends to adapt, consciously or unconsciously, to the existing situation. Rather than change the goal from rehabilitation to custodial care, the staff makes a determined effort after admission of the patient to convince him and his family of the need for rehabilitation. However, several questions must still be answered.

Is the contrast between actual and desirable applicants sufficiently great to justify concern and action? Should a rehabilitation center try to educate the community and its physicians about rehabilitation rather than delay education until patients are admitted? Would broadening Montebello's program to care for cerebrovascular accident patients in the acute phase or as outpatients allow the medical staff to select more suitable subjects for rehabilitation? Further research may answer some of these questions, but definitive answers may result only from making desirable changes in the program. If the best way to solve problems is to try to change them, one study of a changed program may contribute much more than more

prolonged studies of the unaltered situation. Our studies of Montebello's applicants may well have reached this stage.

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Studies on Radioactivity in Children's Diets

The Public Health Service is expanding its program of measuring the kinds and amounts of radionuclides in the meals of selected school children so that it will reach every State. By July 1964, the institutional total diet network, in which 28 institutions currently participate, will consist of 50 sampling stations, one in each State.

The study, conducted by the Division of Radiological Health and the Division of Environmental Engineering and Food Protection, is designed to estimate the daily intake of radioactive substances in children and young adults. Diet samples, taken from educational institutions for children (ages 6–16) including orphanages with limited funds, well-to-do boarding schools, and parochial schools, are analyzed for radium 226 and nonradioactive calcium, potassium, and phosphorous, in addition to radioactive fallout from past nuclear tests.

Twenty-one consecutive meals are selected from each participating institution each month. As a child reaches the end of the cafeteria line, or as his food is served to him at his table, his meal is selected for the program, and the child is served again. Each sample represents the edible portion of the diet for a 7-day week, including all meals, soft drinks, candy bars, and other in-between snacks. The food is placed in plastic containers, frozen, and shipped to Public Health Service laboratories in either Nevada, Alabama, or Massachusetts, where analyses are made to determine the radionuclide content.