

Trends in Discharge Disposition, Mortality, and Service Use Among Long-Stay Psychiatric Patients in the 1990s

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Objective: This study examined changes in discharge disposition, mortality, and service use among three cohorts of highly vulnerable long-stay psychiatric patients in the Department of Veterans Affairs (VA) mental health system during the 1990s, a period of extensive bed closures. **Methods:** National VA administrative databases were used to identify and prospectively follow three long-stay cohorts: mental health inpatients who had been hospitalized for at least one year as of the end of fiscal year 1991 (N=2,343), 1994 (N=1,853), and 1997 (N=1,156). The cohorts were compared in baseline demographic and diagnostic characteristics as well as discharge disposition, mortality, and service use over a three-year follow-up period. **Results:** Nationally, the number of occupied long-stay beds decreased by 50 percent between 1991 and 1997. Over time, significant changes were noted in long-stay patients' principal diagnoses and discharge dispositions. Compared with the 1991 cohort, the 1994 and 1997 cohorts had a higher proportion of patients with psychotic disorders (69 percent, 77 percent, and 75 percent, respectively) and were more likely to be discharged from the hospital during the three-year follow-up period (33 percent, 54 percent, and 53 percent, respectively). However, among patients who were discharged, no substantial differences were noted in either mortality or overall VA service use across the three cohorts. **Conclusions:** The delivery of inpatient VA mental health services changed dramatically during the 1990s. This study provided evidence that continuing efforts to close VA mental health beds have not resulted in substantially adverse changes in mortality rates or in the extent to which long-term inpatients remain connected with the VA system after discharge. (*Psychiatric Services* 54:542–548, 2003)

The delivery of mental health services changed substantially during the 1990s in the United States, largely through cost-driven reductions in inpatient care. In the pri-

vate sector, for example, the use of inpatient services has declined by about a third in recent years (1–4). Major transformations have also occurred in the public sector (5,6) and are well

documented for the Department of Veterans Affairs (VA) mental health care system (7). Between fiscal years 1994 and 1997, the VA eliminated 5,987 mental health beds nationally, nearly 45 percent of the 1994 total of 13,571 beds (8).

Despite increasing pressures to reduce inpatient services and bed capacity, studies that have evaluated the consequences of recent changes in the mental health system are limited. Studies of the impact of Medicaid managed care on clinical outcomes have been initiated (9); some of these reported worse outcomes (10), but others did not (11,12). However, none of these studies focused on the effects of large-scale bed closures. Several studies of the impact of bed closures and other efforts to curtail mental health inpatient costs in the VA system have recently been published and have shown little or no association with outcomes such as cross-system use of psychiatric services (13,14), rates of incarceration (15), and reduced treatment effectiveness for posttraumatic stress disorder (16). Although the studies have focused on veterans with severe mental illness, many of whom require brief, episodic inpatient care, they have not specifically examined the effects of bed closures on the most vulnerable inpatients—those who have been hospitalized for an extended period, such as a year or more.

Recent studies of non-VA state hospital downsizings and closings have focused to a greater extent on long-stay populations and have reported improvements in level of functioning

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and quality of life (17,18) but not full community integration (19) after discharge. Although these studies provide important evidence that even persons hospitalized for prolonged periods can do well after discharge, they are somewhat limited in that they typically reflect the closing of a single facility rather than more systemwide changes. In addition, studies of the process of deinstitutionalizing state psychiatric patients have often focused on the results of legal mandates or consent decrees through which funds have been specifically set aside to enhance community-based services and to monitor outcomes (20–22). Moreover, these case studies, which have evaluated a particular state's efforts to reduce inpatient care, have not shed light on the potential impact that more naturalistic, ongoing changes in a mental health system might have on different cohorts of long-stay patients over time.

In the study reported here, we used national VA administrative data to identify and prospectively follow up three cohorts of long-stay inpatients, defined as those who had been hospitalized for at least a year. Spanning a period of accelerated change in the VA mental health system, the data for the three cohorts were drawn from the early, middle, and late 1990s, respectively. We were interested in determining whether the proportion of long-stay patients being discharged from inpatient units increased over time and whether there were any changes in discharge destination among the patients who were discharged. In addition, we sought to determine whether there were substantial changes in three-year mortality rates across cohorts and in the extent to which discharged patients continued to have contact with the VA system after discharge.

Methods

Subjects and procedures

An annual census is conducted of all current VA inpatients at the end of every fiscal year (September 30). For each inpatient, an administrative record is generated that includes data on factors such as demographic characteristics (for example, age, sex, and race), date of admission, bed section,

and principal diagnosis. We used census files from fiscal years 1991, 1994, and 1997 to identify and describe three cohorts of long-stay patients, defined as inpatients occupying psychiatric or substance abuse beds who had a length of stay of at least one year at the end of the fiscal year. The years 1991 and 1994 were selected because they correspond to periods before and at the start of, respectively, accelerated bed closures in the VA system; 1997 was chosen because the process of closing beds was well under way at that time (8).

For patients in each cohort, we determined the discharge disposition and vital status over a three-year fol-

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low-up period, ending on September 30 of 1994, 1997, and 2000 for the three cohorts, respectively. Discharge disposition was determined by using census files from subsequent years as well as the VA Patient Treatment File, a national discharge abstract database that documents all discharges from VA inpatient facilities. We categorized patients' discharge disposition as one of the following: discharged to the community, discharged to a VA nursing home, discharged to a community nursing home, other placement (for example, a halfway house or a boarding house), died in the hospital, or continued as an inpatient.

Because many long-stay patients were discharged from the hospital only to be readmitted shortly thereafter, we considered readmissions that occurred within 30 days to be continuations of the index inpatient stay. Thus, for the purposes of this study, long-stay patients had to be out of a VA hospital for more than 30 days in order to be considered successfully discharged.

In addition to documenting trends in discharge disposition, we examined differences in overall mortality among the three cohorts. For each cohort, we calculated the three-year mortality rate for all patients as well as the specific mortality rate for those who were discharged alive. Data on inhospital deaths obtained from the Patient Treatment File were supplemented with mortality data from the VA's Beneficiary Identification and Records Locator Subsystem (BIRLS), a computerized database of deceased veterans who have received VA death benefits. In terms of completeness of mortality ascertainment in the veteran population, the BIRLS has been shown to be comparable to alternatives such as the National Death Index (23) and records of the Social Security Administration (24).

Finally, to gauge the extent to which patients who were discharged to different settings in the three cohorts remained connected with VA health services, we used administrative workload data to determine use of services during the third year after baseline (fiscal year 1994, 1997, and 2000, respectively, for the three cohorts). Specifically, we determined whether discharged patients who survived the follow-up period received any inpatient or outpatient psychiatric or substance abuse services, community-based mental health services (for example, VA community residential care and intensive case management), inpatient or outpatient medical or surgical services, nursing home services, or any of these VA health services.

Among patients who made at least one outpatient visit, we also determined the mean number of visits in order to gauge the intensity of service use. Service use data were obtained from computerized national workload

Table 1

Baseline characteristics of the 1991, 1994, and 1997 cohorts of long-stay psychiatric patients in the Department of Veterans Affairs mental health care system

Baseline characteristic	1991 cohort (N=2,343)		1994 cohort (N=1,853)		1997 cohort (N=1,156)		Test statistic	df	p
	N or mean	%	N or mean	%	N or mean	%			
Length of stay before baseline (mean±SD years)	6.3±7.5		6.6±7.5		5.8±7.3		F=4.90	2, 5,349	.008
Age (mean±SD years)	57.9±13.3		57.9±12.3		60.6±11.9		F=19.67	2, 5,349	<.001
Sex							$\chi^2=3.67$	2	ns
Male	2,283	97.4	1,817	98.1	1,137	98.4			
Female	60	2.6	36	1.9	19	1.6			
Race							$\chi^2=6.37$	6	ns
White	1,926	82.2	1,487	80.2	924	79.9			
Black	375	16.0	337	18.2	213	18.4			
Hispanic	34	1.5	26	1.4	17	1.5			
Other	8	.3	3	.2	2	.2			
Principal diagnosis							$\chi^2=79.85$	6	.001
Schizophrenia or other psychotic disorder	1,626	69.4	1,426	77.0	871	75.3			
Dementia or organic brain syndrome	317	13.5	182	9.8	157	13.6			
Major affective disorder	120	5.1	128	6.9	59	5.1			
Other	280	12.0	117	6.3	69	6.0			

files, including the Patient Treatment File, the Outpatient Care File, and the Extended Care File, which, taken together, document all episodes of VA care.

This study was approved by the institutional review board of the VA Connecticut Healthcare System.

Data analysis

Differences in baseline characteristics, discharge disposition, mortality rates, and service use across the three cohorts were compared by using analysis of variance F tests for continuous variables and chi square tests for categorical variables. All analyses were performed with SAS version 6.12 (25).

Results

Description of the cohorts

As expected, given the trend in VA bed closures, we identified a decreasing number of long-stay inpatients between 1991 (N=2,359), 1994 (N=1,863), and 1997 (N=1,178). Information on discharge disposition was missing for less than 2 percent of each cohort; thus the baseline sample sizes were 2,343, 1,853, and 1,156, respectively. All the patients were occupying psychiatric beds as opposed to

substance abuse beds. The three groups were not fully mutually exclusive. The study included 3,794 unique patients, approximately a third (N=1,211) of whom belonged to more than one cohort; 9 percent (N=347) were in all three cohorts.

The characteristics of the three groups are summarized in Table 1. Compared with those in the 1991 and 1994 cohorts, members of the 1997 cohort had a shorter mean length of stay and were, on average, approximately three years older at baseline. The three groups did not differ significantly in sex or race. However, the cohorts did differ in principal diagnoses. The proportion of patients with a principal diagnosis of schizophrenia or another psychotic disorder increased from 69.4 percent in the 1991 cohort to 77.0 percent in the 1994 cohort and held fairly steady at 75.3 percent in the 1997 cohort. The proportion of patients who had disorders categorized as "other" decreased by a corresponding amount during the same period.

Discharge disposition and mortality

As mentioned above, many long-stay patients were initially discharged only

to be readmitted shortly thereafter. Of the patients in the 1991 cohort, 155 (6.6 percent) were discharged and then readmitted within 30 days, compared with 170 (9.2 percent) in the 1994 cohort and 108 (9.3 percent) in the 1997 cohort ($\chi^2=12.22$, df=2, p=.002). As can be seen from Table 2, considerable changes in discharge disposition were observed between the 1991 and 1994 cohorts. Compared with the 1991 cohort, a smaller proportion of patients in the 1994 cohort remained in the hospital (36 percent compared with 49 percent) or died in the hospital (10 percent compared with 18 percent) during the three-year follow-up period. By contrast, a larger proportion of these patients were discharged to the community (28 percent compared with 17 percent) or to a nursing home (23 percent compared with 13 percent).

In terms of the proportion of patients who remained in the hospital, died in the hospital, or were discharged, the overall pattern of discharge disposition was nearly identical for the 1994 and 1997 cohorts. One noteworthy difference between the two cohorts was the apparent shift away from placement in community nursing homes to VA nursing home

Table 2

Discharge disposition and mortality during a three-year follow-up period for the 1991, 1994, and 1997 cohorts of long-stay psychiatric patients in the Department of Veterans Affairs (VA) health care system

Variable	1991 cohort (N=2,343)		1994 cohort (N=1,853)		1997 cohort (N=1,156)		χ^2	df	p
	N	%	N	%	N	%			
Discharge disposition							227.00 ^a	4	.001
Continued inpatient stay	1,152	49	666	36	425	37			
Died in hospital	414	18	191	10	119	10			
Discharged alive	777	33	996	54	612	53			
To the community	405	17	512	28	299	26			
To a nursing home	302	13	426	23	252	22			
VA nursing home	172	7	229	12	176	15			
Community nursing home	130	6	197	11	76	7			
Other placement	70	3	58	3	61	5			
Mortality during the follow-up period									
Total cohort	513	22	315	17	215	19	16.77	2	.001
Patients discharged alive	94	12	123	12	91	15	2.80	2	ns

^a Comparing the frequency distribution of the three main discharge disposition categories—continued inpatient stay, died in hospital, and discharged alive—across all three cohorts

placements. That is, although the total percentage of patients who were discharged to a nursing home remained similar for the period 1994 to 1997 (23 percent) and the period 1997 to 2000 (22 percent), the relative proportion admitted to VA versus community nursing homes increased substantially. In the 1994 cohort, long-stay patients were discharged to VA and community nursing homes in roughly equal numbers, whereas VA nursing home placements outnumbered community nursing home placements by more than two to one in the 1997 cohort.

Table 2 also lists the three-year mortality rates for the three cohorts. Overall mortality was higher in the 1991 cohort (22 percent) than in the 1994 and the 1997 cohorts (17 percent and 19 percent, respectively), primarily because of the 1991 cohort's higher in-hospital mortality rate. However, among the patients who were discharged, no significant difference in mortality over the follow-up period was observed across cohorts.

Use of VA health services

Table 3 presents the proportion of surviving discharged patients who used a variety of VA health services during the third year after baseline. Overall, any contact with the VA health care system remained high throughout the study period. Eighty-

eight percent of discharged patients in the 1991 cohort, 87 percent in the 1994 cohort, and 83 percent in the 1997 cohort continued to receive some form of VA care during the third year after baseline.

As can be seen from Table 3, subsequent use of services varied considerably by discharge destination and cohort. Across the three cohorts, patients who were discharged to community nursing homes were consistently least likely to remain connected with any VA health services. Although this finding is based on a relatively small sample (N=60), it was especially true of patients in the 1997 cohort: only a third of patients in this cohort who were discharged to community nursing homes used any VA services in fiscal year 2000, down from about 70 percent in the 1991 and 1994 cohorts. This dramatic decline in service use among these patients was consistent across all health service categories considered.

Table 3 also shows that follow-up contact with a range of mental health services was greatest among long-stay patients who were discharged to the community or to alternative settings, such as halfway houses and boarding houses, whereas the proportion of patients who used psychiatric or substance abuse services was generally lower among those who were discharged to VA nursing

homes. However, these data did not capture the use of services provided directly in VA nursing homes by consulting psychiatrists. Follow-up use of any medical or surgical services was greatest among patients who were discharged to VA nursing homes—probably reflecting the elevated medical morbidity in this group of patients—although, in general, the use of these services declined slightly over time.

The proportions of patients who received any VA outpatient care during the third year after baseline are shown in Table 4, along with the mean number of visits among those who had at least one mental health or medical or surgical outpatient contact. Overall, approximately half of the surviving discharged patients from each cohort received at least some outpatient care (53 percent, 55 percent, and 47 percent, respectively). Across the three cohorts, the highest proportions appeared to be among those who were discharged to the community or to alternative settings, whereas the lowest rates were found among those who were discharged to either a VA or a community nursing home. Among patients who made at least one outpatient visit, the intensity of service use was low: an average of little more than one visit during the third year after baseline.

Table 3

Proportion of discharged patients who used a variety of Department of Veterans Affairs (VA) health services during the third year after baseline^a among those who survived the three-year follow-up period, by discharge disposition and cohort

Disposition	Any VA health service				Psychiatric or substance abuse services ^b				Community-based mental health services				Medical or surgical services ^b				Nursing home services			
	N	%	χ^2 [†]	p	N	%	χ^2 [†]	p	N	%	χ^2 [†]	p	N	%	χ^2 [†]	p	N	%	χ^2 [†]	p
Total			6.83	.033			2.42	ns			15.64	.001			22.99	.001			7.98	.018
1991 (N=680)	595	88			434	64			78	11			277	41			147	22		
1994 (N=872)	762	87			571	65			164	19			290	33			243	28		
1997 (N=520)	431	83			319	61			85	16			144	28			134	26		
Community			.59	ns			1.37	ns			11.22	.004			14.62	.001			5.59	ns
1991 (N=374)	335	90			282	75			60	16			148	40			13	3		
1994 (N=466)	418	90			367	79			118	25			134	29			32	7		
1997 (N=266)	234	88			207	78			63	24			73	27			11	4		
VA nursing home			2.30	ns			.59	ns			3.31	ns			14.11	.001			.19	ns
1991 (N=129)	125	97			51	40			7	5			69	53			107	83		
1994 (N=194)	185	95			69	36			8	4			101	52			164	85		
1997 (N=142)	132	93			51	36			2	1			48	34			118	83		
Community nursing home			27.78	.001			10.98	.004			20.79	.001			4.88	ns			13.58	.001
1991 (N=114)	80	70			54	47			3	3			33	29			25	22		
1994 (N=156)	108	69			86	55			24	15			45	29			47	30		
1997 (N=60)	20	33			18	30			0	—			9	15			4	7		
Other placement			.63	ns			3.34	ns			10.21	.006			9.15	.010			— ^c	ns
1991 (N=63)	55	87			47	75			8	13			27	43			2	3		
1994 (N=56)	51	91			49	88			14	25			10	18			0	—		
1997 (N=52)	45	87			43	83			20	38			14	27			1	2		

^a Use of services in fiscal year 1994 for the 1991 cohort, 1997 for the 1994 cohort, and 2000 for the 1997 cohort

^b Any inpatient or outpatient services

^c Fisher's exact test

[†] df=2

Table 4

Use of Department of Veterans Affairs (VA) outpatient services in the third year after baseline^a among discharged patients who survived the three-year follow-up period, by discharge disposition and cohort

Discharge disposition	Any outpatient visit ^b				Outpatient visits among those with at least one visit ^b				
	N	%	χ^2 [†]	p	Mean	SD	F	df	p
Total			8.73	.013			2.34	2, 1,086	ns
1991 (N=680)	363	53			1.4	.7			
1994 (N=872)	481	55			1.4	.8			
1997 (N=520)	245	47			1.3	.7			
Community			.30	ns			2.45	2, 751	ns
1991 (N=374)	255	68			1.5	.8			
1994 (N=466)	321	69			1.5	.8			
1997 (N=266)	178	67			1.3	.7			
VA nursing home			6.07	.048			.62	2, 128	ns
1991 (N=129)	41	32			1.2	.4			
1994 (N=194)	61	31			1.3	.5			
1997 (N=142)	29	20			1.3	.7			
Community nursing home			21.10	.001			.57	2, 87	ns
1991 (N=114)	24	21			1.3	.5			
1994 (N=156)	60	38			1.3	.9			
1997 (N=60)	6	10			1.0	.0			
Other placement			.91	ns			2.31	2, 111	ns
1991 (N=63)	43	68			1.5	.7			
1994 (N=56)	39	70			1.7	.9			
1997 (N=52)	32	62			1.3	.7			

^a Use of services in fiscal year 1994 for the 1991 cohort, 1997 for the 1994 cohort, and 2000 for the 1997 cohort

^b Outpatient medical or surgical or mental health services

[†] df=2

Discussion

During the mid-1990s, the Veterans Health Administration was restructured into a more decentralized system of 22 semiautonomous Veterans Integrated Service Networks serving geographically defined populations (26). As part of the restructuring process, administrative directives and financial incentives were used to transform the VA health care system from one focused on acute inpatient care and medical specialization to one grounded in outpatient and primary care.

Between fiscal years 1995 and 2000, the number of veterans receiving inpatient mental health care decreased by 38.5 percent (from 123,217 to 75,745), whereas the number receiving outpatient mental health care increased by 23.2 percent (from 545,004 to 671,368); this change in mental health service delivery was associated with a 24.9 percent reduction in per patient cost (from \$3,560 to \$2,673) (8). It was within this context of rapid and substantial service system changes that we sought to examine recent trends in discharge disposition, mortality, and service use among VA long-stay psychiatric patients—an especially vulnerable subgroup of mental health service users.

We found that, nationally, the number of occupied long-stay beds decreased by 50 percent between the end of fiscal year 1991 and 1997. Over time, there were significant changes in the principal diagnoses and discharge dispositions of long-stay patients. However, among patients who were discharged, no substantial differences were noted in either mortality rates or overall use of VA services across the three cohorts.

Compared with the 1991 cohort, the 1994 and 1997 cohorts included a significantly higher proportion of patients with a primary diagnosis of schizophrenia or another psychotic disorder. To some extent, this shift may reflect the greater likelihood of discharge among inpatients who have less severe psychiatric disorders and retention of those with behavioral problems and tendencies that would complicate subsequent placement (27). Fisher and colleagues (28)

found that 69 percent of long-stay patients in Massachusetts state hospitals had exhibited a significant problematic behavior—for example, committed physical assault or had violent episodes—in the previous 30 days.

Between the 1991 and the 1994 cohorts, there was also a significant shift in readmission and discharge disposition. Discharge was attempted but unsuccessful (readmission within 30 days) for a greater proportion of patients in the 1994 cohort than in the 1991 cohort. Nevertheless, more than half of the patients in the 1994 cohort were discharged from the hospital for more than 30 days by the end of the

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three-year follow-up period, compared with a third of the patients in the 1991 cohort.

With the accelerated pace of VA bed closures well under way, the pattern of readmission and discharge disposition was nearly identical in the 1994 and 1997 cohorts. An exception was an apparent shift away from placement in community nursing homes in favor of VA nursing homes. It is not clear from these data what motivated this change. However, it is possible that a serial discharge process is in effect, such that patients are first discharged to a VA nursing home for a relatively short stay and then transferred to a community facility.

A notable finding of this study was that, among patients who were discharged, no significant change was noted in mortality rates during the three-year follow-up period across the three cohorts. This finding is consistent with those of studies that showed little or no adverse impact of VA bed closures on other outcomes, including rates of incarceration (15) and cross-system use of state psychiatric services (13,14). As these earlier studies have indicated, many VA facilities coupled inpatient bed closures with increased expenditures on outpatient and community care. The expansion of outpatient capacity in conjunction with inpatient downsizing may reduce the risk of adverse outcomes.

Among surviving patients who were discharged, the overall use of any VA health services in the third year after baseline was high in all three cohorts—more than 80 percent—suggesting that a majority of patients remained at least somewhat connected with the VA system. The patients who were discharged to community nursing homes were the least likely to receive any follow-up care. Data on the use of non-VA services were not available, so we do not know the extent to which these and other patients may have substituted services in other health care settings for VA care. This limitation of the data is particularly striking given the low intensity of use of VA outpatient services in the three cohorts.

It is also unclear why the use of VA services declined so dramatically among patients who were discharged to community nursing homes in the 1997 cohort compared with those in the other two cohorts. Although it is possible that this finding reflects an idiosyncrasy of the small sample, future studies should seek to examine the reasons for and potential implications of this decline in connectedness with VA services.

Several limitations of this study deserve comment. First, as is often the case in record-linkage studies of this kind, the database merges were based on a single personal identifier—Social Security number—and some matches may have been missed because of miscoding. Second, the validity of the administrative data we

used is unknown. However, the general validity of VA administrative data has previously been demonstrated (29). Third, mortality and service use are somewhat blunt measures of patient outcome. Information was not available on outcomes such as clinical status, quality of life, and functioning after discharge. Such data are costly to collect and are rarely gathered before the implementation of major service system changes, thereby making follow-up comparisons difficult to perform. However, in case studies in which these kinds of data have been collected, the results have been encouraging in terms of demonstrating improvements in level of functioning and quality of life (17,18).

Fourth, data were not available on comorbid medical conditions, which potentially limits the interpretation of mortality estimates. Finally, because some patients belonged to more than one cohort, the three groups were not entirely independent. Thus computed chi square and F statistics were overestimated, and, accordingly, p values were underestimated. Nevertheless, even if one were to use a more conservative alpha level to test significance—for example, $p < .01$ —similar conclusions would be drawn.

Conclusions

Between 1991 and 1997, the VA reduced its psychiatric long-stay population by 50 percent. Using available secondary administrative data sources, this study provided evidence that continuing efforts to close VA mental health beds and limit inpatient services have not resulted in substantially adverse changes in mortality rates or in the extent to which patients remain connected with the VA health care system after discharge. ♦

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