Discharges against Medical Advice at Regional Acute Care Hospitals

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ABSTRACT

Data from 67 acute care hospitals in the Philadelphia metropolitan area indicate that there were 7,613 discharges against medical advice (AMA) in fiscal year 1987, or 1.20 percent of all discharges that year. Diagnosis-related group (DRG), type of insurance, and sex had independent effects on the rate of AMA discharges. Urban community hospitals had the highest percent of AMA discharges. Previous studies, done in teaching facilities, may have underestimated the rate of AMA discharges. (*Am J Public Health* 1991; 81:210–213)

Introduction

Discharges against medical advice (AMA) represent a frustrating problem for the individual physician and hospital, and an overlooked indicator of potential problems facing the organization of public health services in a region. Little systematic analysis of the subject has been published. Most reports have been anecdotal or limited to specific diagnostic groups within a few selected institutions.[1–3] The only published general estimate, based on a 2-year review of records in a major teaching institution, reported that patients who were discharged AMA accounted for about 0.8 percent of discharges.[4] We analyzed regional data to describe regional patterns and, because larger numbers were involved, to help clarify the relative influence of factors associated with variation in AMA rates.

Methods

A systematic description of patients discharged against medical advice from acute care hospitals was generated from the comprehensive regional inpatient data base constructed directly from hospital abstract tapes supplied to the Delaware Valley Hospital Council. We analyzed the data on the 635,897 patients discharged from all 67 acute care hospitals in the Greater Philadelphia area between July 1, 1986, and June 30, 1987. We used a linear modeling approach, applying the categorical modeling procedure in the SAS statistical package, to estimate the independent effects of diagnosis-related group (DRG), payment method, and sex on the percent of AMA discharges.[5,6]

Results

A total of 7,613 cases, or 1.20 percent of inpatient discharges, were listed as discharged AMA. Males were more than twice as likely as females to be discharged AMA (Table 1). Patients who were covered by the Medicaid program or who had no insurance were three times as likely to be discharged in this manner.

AMA discharges were concentrated in a few diagnostic categories. Table 2 lists the 20 DRGs with the highest frequency of AMA discharges according to the Medicare prospective-payment grouper procedure in effect October 1, 1987, to September 30, 1988.[7] These 20 DRGs accounted for 60.7 percent of AMA discharges. Major diagnostic category (MDC) 20 (DRG 433-437), alcohol and drug use and alcohol- and drug-induced organic mental disorders accounted for 26.6 percent of AMA discharges and was the MDC with highest percentage of patients with such discharges (14.6 percent).

The average length of stay for AMA discharges was about half the average length of stay for all discharges in most of the 20 DRGs. The DRG case weight for all AMA discharges was 0.77, compared with 0.99 for all discharges in the region, suggesting that they were somewhat less severe.[8] However, it is also possible that many such discharges led to later readmissions, as noted in studies of psychiatric facilities.[9]

Among the 20 most frequent AMA discharge diagnoses, diagnosis, insurance status, and sex of the patient had statistically significant ($p < .001$) independent main effects. The Medicaid and self-pay discharges represented underinsured groups in the Philadelphia area with similar patterns of use, and they have been combined in this analysis. The estimate of the percent of AMA discharges for any combination of these three variables can be calculated by adding the individual effects.

Thus, in Table 3, the estimate for the percent of AMA discharges for male Medicaid cases with DRG 430 (psychoses) is 8.00 percent (INTERCEPT [4.12 percent] + DRG [2.19 percent] + MEDICAID/SELF-PAY [1.35 percent] + MALE [.35 percent]. The actual percent of AMA discharges for this group of cases was 7.89 percent, and the standard error for the es-

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TABLE 1—Total Discharges against Medical Advice and Rate per 100 Discharges in the Philadelphia Metropolitan Area, by Source of Payment and Sex

	Female		Male		Total	
Payer	N	Rate/100(%)	N	Rate/100(%)	N	Rate/100(%)
Other[a]	1,281	0.45	2,039	0.91	3,320	0.65
Medicaid	1,290	2.19	2,199	5.31	3,489	3.48
Self-pay	240	1.68	564	4.51	804	3.00
Total	2,811	0.78	4,802	1.73	7,613	1.20

[a]Medicare and private insurance (Blue Cross, health maintenance organizations, and commercial insurers.

timate was 0.24 percent. For all 20 of these discharge diagnoses, estimates of the effect of the DRG category on the percent of AMA discharges ranged from 9.56 percent for substance abuse admissions falling into MDC 20 to −2.29 percent for DRG 243 (medical back problems). The effect of Medicaid or self-pay status (1.34 percent) was almost four times greater than the effect of being male (.35 percent).

AMA discharge rates also varied significantly by the geographic location and the type of facility. Suburban and teaching hospitals had the lowest rates of AMA discharges. Urban community hospitals had the highest rates. Table 4 presents the percent of AMA discharges by type of hospital for the 24 MDCs. Except for the group of specialty facilities (800 beds out of a regional total of 17,555 beds, the majority belonging to two children's hospitals), suburban facilities had the lowest AMA rates. In contrast, the urban community hospitals had the highest percent of AMA discharges (3.49 percent compared with 1.20 percent for the region as a whole). Teaching facilities tended to have lower rates of AMA discharges than community hospitals. The differences in rates of AMA discharges between urban and suburban hospitals and between community and teaching hospitals persist in almost all MDCs.

Discussion

While the analysis confirms the patterns found in the previous case studies of self-selected institutions, it places the findings into a broader perspective.[1–4] Because previous inquiries studied major teaching institutions, they may have underestimated the magnitude of the problem. The 1.2 percent of Philadelphia-area discharges that were AMA is substantially higher than the 0.8 percent found in the previously cited Peter Bent Brigham Hospital study. Urban community hospitals located in areas with the most serious problems of social disorganization (e.g., crime, drug addiction, unemployment) had the highest rates.

AMA rates do not appear to be simply a function of the disease and the nature of its treatment. Males, Medicaid patients, and patients identified as self-paying were more likely to be discharged AMA, independent of diagnosis. They represent a crude measure of therapeutic failure or, at least, failure in the provider-patient relationship. Efforts to reduce these discharges must be balanced against the individual rights of patients to refuse treatment, the legitimacy of some of the personal reasons that motivate them to leave, and the potential harm to the patient of premature discharge.

It is useful to view AMA discharges in the context of overall patterns of use and access to health care. Indeed, there is a striking symmetry between the factors

TABLE 2—AMA Rates and Length of Stay for 20 DRGs with Highest Number of AMA Discharges

DRG #	Code	N	Rate/100 (%)	Average AMA Length of Stay (LOS)	Ratio of LOS to Total[a]
MDC20	Alcohol and drug use and alcohol- and drug-induced mental disorders	2,025	14.59	3.37	0.59
430	Psychoses	686	6.13	7.79	0.48
450	Poisoning and toxic effects of drugs, age >17 without CC	250	10.35	1.20	0.36
140	Angina pectoris	196	1.38	2.60	0.42
449	Poisoning and toxic effects of drugs, age >17 with CC	154	6.58	2.37	0.26
426	Depressive neuroses	152	9.92	5.03	0.33
143	Chest pain	134	2.54	1.88	0.44
127	Heart failure and shock	101	0.72	5.14	0.49
24	Seizure and headache, age >17 with CC	98	3.62	3.20	0.29
204	Disorders of the pancreas except malignancy	95	4.50	4.58	0.33
97	Bronchitis and asthma, age >17 without CC	90	2.26	2.55	0.43
277	Cellulitis, age >17 with CC	87	3.60	4.22	0.38
294	Diabetes, age >35	78	1.89	5.71	0.55
395	Red blood cell disorders, age >17	77	2.29	4.83	0.54
243	Medical back problems	74	0.57	3.87	0.40
182	Esophagitis, gastroenteritis, and miscellaneous digestive disorders, age >17 with CC	73	1.08	3.23	0.33
174	Gastrointestinal hemorrhage, age >70	66	1.99	4.45	0.30
122	Circulatory disorders with acute myocardial infarction	64	1.13	3.95	0.38
96	Bronchitis and asthma age, >70 and/or CC	63	1.35	3.93	0.36
88	Chronic obstructive pulmonary disease	59	1.24	4.98	0.40
Top 20 AMA DRGs		4,622	3.79	3.76	0.39
All regional discharges		7,613	1.20	4.40	0.61

[a]AMA average length of stay divided by average length of stay for all discharges.

TABLE 3—Linear Model Estimates of Main Effects on Percent AMA Discharges

		Effect (%)	Standard Error (%)	AMA Estimate[a] (%)
Intercept		4.12%	0.08%	
MDC20	Substance abuse and substance-induced organic mental disorders	9.56	0.29	13.68
430	Psychoses	2.19	0.22	6.31
450	Poisoning and toxic effects of drugs, age >17 without CC	5.85	0.57	9.97
140	Angina pectoris	−1.86	0.09	2.26
449	Poisoning and toxic effects of drugs, age >17 with CC	1.78	0.43	5.90
426	Depressive neuroses	5.88	0.71	1.00
143	Chest pain	−1.09	0.18	3.03
127	Heart failure and shock	−2.15	0.09	1.97
24	Seizure and headache, age >17 with CC	−1.20	0.24	2.92
204	Disorders of the pancreas except malignancy	−1.05	0.28	3.07
97	Bronchitis and asthma, age >17 without CC	−1.39	0.20	2.73
277	Cellulitis, age >17 with CC	−1.54	0.21	2.58
294	Diabetes, age >35	−1.64	0.17	2.48
243	Medical back problems	−2.29	0.88	1.83
395	Red blood cell disorders, age >17	−1.45	0.23	2.67
182	Esophagitis, gastroenteritis, and miscellaneous digestive disorders, age >17 with CC	−1.94	0.12	2.18
174	Gastrointestinal hemorrhage with CC	−1.69	0.17	2.43
122	Circulatory disorders with acute myocardial infarction without cardiovascular complications discharged alive	−2.05	0.13	2.07
96	Bronchitis and asthma, age >17 with CC	−2.02	0.13	2.10
Insurance (Medicaid or self-pay)		1.34	0.07	5.46
Sex (male)		0.35	0.03	4.47

[a]Intercept + Main Effect, all effects significant, $p < .001$

TABLE 4—Percentage of Patients Discharged AMA, by Hospital Type and Major Diagnostic Category

	Major Diagnostic Category	Teaching Hospitals: Suburban	Teaching Hospitals: City		Community: Suburban	Community: City	Medical School	Other Specialty	Average	
		Major	Minor	Major	Minor					
1	Nervous system	0.5	1.1	1.3	1.6	1.0	2.1	1.1	0.0	1.1
2	Eye	0.0	0.0	0.7	0.6	0.1	0.7	0.2	0.0	0.2
3	Ear, nose, and throat	0.0	0.5	0.3	0.4	0.1	0.8	0.4	0.0	0.2
4	Respiratory system	0.6	1.0	1.1	1.3	0.5	2.6	1.2	0.1	1.0
5	Circulatory system	0.6	0.7	1.2	1.0	0.7	2.0	0.8	0.1	1.0
6	Digestive system	0.4	0.6	0.9	0.9	0.5	1.7	0.7	0.0	0.7
7	Hepatobiliary system and pancreas	0.7	0.7	1.8	0.7	1.0	3.7	1.3	0.0	1.4
8	Musculoskeletal system	0.2	0.2	0.6	0.7	0.3	1.1	0.4	0.1	0.5
9	Skin, subcutaneous tissue	0.5	1.1	2.2	1.5	0.5	3.5	1.5	0.0	1.4
10	Endocrine, nutritional and met.	0.5	0.8	1.5	1.1	0.8	2.5	0.8	0.1	1.1
11	Kidney and urinary tract	0.3	0.6	0.8	0.8	0.6	1.2	1.3	0.0	0.8
12	Male reproductive system	0.3	0.1	0.4	0.7	0.3	0.7	0.5	0.4	0.4
13	Female reproductive system	0.0	0.2	0.6	0.3	0.1	0.9	0.4	0.0	0.4
14	Pregnancy, childbirth	0.1	0.0	0.4	0.1	0.2	0.3	0.5	0.0	0.3
15	Newborns and neonates	0.1	0.0	0.0	0.1	0.0	0.0	0.1	0.1	0.1
16	Blood, blood forming and imun.	0.3	2.2	1.6	2.2	1.3	5.2	2.2	0.0	1.7
17	Myeloproliferative, malignancy	0.1	0.0	0.4	0.9	0.1	0.5	0.3	0.1	0.2
18	Infections and parasitic	0.5	0.0	1.5	1.7	0.7	2.8	1.3	0.3	1.1
19	Mental	4.3	4.2	5.0	3.7	7.9	5.3	7.9	1.6	6.4
20	Alcohol/drug use	7.1	14.4	13.4	7.4	12.3	18.7	7.1	0.0	14.6
21	Injuries, poisonings and toxic	2.7	4.9	4.1	6.0	2.6	7.9	1.6	0.2	3.5
22	Burns	0.4	3.6	1.7	1.0	1.0	2.9	3.3	0.0	1.2
23	Factors influencing services	0.9	1.0	0.6	1.4	0.6	3.6	0.3	0.4	0.7
24	Other	0.0	0.0	2.6	0.0	2.0	2.5	0.5	0.0	0.8
	Average	0.55	0.99	1.37	1.00	0.94	3.49	1.0	0.07	1.20

affecting "entrance" to health services (i.e., barriers and delays in seeking care and overall patterns of underutilization) and of the factors affecting AMA discharge rates, which may be viewed as inappropriate "exit" from such services.[10–14]

Since regional data systems are now widely available, it is possible to monitor these processes more systematically. These rates can be linked more directly to the relationships between medical and social problems in regional populations and to the pressures imposed on medical management by different forms of reimbursement as they change the character of inpatient care. AMA discharges represent many of the problems (e.g., those related to drugs, alcohol, psychiatric conditions, and indigent care) that public health agencies address. The percent of AMA discharges may in time take its place among other indicators of incidence rates and use of health services in a population and help document progress (or the lack of it) in solving larger social problems. □

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An Evaluation of the Use of the Statewide Planning and Research Cooperative System of New York State as a Resource Planning Tool for HIV Infection

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ABSTRACT

Hospital discharge records of patients with *Pneumocystis carinii* pneumonia (PCP) in New York State were studied to determine whether cases of human immunodeficiency virus (HIV) infection were identified. We estimate that as many as 13 percent of hospitalizations of patients with PCP in 1987 and 10 percent of those in 1988 were not appropriately identified as HIV related. Identification of PCP as HIV related was a function of a hospital's volume of PCP admissions. (*Am J Public Health* 1991;81:213–215)

Introduction

One means of estimating acute care hospital use in New York State by patients infected with human immunodeficiency virus (HIV) has been based on the Statewide Planning and Research Cooperative System (SPARCS).[1] SPARCS, a mainframe data base that has been in existence since 1980, contains a discharge abstract for more than 95 percent of the acute care hospital stays in the state, exclusive of those occurring in federal and psychiatric acute care facilities. The discharge abstracts describe the hospital patient's medical condition in five diagnostic fields, including a principal diagnosis and four secondary diagnoses, using ICD-9-CM diagnostic codes.

In October 1986, new HIV-specific ICD-9-CM codes[2] became effective.[3] The new codes, 042-044, indicate the presence of certain illnesses and/or conditions occurring simultaneously with HIV infection,

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