

Use of the Emergency Room in a Community Hospital

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AN INCREASING demand for medical care has been noted in hospital emergency rooms across the country. Studies in metropolitan area hospitals have documented the demand for and the pattern of emergency services in such hospitals (1-3). In these studies numerous problems, such as the overuse of the emergency room for nonurgent medical problems, the substitution of emergency room care for care by a primary physician in practice, and a disproportionate use of the emergency room by lower income level population groups, have been identified.

To determine the pattern of emergency services in a community hospital in a medium-sized city, a study of the services in the Saginaw General Hospital emergency room was carried out in 1966-67. The pattern of these emergency room services was compared with that of the Yale-New Haven Hospital emergency room (1). At the time of the study, the house staff at Saginaw General Hospital was responsible for emergency services, with attending staff seeing patients as indicated or by arrangement. Since July 1967 this emergency room has been staffed by a corporation of community physicians.

Methods of Study

Four periods of 4 weeks each in July and October of 1966 and in January and April of 1967 were chosen to document possible seasonal variation. All patients attending the emergency room during these 16 weeks were included in the study. The total number of patients in the study was 3,957.

A form was devised for use in data collection.

Part of the information was collected from the patient or his family by the emergency room clerk, and Dr. White obtained the remainder from the emergency room records. The information was then transferred to standard punchcards for tabulation. Tabulated information was compared with the 1960 census data. In 1960 the population of the city of Saginaw was 98,265, with the county numbering 190,752.

A special interviewer obtained additional information on socioeconomic and medical care patterns and verified information recorded by the emergency room clerk during a composite week in April 1967. Intervals of varying length were selected at random to insure that every hour in the 7 days of the week was sampled by the interviewer. Thus, 214 patients were interviewed. When similar data were obtained by clerk and interviewer, there was essential agreement.

Attributes of Emergency Room Patients

Sex. Males comprised 52.3 percent of the patients in the study group as compared with 49.2 percent of the population in Saginaw County according to the 1960 census.

Race. Negroes used the emergency room more than white persons. Although only 9.8 percent of the total county population was Negro,

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and Negroes comprised 16.8 percent of the city's population, 26.6 percent of the study group were Negroes.

Age. When the age distribution of the study group was compared with the age distribution in Saginaw County in the 1960 census, it was found that the two distributions were similar. The percentage distributions by age are shown in the following table.

Age (years)	Study group ¹	1960 census ¹
0-9	28.4	25.6
10-19	19.4	17.2
20-29	17.8	11.7
30-39	11.0	13.4
40-49	8.7	11.9
50-64	9.0	12.4
65 and over	5.5	7.9

¹ May not total exactly 100 because of rounding.

Occupation. Table 1 shows the comparison of the occupation of the head of the household in the interviewed group with the occupation of males 14 years old and over in Saginaw County in 1960. The unemployed made up 7.9 percent of the study group as compared with 5.5 percent in the 1960 county population. Laborers comprised 9.3 percent of the study group as contrasted with 6.4 percent in the county. The categories of "retired," "housewife," and "student" are not included in the 1960 census data, but were included in the study.

Education. The educational level of the heads of household in the interviewed group was compared with the educational level of persons 25 years and over from the 1960 census data for Saginaw County. The median educational level was 12 years in the study group and 10 years in the county. The percentage of persons with high school or college education was higher in the study group.

Census tract. Residents of census tracts with low socioeconomic levels made greater use of the emergency room than residents of other Saginaw census tracts.

Usual source of medical care. Eighty-six percent of the patients reported having a private physician, and 80.8 percent had had contact with their physician within the past year. Only 10.9 percent had used the emergency room three times or more in the previous year. Persons who routinely received medical care at the hospital's free clinic comprised 6.6 percent of the

emergency room patients. Thirty-six percent of the emergency room patients attempted to contact their physician before coming to the emergency room, and 73.6 percent of these had talked with their physician.

Each patient was asked how long the problem that had brought him to the emergency room had existed. Problems existing less than 1 hour were reported by 36 percent of the patients, and 55 percent were admitted to the emergency room within 4 hours of the onset of their illness. Illnesses lasting more than 24 hours were reported by 24.8 percent of the patients.

Characteristics of Services

The patients, classified by hospital service, were adult surgical 37.4 percent, adult medical 19.8 percent, obstetric or gynecological 7.3 percent, and pediatric (under 14 years old) 35.1 percent. The physician responsible for 57.9 percent of the patients was a general practitioner, for 17.7 percent a pediatrician, for 6.4 percent an obstetrician-gynecologist, for 6.2 percent a general surgeon, for 5.9 percent an internist, and for 5.9 percent practitioners of various surgical subspecialties.

Sixty-five percent of the patients were seen by house staff, and 25 percent were seen by their private physician. Following examination or

Table 1. Comparison, in percentages, of occupation of head of household in interviewed group with that of males 14 years old and over in Saginaw County, Mich., 1960 census

Occupation	Interviewed group (N=214)	Saginaw County (N=190,752)
Unemployed	7.9	5.5
Professional	5.6	7.8
Managerial	7.0	11.9
Clerical	3.7	5.1
Sales	3.7	6.5
Craftsman	22.4	21.3
Operatives	25.8	28.7
Service	3.3	4.3
Household	1.9	.1
Laborer	9.3	6.4
Retired	6.5	-----
Housewife	1.9	-----
Student	.5	-----
Not reported	.5	2.4
Total	100.0	100.0

Table 2. Diagnoses of patients' conditions, each month of study, by percentage

Diagnoses	1967		1966		Total	Number
	January	April	July	October		
Trauma.....	45.5	52.0	53.8	49.1	50.4	1,994
Fracture or dislocation.....	6.1	4.8	4.4	3.3	4.6	182
Sprain.....	5.3	5.4	2.6	4.1	4.2	166
Head injury.....	2.6	2.8	3.5	4.7	3.5	138
Internal injury.....	.1	.1	-----	-----	.1	2
Laceration, abrasion, or contusion.....	24.1	32.6	38.0	30.0	31.5	1,253
Foreign body.....	2.0	1.2	1.7	3.0	2.0	79
Burn.....	1.9	1.4	1.5	1.6	1.6	62
Poisoning.....	2.5	1.9	1.4	1.6	1.8	72
Other or nonspecific.....	.9	1.8	.7	.8	1.1	40
Nontrauma.....	54.5	48.0	46.2	50.9	49.6	1,963
Infectious disease.....	.6	.7	1.1	.6	.8	30
Psychiatric disorder.....	2.0	1.6	2.1	2.9	2.2	86
Disease of the central nervous system.....	.6	1.5	.7	.6	.8	33
Eye disease.....	.7	.8	1.1	.6	.8	32
Ear disease.....	1.4	1.1	1.6	1.3	1.4	54
Circulatory disease.....	3.4	3.2	2.9	2.7	3.0	119
Respiratory disease.....	8.9	7.0	6.1	9.3	7.7	306
Gastrointestinal disease.....	7.2	6.4	5.4	5.0	5.9	234
Genitourinary disease.....	4.8	4.0	3.2	3.7	3.8	152
Pregnancy.....	2.9	1.9	2.6	2.9	2.6	103
Allergy (including asthma).....	1.9	3.4	2.6	1.7	2.4	95
Endocrine disease.....	.5	.2	.2	.4	.3	13
Blood disease.....	-----	.1	.3	.1	.2	6
Skin disease.....	2.6	.9	1.7	1.9	1.8	71
Bone and joint disease.....	1.2	1.4	1.3	1.3	1.3	51
Congenital malformations or diseases of infancy.....	.5	.1	.1	-----	.2	6
Symptoms of senility, ill-defined.....	9.8	10.1	6.5	9.6	8.8	349
Neoplasms.....	1.4	.3	.6	.4	.7	26
No diagnosed illness.....	2.0	1.5	3.4	2.6	2.4	97
Followup and other visits.....	2.1	1.8	2.7	3.3	2.5	100
Total.....	100.0	100.0	100.0	100.0	100.0	3,957

treatment or both in the emergency room, 14.8 percent of the patients were admitted to the hospital for further care, 1.4 percent were referred to another facility, for example, the physician's office, and 83.1 percent were discharged to their homes.

Urgency. White determined the degree of urgency from the emergency room records or from the physician in cases where doubt existed. A classification of conditions similar to that of Weinerman and co-workers (1) was used.

Emergent: Threatening to life or limb without immediate medical attention. Acute and usually severe.

Urgent: Requiring medical attention within a few hours. Acute but not necessarily severe.

Nonurgent: Not requiring the resources of an emergency room. Nonacute, minor in severity.

Emergent cases resulted in 3.3 percent of emergency room visits, urgent cases 57.1 percent, and nonurgent cases 35.9 percent. Scheduled

procedures, such as minor surgery or cast changes, prompted 3.3 percent of the visits.

Diagnoses. The diagnoses were individually coded and then grouped into 29 categories for analysis. The 4 months studied showed very little variation. Lacerations, abrasions, and contusions, the largest single group in the series, accounted for more than 30 percent of the cases. The incidence of these diagnoses increased significantly in July. The incidence of respiratory diseases increased during the months of October and January. Overall, 50.4 percent of cases were due to trauma; 49.6 percent were nontrauma cases (table 2).

Source of payment. More than two-thirds of the patients had health insurance, 50.5 percent being covered by Blue Cross and 16.2 percent having other types of health insurance. Welfare agencies, Medicare, and Medicaid provided health care for 9.2 percent of the patients, and

7.6 percent were covered by compensation. Only 9.3 percent of the patients had no assistance from insurance or agencies to meet their medical expenses.

Distribution of Services by Time

The week was divided into six periods. Each day was divided into three 8-hour periods: midnight to 8 a.m., 8 a.m. to 4 p.m., and 4 p.m. to midnight. Because of similarities in distribution of patient visits, Saturdays and Sundays were considered together, giving three weekend time periods. The days Monday through Friday were also considered together to give three weekday time periods.

Urgency ratings varied for the different time intervals (table 3). The highest percent of emergent cases, 6.6 percent of the total cases, occurred in the midnight to 8 a.m. period on weekends. For the corresponding time period on weekdays, 5.4 percent of the cases were emergent. The highest percent of urgent cases was in the 4 p.m. to midnight periods.

Table 4 shows the distribution of patients by

service for the six time periods. The pediatric service was responsible for the highest percent of patients in the 4 p.m. to midnight periods. More patients required surgical services from midnight to 8 a.m. on weekends and from 8 a.m. to 4 p.m. on weekdays. The highest percentage of medical cases in an 8-hour period was in the midnight to 8 a.m. periods. A higher proportion of these cases were found to be emergent.

Source of Referral

Distribution of service. Of the 3,957 patients, 57.4 percent were self-referred (table 5). About two-thirds of the pediatric patients—912 of 1,366—were self or parent referred, and 437 were referred by physicians, their office staff, or answering service.

About one-half of surgical and medical patients were self-referred. As might be expected, a large majority of patients referred by the police and employers were surgical patients. Self-referral was more common for pediatric patients than for patients in other services.

Urgency rating. The distribution of pa-

Table 3. Urgency ratings, in percentages, for patients seen during 8-hour intervals

Urgency rating	Weekend			Weekday			Total (N=3,957)
	12 p.m.- 8 a.m. (N=197)	8 a.m.- 4 p.m. (N=563)	4-12 p.m. (N=555)	12 p.m.- 8 a.m. (N=279)	8 a.m.- 4 p.m. (N=1,119)	4-12 p.m. (N=1,244)	
Emergent.....	6.6	2.1	3.8	5.4	3.2	2.9	3.3
Urgent.....	54.9	48.0	62.8	49.4	53.9	63.2	57.1
Nonurgent.....	36.5	43.5	33.0	44.1	35.4	32.5	35.9
Scheduled.....	1.0	6.2	.2	.4	6.9	1.1	3.3
Undetermined....	1.0	.2	.2	.7	.6	.3	.4
Total.....	100.0	100.0	100.0	100.0	100.0	100.0	100.0

Table 4. Percentage of patients seen during 8-hour intervals according to service responsible for their care

Service	Weekend			Weekday			Total (N=3,957)
	12 p.m.- 8 a.m. (N=197)	8 a.m.- 4 p.m. (N=563)	4-12 p.m. (N=555)	12 p.m.- 8 a.m. (N=279)	8 a.m.- 4 p.m. (N=1,119)	4-12 p.m. (N=1,244)	
Pediatrics.....	18.8	38.2	43.2	19.4	29.5	41.0	35.1
Surgery.....	45.6	35.8	31.4	33.0	45.6	33.4	37.4
Medicine.....	28.0	18.3	18.9	35.4	17.4	18.2	19.8
Obstetrics and gynecology.....	6.1	7.3	6.3	11.1	7.1	7.2	7.3
Undetermined....	1.5	.4	.2	1.1	.4	.2	.4
Total.....	100.0	100.0	100.0	100.0	100.0	100.0	100.0

Table 5. Classification of patients according to service and source of referral

Service	Self	Physician	Physician's staff or answering service	Employer	Police	Total
Pediatric.....	912	370	67	1	16	1,366
Surgery.....	792	291	50	240	93	1,466
Medicine.....	438	261	37	26	12	774
Obstetrics and gynecology.....	98	169	16	3	2	288
Unable to classify.....	5	9				14
Total.....	2,245	1,100	170	270	123	3,908

¹ Source of referral not available for 49 patients.

Table 6. Urgency rating of patients' conditions, by source of referral

Urgency rating	Self		Physician		Physician's staff or answering service		Employer		Police		Total
	Number	Percent	Number	Percent	Number	Percent	Number	Percent	Number	Percent	
Emergent.....	64	2.85	39	3.54	2	1.17	11	4.07	11	8.94	127
Urgent.....	1,369	60.97	470	42.72	74	43.52	207	76.66	105	85.36	2,225
Nonurgent.....	804	35.81	458	41.63	90	52.94	51	18.88	7	5.69	1,410
Scheduled.....	3	.13	122	11.09	4	2.35					129
Not rated.....	5	.22	11	1.00			1	.37			17
Total.....	2,245	99.98	1,100	99.98	170	99.98	270	99.98	123	99.99	3,908

¹ Source of referral not recorded for 49 patients.

NOTE: Percentages do not total 100 because of rounding.

tients according to urgency and source of referral is given in table 6. The percentages refer to the distributions according to urgency level for all patients from each referral source. Considering emergent and urgent cases together, employers and police made more of their referrals in this combined category than other sources. Of the self-referred patients, 63.8 percent had emergent or urgent conditions. Physicians, their office staff, or answering service had the lowest percent (about 45 percent) of their referrals in the emergent-urgent group.

Discussion

Data obtained in this study group did not identify patterns of misuse of the emergency room. Comparing the study data with the 1960 census data, the study group had a higher percentage of Negro patients and a slightly higher percentage unemployed or in the labor group.

However, the educational level of the study group was similar to the educational level in the 1960 population, and the age and sex distributions for the study group were similar to those found in the 1960 census.

Of the study group, 86 percent claimed having a private physician as their usual source of medical care, in contrast to the 36.6 percent found in the Yale-New Haven Hospital by Weinerman and co-workers (1). In the Yale-New Haven Hospital study 13.2 percent were clinic patients, while in the Saginaw hospital only 6.6 percent of the emergency room patients claimed the clinic as the usual source of medical care. Almost three-quarters of the Saginaw patients had private health insurance or were receiving compensation. Only 10.9 percent of these patients reported using the emergency room three or more times in the previous year. These data suggest that the majority of the study patients

received private medical care and relatively few used the emergency room as the main source of medical care.

The characteristics of the services provided in this study suggest that these services are appropriate to an emergency room. Sixty percent of the cases were rated emergent or urgent, while in Weinerman's study (1) 42 percent were considered emergent or urgent. One-half of the study cases were trauma cases. Only about 2 percent of all patients seen had no diagnosed illness. Almost 10 percent of the patients, however, had symptoms of senility, ill defined. Probably this group of patients should be examined more closely. Were these patients seeking treatment for an essentially untreatable condition or seeking attention or were families perhaps trying to have the patient hospitalized to escape burdensome care?

The time distribution of patients in the emergency room was expected. The patient load increased on weekends and on the day when most physicians in the community close their offices.

The distribution of urgent cases according to source of referral indicates that referrals by police and employers were almost always for emergent or urgent cases. Of the self-referred patients, 36 percent had nonurgent conditions. However, physicians' referrals were 41.6 percent nonurgent, and office-answering service referrals were 52.9 percent nonurgent. Considering that it is not always easy for laymen to decide whether an illness is urgent or for physicians to decide this without examination, some nonurgent cases should be expected in any emergency room. Patients in this study did as well as physicians in estimating urgency.

In the sample of 214 patients interviewed, there were no significant discrepancies in information obtained by the clerk compared with information elicited by the interviewer. Interviewing did not result in identifying instances of gross misuse of the emergency room. There were among the interviewed group as well as in the larger group, however, cases which were not emergent or urgent. Alternate ways of handling

such cases include house calls, flexibility in physicians' office hours, and service in physicians' offices and hospital clinics during regular office hours. Education of the public and of physicians and provision of acceptable alternates should minimize the use of emergency rooms for non-urgent conditions.

Summary

A study of emergency room services at Saginaw General Hospital, a voluntary, nonprofit, short-stay hospital in a medium-sized city, was conducted in 1966-67. The emergency room was found to serve a cross section of the community.

Analyses of conditions diagnosed, sources of referral, and urgency of the conditions handled suggest that the demands for services in this emergency room were generally appropriate. There was no evidence in this study of specific patterns of misuse of the emergency room.

The method used in this study is applicable to any emergency room. Such a study is helpful in analyzing services provided and in planning programs. Emergency room service patterns will differ according to hospital size, characteristics of patients served by that hospital, and size and characteristics of the community in which the hospital is located.

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Tearsheet Requests

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