

Changes in Inpatient Hospital Utilization at the Community Level

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Abstract

This study demonstrated that numbers of hospital inpatient discharges have declined in the metropolitan area of Syracuse, New York. The largest impact has been in adult medicine and adult surgery, the hospital services with the highest utilization rates. Reductions in inpatient care have also affected services with lower utilization, such as pediatrics, obstetrics, and mental health. The study indicated that, between January - June 2019 and 2024, adult medicine discharges declined by 11.9 percent and adult surgery discharges declined by 24.6 percent. A large proportion of the reductions involved orthopedic surgery. They indicated that more than 50 percent of the joint replacements in the Syracuse hospitals have been moved to outpatient services. These patients included those with low severity of illness. The study suggested that reductions in hospital discharges could contribute to the efficiency of care. Fewer inpatient admissions could reduce the need for staffing and other resources. Information from the Syracuse hospitals has suggested that these reductions may continue.

Keywords

Hospitals, Hospital Inpatients, Adult Medicine, Adult Surgery

1. Introduction

During the twenty-first century, changes at the community level have revised the process and content of health care in the United States. These changes have had a major impact on inpatient and outpatient services at local and regional levels [1].

Historically, inpatient services have been an important part of the continuum of health care in the United States. Hospital inpatient care has been the largest and most expensive part of this component. The expenses of inpatient services have been increased by a full range of medical and surgical care. They have also

included intensive care and critical care [2] [3].

In recent years, numbers of inpatients admitted to hospitals have declined in many communities in the United States. These changes have reduced the use of major inpatient services such as adult medicine and adult surgery. The data in this study indicated that the impact of the reduction on adult surgery has been considerably larger [4].

These changes have been supported by the growth of ambulatory care services. Declines in numbers of discharges for inpatient surgery have been offset by increases in ambulatory surgery in the same communities. These outpatient services are supporting the growth of other ambulatory care services [5] [6].

The impact of these developments relates to at least two areas of health care. The clinical aspects have been of interest to patients and practitioners. The efficiency components have involved payors and financial support. These reductions also reduced hospital inpatient revenue and staffing [7].

These issues in health care have involved a number of areas at the community level. Most of the components have concerned adult medicine and adult surgery. Adult medicine has been the component with the largest patient volumes. Adult surgery has been the component with the largest volumes other than adult medicine. This service included inpatients and outpatients.

This study evaluated recent developments in acute care and ambulatory care at the community level in the metropolitan area of Syracuse, New York and other areas. It summarized recent changes in the distribution of patients for the major hospital services. The study also described changes for inpatient hospital services related to severity of illness [8].

These developments have been of interest for healthcare providers since 2019. They have also been of interest for healthcare payors.

2. Population

This study evaluated inpatient health care in the metropolitan area of Syracuse, New York. This area included Crouse Hospital (17,309 inpatient discharges excluding well newborns, 2024); St. Joseph's Hospital Health Center (17,715 discharges); and Upstate University Hospital (29,967 discharges).

The Syracuse hospitals provide primary and secondary acute care services to a population of approximately 600,000. They also provide tertiary services to the Central New York Health service area with a population of approximately 1,400,000 [9].

A number of the cooperative activities of the Syracuse hospitals have been developed through the Hospital Executive Council. The Council is the cooperative planning organization for the hospitals. It has been planning with the hospitals for more than forty years.

These programs have been implemented in order to improve the effectiveness and efficiency of health care in the Central New York region. These programs were developed to support healthcare providers and payors. Both of these groups

are focusing on efficiency at the community level.

3. Method

This study summarized important recent changes in inpatient hospital utilization in the metropolitan area of Syracuse, New York. It focused on developments in numbers of inpatient hospital admissions during the most recent five-year periods available.

The first component of the study evaluated numbers of hospital discharges for major inpatient services. This component included adult medicine, adult surgery, obstetrics, mental health, alcohol/substance abuse treatment, pediatrics, and neonates. Historically, these services have been a major focus for evaluation of the utilization of inpatient hospital care.

In this study, the inpatient services with the highest utilization were adult medicine and adult surgery excluding obstetrics, mental health, alcohol/substance abuse, pediatrics, and neonates. Patients aged 18 years and over who were admitted without surgical care were assigned to adult medicine. Patients aged 18 years and over who were admitted for surgical care were assigned to adult surgery.

In addition to the large inpatient services previously identified, the study included a number of inpatient programs, which generated relatively limited amounts of care in the Syracuse hospitals. These included obstetrics, pediatrics, neonates, mental health, and alcohol/substance abuse treatment. These services were also affected by reductions in inpatient care.

Numbers of inpatients for each service were compared for January - June 2019 and 2024. The focus of the study involved comparison of inpatient utilization for the two six-month periods.

Additional evaluation of the impact of changes in hospitalization between January - June 2019 and 2024 focused on the utilization of care by 3M™ All Patients Refined Diagnosis Related Groups. This evaluation involved a greater specificity of care provided than what was possible for complete hospital services. The largest component of this evaluation involved adult medicine and adult surgery. These two services had the highest numbers of inpatients throughout the five-year period.

The second component of the study included evaluation of the severity of illness of the hospital adult medicine and adult surgery patient populations during the two six month periods.

Individual patients were identified according to their degree of illness based on the 3M™ All Patients Refined Severity of Illness System. This methodology was based on four categories of Minor, Moderate, Major, and Extreme. These categories were related to the principal and secondary diagnoses of each patient.

Use of the severity of illness system made it possible to compare differences in the degree of illness for patients during six-month periods. These differences focused on changes in the inpatient care of patient populations.

The use of numbers of patients by hospital service, all patients refined diagnosis

related group, and severity of illness made it possible to include additional levels of care throughout the six-month periods. This information delineated changes in the use of inpatient care throughout the study.

This study evaluated changes in the frequency of hospital care among the Syracuse hospitals. Evaluations have been developed in other communities based on similar parameters.

4. Results

Data concerning the first component of the study evaluated hospital discharges for the combined Syracuse hospitals between January - June 2019 and 2024. The results of this analysis were summarized in **Table 1**. Data for this component of the study were collected by the Hospital Executive Council.

Table 1. Inpatient hospital discharges, selected hospital services, Syracuse hospitals, January - June 2019-2024.

	2019	2021	2022	2023	2024	2024-2019 Difference
Adult Medicine	18,930	18,297	15,301	15,556	16,674	-2256
Adult Surgery	10,629	8683	7905	8024	8019	-2610
Obstetrics	3649	3584	3395	3289	3135	-514
Mental Health	1493	1710	1295	1318	1256	-237
Alcohol/Substance Abuse	890	796	652	557	639	-251
Pediatrics	2643	1904	1877	1833	2023	-620
Neonates/Well Newborn	3460	3436	3318	3286	3101	-359

This information indicated that adult medicine and adult surgery generated the largest numbers of inpatients in the Syracuse hospitals. The number of discharges for adult medicine declined from 18,930 to 16,674, a 11.9 percent reduction. The numbers of discharges for adult surgery declined from 10,629 to 8019, a 24.6 percent reduction.

The largest numbers of hospital inpatients were associated with adult medicine during the six-month periods. Within this service, this utilization included a reduction of 475 inpatients for the nervous system. The largest components of this reduction involved stroke (70), transient ischemia (64), alteration in consciousness (100), and seizures (39). Respiratory disorders were associated with reductions of 696 inpatients, including pneumonia (283) and chronic obstructive pulmonary disease (346).

Additional reductions in adult medicine involved the circulatory system (600). These changes included heart failure (279), and cardiac arrhythmia (146). Further

reductions included diagnoses related to the digestive system (400), including gastroenteritis (100), peptic ulcer & gastritis (58), and the hepatobiliary system and pancreas (140).

Adult surgery included the largest reductions in inpatient care for a single diagnosis during the five-year period. These reductions were associated with the movement of large numbers of hospital inpatients from inpatient to outpatient settings. The study data suggested that these changes resulted from the increased use of ambulatory care in the metropolitan area of the Syracuse hospitals.

Within adult surgery, the largest declines in discharges involved major joint procedures including hip replacement (635) and knee procedures (660). Historically, these procedures have generated the largest volumes of inpatient surgery in United States hospitals.

Additional analyses of the study data also included hospital inpatients with smaller numbers of utilization that were identified previously. These differences involved the following services and specific diagnoses and procedures. They included vaginal deliveries and cesarean section deliveries (400). They also included well newborns (359). Within mental health, they included psychoses (236) and substance abuse involving specific substances (185).

Data concerning the second component of the study evaluated hospital discharges related to severity of illness in the Syracuse hospitals between January - June 2019 and 2024 by year. The results of this analysis are summarized below in **Table 2**. Data for this component of the study were collected by the Hospital Executive Council.

The data in **Table 2** identified numbers of hospital inpatients by severity of illness in the combined Syracuse hospitals. This information was based on numbers of inpatients by principal and secondary diagnoses. These diagnoses were used to determine the amount of care associated with the needs of individual inpatients. The severity of illness data was used to evaluate changes in numbers of patients associated with each of the four levels of care.

The study data suggested that substantial reductions in numbers of inpatients occurred in the Syracuse hospitals during the five-year period. The largest numbers of these inpatients were associated with those patients who experienced Minor and Moderate severity of illness.

The study data indicated that 57.4 percent of adult medicine patients and 73.9 percent of adult surgery patients at Minor and Moderate severity of illness were not admitted to hospitals and probably received treatment through other sites of care. At the same time, an additional 25.6 percent of adult medicine patients and 26.0 percent of adult surgery patients experienced high severity of illness (Extreme) and remained in the hospitals.

The study data suggested that the small group of patients at extreme severity of illness were those who remained in acute care after others had been shifted to ambulatory care. Data concerning the use of outpatient services in the Syracuse area were not available concerning this population.

Table 2. Inpatient adult medicine and adult surgery discharges by severity of illness, Syracuse hospitals, January - June 2019-2024.

	Severity of Illness				Total
	Minor	Moderate	Major	Extreme	
Adult Medicine					
2019	2434	6558	7111	2827	18,930
2020	1743	5191	6133	3042	16,109
2021	1890	5692	7027	3688	18,297
2022	1430	4651	6048	3172	15,301
2023	1490	4586	6159	3321	15,556
2024	1660	4876	6588	3550	16,674
Difference 2024 vs 2019	-774	-1682	-523	723	-2256
Percent Difference 2024 vs 2019	-31.8	-25.6	-7.4	25.6	-11.9
Adult Surgery					
2019	3595	4111	1930	993	10,629
2020	2374	3043	1745	1109	8271
2021	2398	3074	1995	1216	8683
2022	2179	2852	1733	1141	7905
2023	2058	2926	1870	1170	8024
2024	2007	2890	1871	1251	8019
Difference 2024 vs 2019	-1588	-1221	-59	258	-2610
Percent Difference 2024 vs 2019	-44.2	-29.7	-3.1	26.0	-24.6

5. Discussion

Historically, health care in the United States has expanded for decades. During the second decade of the twenty-first century, however, the use of inpatient health care has changed.

Between 2019 and 2024, however, the numbers of hospital inpatients have declined. The utilization of acute care services has undergone major reductions. These reductions have had a major impact on the use of care. These declines in inpatient utilization have had an impact on many types of inpatient care.

This study demonstrated the impact of these changes in the metropolitan area of the hospitals of Syracuse, New York. The largest impact has been on adult medicine and adult surgery, the hospital services with the highest use rates. At the same time, reductions in inpatient care have also affected smaller areas such as

obstetrics, pediatrics, mental health, and substance abuse.

This study demonstrated that important changes in numbers of inpatients in the combined Syracuse hospitals occurred between January - June 2019 and 2024. They indicated that during this period, adult medicine discharges declined by 11.9 percent and adult surgery declined by 24.6 percent. These changes were larger than any others during the last one hundred years.

A large proportion of the reductions have involved orthopedic surgery. The study indicated that more than fifty percent of the joint replacements in the Syracuse hospitals have been moved to outpatient services. These patients included many of those with low severity of illness.

The study data indicated that these changes were associated with the expansion of ambulatory care. These programs have probably replaced large volumes of inpatient care in the hospitals in recent years.

This study also indicated that reductions in numbers of discharges have affected smaller services. Inpatient discharges have declined during the past five years for obstetrics (514), pediatrics (620), mental health (237), and alcohol/substance abuse treatment (251).

Evaluation of the study data suggested that these changes in utilization have replaced large amounts of provider resources in addition to utilization. The reductions in discharges have probably reduced the need for staffing and other clinical resources. Because of the lower care requirements associated with ambulatory care, it could have a favorable impact on the nursing shortage in the United States.

The study data also suggest that reductions in hospital discharges could contribute to improvements in the efficiency of care. Fewer inpatient admissions could result in the need for expensive inpatient resources such as pharmaceuticals and diagnostic testing.

It is possible to overstate the need for fewer inpatient healthcare resources. Beyond the five-year parameters of this study, these issues will require additional evaluation. Information from the Syracuse hospitals and other communities has suggested that reductions in the use of inpatient hospital care and other services may continue.

Conflicts of Interest

The authors declare there are no conflicts of interest regarding publication of this manuscript.

References

- [1] Dentzer, S. (2011) Urgent Measures for an Old Problem. *Health Affairs*, **30**, 1626. <https://doi.org/10.1377/hlthaff.2011.0961>
- [2] Hyman, H.H. (1982) *Health Planning: A Systematic Approach*. London.
- [3] Mustard, H.S. (1969) *The Uneasy Equilibrium Public and Private Financing of Health Services in the United States 1875-1965*. College and University Press, 11958.
- [4] Desilva, H. (2024) *Healthcare Construction Continues Shift from Inpatient Care*.

Modern Healthcare, **54**, 26-33.

- [5] Stebbins, E.L. (1972) *History and Background of Health Care in the United States*. Baltimore, Waverly Press.
- [6] May, J.J. (1967) *Health Planning: It's Past and Potential*. University of Chicago, Center for Administration Studies.
- [7] Rosen, G. (1958) *A History of Public Health*. M.D. Publications.
<https://doi.org/10.1037/11322-000>
- [8] Wagner, E.H., Austin, B.T., Davis, C., Hindmarsh, M., Schaefer, J. and Bonomi, A. (2001) Improving Chronic Illness Care: Translating Evidence into Action. *Health Affairs*, **20**, 64-78. <https://doi.org/10.1377/hlthaff.20.6.64>
- [9] Lagoe, R., Pasinski, T., Kronenberg, P., Quinn, T. and Schaengold, P. (2006) Linking Health Services at the Community Level. *Canada Health Care Quarterly*, **9**, 60-65.
<https://doi.org/10.12927/hcq.18229>