

Changes in Hospital Utilization at the Community Level

Ronald Lagoe*, Shelly Littau

Hospital Executive Council, Syracuse, USA

Email: *Hospexcl@cnyemail.com

How to cite this paper: Lagoe, R. and Littau, S. (2023) Changes in Hospital Utilization at the Community Level. *Case Reports in Clinical Medicine*, 12, 285-291. <https://doi.org/10.4236/crcm.2023.128040>

Received: June 28, 2023

Accepted: August 6, 2023

Published: August 9, 2023

Copyright © 2023 by author(s) and Scientific Research Publishing Inc.

This work is licensed under the Creative Commons Attribution International License (CC BY 4.0).

<http://creativecommons.org/licenses/by/4.0/>



Open Access

Abstract

This study evaluated developments in adult medicine and adult surgery inpatient discharges of the Syracuse, New York metropolitan area during a five-year period. The study demonstrated that adult medicine discharges declined by 19.1 percent and adult surgery discharges declined by 25.1 percent between January-April 2019 and 2023. The study also indicated that discharges for both services increased slightly, 2.8 - 6.2 percent, between January-April 2022 and 2023. The study data suggested that some of the reduction in adult medicine discharges resulted from less use of health care services related to the coronavirus epidemic. It also demonstrated that reduced use of adult surgery services was associated with greater utilization of ambulatory surgery and other outpatient services in the community. The results of the study suggested that hospitals in the United States may experience less utilization of inpatient services in the future.

Keywords

Hospitals, Hospital Discharges, Hospital Utilization

1. Introduction

The utilization of health care is an important component of the United States society. It includes services ranging from primary care to acute hospitalization. Historically, these services have been delivered at the community level [1].

Related to the impact of health care has been its relationship to society and the economy. Since the middle of the twentieth century, providers and payers have exerted a major impact on the delivery of and spending for health care at the local and national levels [2].

Historically, health care has been a conservative component of the national society. Since the development of payers and providers in the mid-twentieth cen-

tury, major changes in this sector have been relatively few [3] [4].

One of the most important components has been the evolution of hospitals. The use of these important services has been stimulated by clinical issues and by public and private payers.

An exception to this pattern has been the developments in hospital utilization that have occurred in United States hospitals during the third decade of the twenty-first century. The impact of these changes is still in the process of being defined [4].

At the beginning of the third decade of the twenty-first century, the health care systems in the United States and elsewhere in the world were challenged by a number of clinical issues. These included a number of important developments.

The most visible of these trends was the onset of the coronavirus. It caused large numbers of hospital inpatients to obtain services outside acute care facilities. As a result, many inpatients and emergency services patients made increased use of care outside hospital settings [5] [6] [7] [8].

The coronavirus was not the only cause of changes in hospital utilization. Alterations in the work of health care providers and payers resulted in less use of inpatient services and more utilization of outpatient care [9].

This study reviewed these changes in the metropolitan area of one community. It suggested the implications of these changes for one area and the populations it serves.

2. Population

This study evaluated changes in hospital inpatient utilization in the metropolitan area of Syracuse, New York. This area includes three large inpatient acute care facilities, Crouse Hospital (17,715 inpatient discharges excluding well newborns, 2022); St. Joseph's Hospital Health Center (18,277 inpatient discharges, 2022); and Upstate University Hospital (28,106 inpatient discharges, 2022).

The Syracuse hospitals provide a full range of inpatient acute care to an immediate services area of approximately 600,000. They also provide tertiary referral center services to the Central New York Health Services Area with a population of approximately 1,400,000.

Historically, the Syracuse hospitals have monitored acute inpatient care on a daily and monthly basis through the Hospital Executive Council. This planning organization has distributed inpatient information when updated inpatient data are available [10].

3. Method

This study focused on the identification of changes in inpatient acute care within the service area of the hospitals of Syracuse, New York during the period between 2019 and 2023. After remaining relatively stable during the first two decades of the twenty first century, numbers of discharges declined between 2020 and 2022.

The evaluation focused on developments in hospital inpatient utilization. These included developments in inpatient adult medicine and adult surgery, as well as the clinical services that comprised these types of care. Adult medicine and adult surgery have been the largest sources of inpatient acute care in Syracuse and elsewhere in the nation.

Data for the analysis were obtained from the individual acute care facilities by the Hospital Executive Council. This information has been collected by the Council on a monthly and daily basis for more than twenty years. The data have been used to develop studies for health planning and research [8].

The study included two major components. The first involved developments in adult medicine and adult surgery between 2019 and 2023. The second involved the sources of these changes by Major Diagnostic Categories.

The first component of the analysis focused on numbers of adult medicine and adult surgery discharges in the Syracuse hospitals between January and April 2019 and 2023. This was the most recent period for which complete data were available. The January-April time intervals were used to compare inpatient data in the five periods.

In this component of the analysis, numbers of adult inpatient and adult surgery discharges were based on five-year and two-year comparisons. Both comparisons were based on uniform definitions of these services.

The five-year comparisons involved 2019-2023. They included the periods before and after the coronavirus epidemic. They also include the movement of large numbers of inpatients to outpatient care.

The two-year comparisons involved 2022 and 2023. They included the end of the coronavirus epidemic and the most recent movement of inpatients to ambulatory care.

The first component of the analysis also included references to severity of illness for adult medicine and adult surgery. Changes in severity of illness helped define developments in volumes of inpatient discharges.

The second component of the analysis focused on changes in inpatient hospital utilization by Major Diagnostic Category. This analysis included additional clinical detail for both adult medicine and adult surgery.

Most of the study concerning clinical comparisons involved Major Diagnostic Categories. Specific references within these categories were based on Diagnosis Related Groups.

4. Results

The first component of the study focused on inpatient hospital discharge data from the hospitals of Syracuse, New York between January-April 2019 and 2023. Relevant data are summarized in **Table 1** which follows.

The data in **Table 1** demonstrated that numbers of inpatient adult medicine and adult surgery discharges in the Syracuse hospital declined substantially between January-April 2019 and 2023. During this interval, the number of adult

Table 1. Inpatient adult medicine and adult surgery discharges, Syracuse Hospitals, January-April 2019-2023.

	2019	2020	2021	2022	2023	Percent Difference	
						2019-2023	2022-2023
Adult Medicine	12,604	10,896	11,965	9926	10,202	-19.1	2.8
Adult Surgery	7032	5683	5513	4960	5268	-25.1	6.2

Adult medicine data exclude Diagnosis Related Groups concerning surgery, obstetrics, psychiatry, alcohol/substance abuse treatment, rehabilitation, and all patients aged 0 - 17 years. Adult surgery data exclude Diagnosis Related Groups concerning medicine, obstetrics, psychiatry, alcohol/substance abuse treatment, and all patients aged 0 - 17 years. Source: Hospital Executive Council.

medicine discharges declined by 19.1 percent, from 12,604 to 10,202, and the number of adult surgery discharges declined by 25.1 percent, from 7032 to 5268.

The analysis also indicated that these reductions in discharges reached low points during 2022. Adult medicine discharges declined from 12,604 in 2019 to 9926 in 2022 before increasing slightly to 10,202 in January-April 2023. Adult surgery discharges declined from 7032 in 2019 to 4960 in 2022 before increasing to 5268 in January-April 2023.

The increases in the numbers of adult medicine and adult surgery discharges that occurred in the Syracuse hospitals were limited. Adult medicine discharges increased by 2.8 percent and adult surgery discharges increased by 6.2 percent between the first four months of 2022 and 2023.

Additional data from these time periods suggested that the largest reductions in hospital discharges involved patients that were at relatively low severity of illness. Between January-April 2019 and 2023, the number of adult medicine patients at Minor severity declined by 41.39 percent and the number of adult surgery patients at Minor severity declined by 41.80 percent. The number of adult medicine patients at Moderate severity of illness declined by 31.72 percent and the number of adult surgery patients at Moderate severity of illness declined by 29.87 percent.

The analysis indicated that a relatively limited increase in the number of patients for both services in the Syracuse hospitals occurred between January and April 2023. It is possible that additional increases in the number of discharges for one or both services may occur. At the same time, the data suggest that numbers of discharges may be stabilizing.

Additional information concerning these developments was produced by a comparison of data for the same time periods by Major Diagnostic Category. This information is summarized in **Table 2**.

This information identified the clinical sources of the reductions in the number of discharges in the Syracuse hospitals between 2019 and 2023. It focused on adult medicine and adult surgery, the inpatient services with the highest volumes.

Table 2. Adult medicine and adult surgery by major diagnostic category, Syracuse Hospitals, January-April 2019, 2023.

Major Diagnostic Category	Adult Medicine				Adult Surgery			
	2019	2023	Actual Difference	Percent Difference	2019	2023	Actual Difference	Percent Difference
1) Nervous System	1405	989	-416	-29.6	389	411	22	5.7
2) Eye	42	30	-12	-28.6	7	9	2	28.6
3) ENT, Mouth & Craniofacial	259	124	-135	-52.1	64	55	-9	-14.1
4) Respiratory System	2135	1621	-514	-24.1	161	132	-29	-18.0
5) Circulatory System	2013	1526	-487	-24.2	1550	1325	-225	-14.5
6) Digestive System	1391	1046	-345	-24.8	683	555	-128	-18.7
7) Hepatobiliary System & Pancreas	520	362	-158	-30.4	207	122	-85	-41.1
8) Musculoskeletal System & Connective Tissue	473	434	-39	-8.2	2631	1420	-1211	-46.0
9) Skin, Subcutaneous Tissue & Breast	410	330	-80	-19.5	86	69	-17	-19.8
10) Endocrine, Nutritional & Metabolic	645	576	-69	-10.7	347	311	-36	-10.4
11) Kidney & Urinary Tract	887	754	-133	-15.0	260	237	-23	-8.8
12) Male Reproductive System	22	21	-1	-4.5	114	32	-82	-71.9
13) Female Reproductive System	38	32	-6	-15.8	108	105	-3	-2.8
16) Blood & Immunology Disorders	268	181	-87	-32.5	12	8	-4	-33.3
17) Lymphatic & Other Malignancies	187	152	-35	-18.7	29	45	16	55.2
18) Infectious & Parasitic Diseases	1403	1618	215	15.3	204	280	76	37.3
21) Poison, Toxic Effect & Other Injury	292	203	-89	-30.5	58	46	-12	-20.7
22) Burns	21	11	-10	-47.6	25	27	2	8.0
23) Rehab, Aftercare, Other Health Status	133	145	12	9.0	31	20	-11	-35.5
24) HIV Infections	26	20	-6	-23.1	0	0	0	-
25) Multiple Significant Trauma	34	27	-7	-20.6	66	59	-7	-10.6
Total	12,604	10,202	-2402	-19.1	7032	5268	-1764	-25.1

Adult medicine data exclude Diagnosis Related Groups concerning surgery, obstetrics, psychiatry, alcohol/substance abuse treatment, rehabilitation, and all patients aged 0 - 17 years. Adult surgery data exclude Diagnosis Related Groups concerning medicine, obstetrics, psychiatry, alcohol/substance abuse treatment, and all patients aged 0 - 17 years. Source: Hospital Executive Council.

The data demonstrated that the largest numbers of discharges for adult medicine included the respiratory system including chronic obstructive disease (514); the circulatory system including heart failure (487); and the digestive system (345 and 158). It appears the number of inpatient discharges for all other diagnoses declined during the coronavirus epidemic.

These developments resulted in fewer inpatient hospital admissions and increased use of ambulatory care. A number of other diagnoses generated declines in other percentages of total discharges such as neurology.

The analysis also indicated that adult surgery was a major source of reductions in patient care for the Syracuse hospitals. The information in **Table 2** demonstrated that musculoskeletal procedures were the largest source of changes in inpatient discharges in the Syracuse hospitals between January-April 2019 and 2023. The data in **Table 2** indicated that this reduction amounted to 1211 patients or 46 percent. The reduction in discharges was considerably larger than those of other adult medicine and adult surgery Major Diagnostic Categories.

Additional data included in the study demonstrated that the reduction in the number of orthopedic discharges was associated with large numbers of inpatient joint procedures for hip, knee, and shoulder & elbow replacement. These changes amounted to the movement of 60 - 76 patients from inpatient to outpatient care.

The analysis suggested that these changes amounted to increased use of ambulatory surgery involving patients with low severity of illness. Between January and April 2019 and 2023, inpatient joint replacements at Minor severity of illness declined by 64 - 86 percent and those at Moderate severity of illness declined by 62 - 65 percent.

5. Discussion

This study evaluated developments in inpatient adult medicine and adult surgery discharges at the hospitals of Syracuse, New York during a five-year period. It focused on the extent of these changes and the causes that generated them.

The analysis demonstrated that there were substantial reductions in discharges for both services between January-April 2019 and 2023. Adult medicine discharges declined by 19.1 percent and adult surgery discharges declined by 25.1 percent.

Information from the study also indicated that discharges for both services increased slightly, 2.8 - 6.2 percent, between January-April 2022 and 2023. It suggested that additional data will be necessary to determine if these developments will continue.

The study data indicated that some of the reductions in adult medicine discharges between 2019 and 2023 were produced by the impact of the coronavirus epidemic on the health care system. It appears that the epidemic resulted in less use of health care services such as inpatient hospital beds and emergency departments.

It also appears that the increased use of ambulatory surgery and other outpatient services was responsible for the reduced use of adult surgery services during the five-year period. Much of this decline was associated with a lesser need for inpatient care for patients with lower severity of illness.

6. Conclusions

The results of the study suggested that hospitals in the United States may experience less utilization of inpatient adult medicine and adult surgery in the future. This development could be associated with lower expenses for some types of

care.

Additional studies should include the impact of these and other services, such as the nursing shortage, on this subject. It should also include the utilization of care in other communities.

Conflicts of Interest

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

References

- [1] Denzler, S. (2011) Urgent Measures for an Old Problem. *Health Affairs*, **30**, 1626. <https://doi.org/10.1377/hlthaff.2011.0961>
- [2] Lizonitz, J. M. (2015) National Health Expenditure Projections 2014-24: Spending Growth Faster than Recent Trends. *Health Affairs*, **34**, 1407-1417. <https://doi.org/10.1377/hlthaff.2015.0600>
- [3] Weil, A.R. (2015) Hospital Costs and Quality. *Health Affairs*, **34**, 126. <https://doi.org/10.1377/hlthaff.2015.0786>
- [4] Hyman, H.H. (1982) *Health Planning: A Systematic Approach*. Oxford Publishing, London.
- [5] Goozner, M. (2020) Big Data's Role in Addressing COVID-19. *Modern Healthcare*, **50**, 22.
- [6] Sampat, B.N. and Shadlen, K.C. (2021) The COVID-19 Innovation System. *Health Affairs*, **40**, 400-409. <https://doi.org/10.1377/hlthaff.2020.02097>
- [7] Chassin, M.R., Brook, R.H., Park, R.E., Kessey, J., Fink, A., Khan, K., Merrick, N. and Solomon D.H. (1986) Variations in the Use of Medical and Surgical Services by the Medicaid Population. *New England Journal of Medicine*, **314**, 285-290. <https://doi.org/10.1056/NEJM198601303140505>
- [8] Tedeschi, P.J., Wolfe, R.A. and Griffith, J.R. (1990) Micro Area Variation in Hospital Use. *Health Services Research*, **24**, 729-740.
- [9] Riley, G.F. (2007) Long Term Trends in the Concentration of Medicaid Spending. *Health Affairs*, **26**, 808-814. <https://doi.org/10.1377/hlthaff.26.3.808>
- [10] 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>