Scientific Research Publishing

Case Reports in Clinical Medicine, 2025, 14(1), 1-9
https://www.scirp.org/journal/crcm
ISSN Online: 2325-7083
ISSN Print: 2325-7075

Improving Provider Efficiency at the Local Level

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How to cite this paper: Lagoe, R. and Littau, S. (2025) Improving Provider Efficiency at the Local Level. *Case Reports in Clinical Medicine*, **14**, 1-9.
https://doi.org/10.4236/crcm.2025.141001

Received: November 27, 2024
Accepted: January 4, 2024
Published: January 7, 2024

Abstract

This study reviewed developments in provider utilization related to health care in the metropolitan area of the Syracuse hospitals between the twentieth century and the twenty first century with respect to major hospital services. In this study, a decline in the utilization of inpatient hospitals developed between 2020 and 2022. During this period, use of additional outpatient services such as ambulatory surgery, individual practitioners, outside hospitals, and the use of hospital emergency departments developed in the community. The study data demonstrated that between 2020 and 2022, the numbers of discharges from the combined hospitals declined for both adult medicine and adult surgery. Inpatient discharges declined by 2730 patients for adult medicine and 1961 patients for adult surgery. The data also demonstrated that between 2022 and 2024, the numbers of discharges increased by 1998 discharges for adult medicine and by 229 for adult surgery. As followup to this study, health care providers and payors should review approaches to efficiency in their communities and evaluate their impact on health care efficiency.

Keywords

Health Care Efficiency, Hospitals, Ambulatory Care

1. Introduction

In the United States, health care costs are under increasing pressure to improve efficiency at the community level. Interest in the coronavirus and other infectious diseases has declined somewhat and attention concerning health care expenses have increased. This study was related to health planning at the community level [1] [2].

Recent data have demonstrated that numbers of inpatient hospital discharges have stabilized or declined during current time periods. Part of this phenomenon

has been related to the movement of inpatients to outpatient settings. Numbers of ambulatory care services have increased. This utilization has increased urgent care programs and other services at the community wide level [3] [4].

In the service area of the Syracuse hospitals, ambulatory care has undergone increases in recent years. Urgent care and other services have been responsible for part of this increase [5].

These health care utilization data have been developed over time periods. They included information related to the coronavirus epidemic and data related to other aspects of health planning. This interest is being generated by providers of care and payors, including insurance companies [6] [7].

One approach to this subject included evaluation of the impact on changes in numbers of inpatient hospital discharges by severity of illness over periods of time. This approach has helped outline the impact of discharges for adult medicine and adult surgery.

Analyses of additional utilization in the Syracuse hospitals have also been assembled by moving hospital inpatients to programs developed by individual physicians. One of these physicians has developed a version of outpatient orthopedic care in the western part of the county. Other physicians and providers have assembled their own approaches to care in areas such as neurology and orthopedics outside hospitals [8].

The data for this study demonstrated that there have been different causes of changes in utilization among the Syracuse hospitals. They include the two largest services, adult medicine and adult surgery.

2. Population

This study focused on changes in hospital utilization at the community level in the metropolitan area of Syracuse, New York. This area included three large acute care providers. These acute care providers included Crouse Hospital (17,309 inpatient discharges excluding well newborns, 2023), St. Joseph's Hospital Health Center (17,715 inpatient discharges excluding well newborns, 2023), and Upstate University Hospital—SUNY UMU (29,967 inpatient discharges excluding well newborns, 2023).

These hospitals provide primary and secondary inpatient acute care services to an immediate service area with a population of approximately 600,000. They also provide tertiary acute care services to the eleven county Central New York Health Service Area with a population of approximately 1,4000,000 [9].

3. Method

This study described recent developments in hospital services for these providers related to a five-year period from 2020 to 2024.

The principal focus of the study related to developments in numbers of inpatient hospital discharges. The study involved inpatient adult medicine and adult surgery services during this time period. Adult medicine and adult surgery have

accounted for approximately 70 percent of all inpatient hospital discharges.

The initial component of the study described numbers of adult medicine diagnoses and surgical procedures in the five year period between 2020 and 2024. The five year period included stabilization of specific adult medicine diagnoses and declines in use of specific surgical procedures that occurred during this interval. Some of these utilization patterns related to the coronavirus and other diagnoses.

Each of the components of the study was divided into two sections. The first section included hospital discharges during the period 2020-2022 and related issues. During this period, the numbers of inpatients declined substantially after the coronavirus. The second section included hospital discharges during the period 2022-2024. During this period, the numbers of hospital inpatients offset some of the original decline between 2020 and 2022.

The study data suggested that some of the different hospital services accounted for varying use of inpatient services and related aspects of care. These variances were related to different uses of health care in the Syracuse community. They also related to use of outpatient services.

The largest component of the use of care involved basic inpatient adult medicine and adult surgery utilization in the community. These services were associated with declines in the inpatient use of the Syracuse hospitals as well as the impact of inpatient care on ambulatory programs and physician services.

The study data also described reductions in hospital inpatient care associated with use of programs in the community such as ambulatory surgery, as well as the increased use of physician practices outside hospitals.

The study also characterized changes in the use of inpatient services in the Syracuse hospitals. This included increased use of adult medicine services, especially inpatient care. It also was associated with less use of inpatient adult surgery and greater use of outpatient surgical care.

Some of the changes in hospital inpatient care were related to severity of illness in the hospitals. Reductions in inpatient care were associated with increased use of ambulatory care and physician practices. Large physician practices and varying use of inpatient care had an impact on the utilization of health care in the Syracuse hospitals.

4. Results

The analysis of the study data was divided into two three year periods 2020-2022, 2022-2024. Each of these time periods was divided into two major services, adult medicine and adult surgery.

The initial component of the study included specific data concerning changes in adult medicine and adult surgery discharges in the Syracuse hospitals that occurred between the two three year periods. It focused on differences in numbers of inpatient discharges in the Syracuse hospitals for each of the two separate time periods.

Within these time periods, the initial study data were organized by Major

Diagnostic Categories. This approach identified clinical information for the individual time periods with the largest numbers of reductions in discharges. This information is summarized in Table 1(a) for adult medicine and Table 1(b) for adult surgery.

Table 1. (a) Inpatient hospital adult medicine discharges by major diagnostic category by year, Syracuse hospitals, 2020, 2022, 2024; (b) Inpatient hospital adult surgery discharges by major diagnostic category by year, Syracuse hospitals, 2020, 2022, 2024.

(a)

Major Diagnostic Category		Number of Discharges			Difference	
		2020	2022	2024	2020-2022	2022-2024
1	Nervous System	3747	3299	3306	−448	7
2	Eye	94	92	113	−2	21
3	ENT, Mouth & Craniofacial	407	344	392	−63	48
4	Respiratory System	5511	5343	4644	−168	−699
5	Circulatory System	4898	4706	4731	−192	25
6	Digestive System	3504	2853	3429	−651	576
7	Hepatobiliary Sys & Pancreas	1685	1138	1260	−547	122
8	Musculoskeletal Sys & Conn Tissue	1328	1370	1548	42	178
9	Skin, Subcutaneous Tissue & Breast	1092	906	1107	−186	201
10	Endocrine, Nutritional & Metabolic	1785	1679	1778	−106	99
11	Kidney & Urinary Tract	2572	2407	2894	−165	487
12	Male Reproductive System	81	55	70	−26	15
13	Female Reproductive System	112	92	88	−20	−4
16	Blood & Immunological Disorders	741	634	658	−107	24
17	Lymphatic & Other Malignancies	549	516	662	−33	146
18	Infectious & Parasitic Diseases	4337	4333	5234	−4	901
21	Poison, Toxic Effect & Other Injury	753	644	604	−109	−40
22	Burns	67	43	45	−24	2
23	Rehab, Aftercare, Other Health Status	382	468	375	86	−93
24	HIV Infections	58	59	52	1	−7
25	Multiple Significant Trauma	128	120	110	−8	−10
Total		33,831	31,101	33,100	−2730	1999

Data exclude Diagnosis Related Groups concerning surgery, obstetrics, psychiatry, alcohol/substance abuse treatment, rehabilitation, and all patients aged 0 - 17 years. 2024 data annualized based on January-September 2024 actual experience. Source: Hospital Executive Council.

Continued

(b)

Major Diagnostic Category		Number of Discharges			Difference	
		2020	2022	2024	2020-2022	2022-2024
1	Nervous System	1193	1215	1206	22	−9
2	Eye	23	23	17	0	−6
3	ENT, Mouth & Craniofacial	177	177	257	0	80
4	Respiratory System	377	379	362	2	−17
5	Circulatory System	4334	4268	4424	−66	156
6	Digestive System	1705	1646	1657	−59	11
7	Hepatobiliary Sys & Pancreas	519	366	410	−153	44
8	Musculoskeletal Sys & Conn Tissue	5984	4333	4513	−1651	180
9	Skin, Subcutaneous Tissue & Breast	263	193	227	−70	34
10	Endocrine, Nutritional & Metabolic	743	948	634	205	−314
11	Kidney & Urinary Tract	696	681	577	−15	−104
12	Male Reproductive System	197	77	97	−120	20
13	Female Reproductive System	332	281	247	−51	−34
16	Blood & Immunological Disorders	33	20	37	−13	17
17	Lymphatic & Other Malignancies	119	107	106	−12	−1
18	Infectious & Parasitic Diseases	699	775	841	76	66
21	Poison, Toxic Effect & Other Injury	149	135	166	−14	31
22	Burns	71	66	105	−5	39
23	Rehab, Aftercare, Other Health Status	76	59	76	−17	17
24	HIV Infections	1	0	0	−1	0
25	Multiple Significant Trauma	238	219	237	−19	18
Total		17,929	15,968	16,197	−1961	229

Data exclude Diagnosis Related Groups concerning medicine, obstetrics, psychiatry, alcohol/substance abuse treatment, and all patients aged 0 - 17 years. 2024 data annualized based on January-September 2024 actual experience.
Source: Hospital Executive Council.

The study data demonstrated that between 2020 and 2022, the numbers of discharges from the combined hospitals declined for both adult medicine and adult surgery. Inpatient discharges declined by 2730 inpatients for adult medicine and 1961 inpatients for adult surgery.

The declines in adult medicine were generated by reductions in numbers of discharges for the digestive system (651 discharges), the hepatobiliary system & pancreas (547 discharges), the nervous system (448 discharges), the circulatory system (192 discharges), skin & breast (186 discharges), the respiratory system (168 discharges), and the kidney & urinary tract system (165 discharges).

The declines in adult surgery were generated by reductions in numbers of

discharges for orthopedics (1651 discharges), the hepatobiliary system & pancreas (153 discharges), and the male reproductive system (120 discharges).

The data also demonstrated that between 2022 and 2024, numbers of discharges increased by 1998 discharges for adult medicine and by 229 for adult surgery. This information included the differences in utilization between 2022 and 2024, however, they demonstrated overall changes in care in the hospitals.

The increases in adult medicine discharges between 2022 and 2024 were generated by increases for infectious & parasitic diseases (901 discharges), the digestive system (576 discharges), the kidney & urinary tract system (487 discharges), skin, subcutaneous tissue & breast (201 discharges), orthopedics (178 discharges), and the hepatobiliary system & pancreas (122 discharges).

The increases in adult surgery discharges were generated by larger numbers of discharges for the orthopedics (180 discharges), the circulatory system (156 discharges), and ENT, mouth & craniofacial (80 discharges).

These differences were probably related to practice changes associated with inpatients and outpatients in the study data. They included the movement of some hospital inpatients to outpatient programs such as ambulatory surgery and the increased utilization in ambulatory care for some individual practitioners. Adult medicine and adult surgery patients were frequently not admitted between 2020 and 2022. Adult medicine patients were frequently admitted between 2022 and 2024.

The movement of these patients to outpatient care also may have included additional utilization for hospital emergency departments. This volume may have offset some amount of inpatient volume during the period of the study.

Beginning in 2020, hospital emergency departments were closed due to the coronavirus. The population previously treated and admitted through the emergency departments were no longer presenting to hospitals. Adult medicine patients who had frequently been admitted to hospitals through emergency departments were no longer generating this level of utilization.

The second component of the study data included specific information concerning the utilization of adult medicine and adult surgery discharges by severity of illness between 2020 and 2024. This information identified changes in the utilization of care for patients identified as Minor, Moderate, Major, and Extreme severity of illness. This information is summarized in Table 2.

Within these data, it was possible to identify clinical levels of inpatient care for the combined hospitals. The largest changes in clinical care were related to the movement of lower severity of illness patients from hospital inpatients to outpatient settings.

The study data also identified changes in utilization within severity of illness among the Syracuse hospitals. These changes indicated that the largest differences in utilization between adult medicine and adult surgery involved lower severity of illness patients, those at Minor and Moderate levels of care.

These differences in hospital utilization focused on variations in levels of care

Table 2. Inpatient adult medicine and adult surgery discharges by severity of illness, Syracuse hospitals, 2020-2024.

	Number of Discharges			Difference	
	2020	2022	2024	2020-2022	2022-2024
Adult Medicine					
Minor	3640	3062	3384	−578	322
Moderate	10,891	9417	9736	−1474	319
Major	12,919	12,292	13,129	−627	837
Extreme	6381	6330	6851	−51	521
Total	33,831	31,101	33,100	−2730	1999
Adult Surgery					
Minor	5242	4317	4011	−925	−306
Moderate	6642	5795	5856	−847	61
Major	3732	3583	3780	−149	197
Extreme	2313	2273	2550	−40	277
Total	17,929	15,968	16,197	−1961	229

2024 data annualized based on January-September 2024 actual experience.

between the two time periods. These data demonstrated that numbers of discharges declined for adult medicine and adult surgery between 2020 and 2022 and increased between 2022 and 2024.

The number of inpatient discharges declined by 2730 in adult medicine and 1961 in adult surgery between 2020 and 2022. The change in the numbers of discharges was an increase of 1999 patients in adult medicine and 229 patients in adult surgery between 2022 and 2024.

All of these changes shifted the utilization of the three hospitals from reductions to increases in discharges. This amounted to a shift between 2730 and 1961 reductions in discharges to 1999 to 229 increases in discharges between the two year periods.

5. Discussion

In the twentieth century, changes in health care utilization were often addressed by large variations in inpatient volume. Variations in utilization have also occurred in the twentieth century, but they have frequently been more closely related to levels of care.

This study reviewed developments in provider utilization related to health care in the metropolitan area of the Syracuse hospitals between the twentieth century and the twenty first century with respect to major hospital services. It focused on efforts to improve the efficiency of care through reducing provider volume and payor approaches such as health maintenance organizations, other types of insurance, and health planning.

During the past five years, hospital utilization at the community level in the

United States has responded to the need for changes in the volumes of major hospital services. These changes developed out of the requirement for increased efficiency among providers of care. The need for these efforts was related to excess utilization of inpatient services and the opportunity to improve care for patients who only required outpatient care.

In this study, the reduction in utilization of inpatient hospitals developed between 2020 and 2022. At the same time, the opportunity to make additional use of outpatient care was made available. The outpatient services included programs such as ambulatory surgery, individual practitioners, outside hospitals, and the use of hospital emergency departments.

In the study, the participating providers also addressed excess utilization between 2022 and 2024. These mechanisms involved outpatient services, hospital emergency departments, and urgent care.

The impact of these changes amounted to opportunities for hospital inpatient volume and increased utilization in outpatient care both within hospitals and among other providers of care. In addition to providers of care, these changes have generated interest among health care payors such as Excellus BlueCross/BlueShield.

These changes related to efforts by providers and payors to improve efficiency similar to those employed at the community level during the 1960's and 1970's. As followup to this study, health care providers and payors should review approaches to efficiency in their communities and their impact on health care efficiency.

Conflicts of Interest

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

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