

Hospital Utilization and Health Care Planning

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Abstract

This study evaluated changes in inpatient adult medicine and adult surgery services in the metropolitan area of Syracuse New York. These are the two largest inpatient hospital services. The study involved the use of these services as a basis for health care planning over time. The first component of the study focused on changes in hospital discharges for adult medicine and adult surgery. It demonstrated that, between the first three quarters of 2019 and 2022, before and after the coronavirus epidemic, numbers of adult medicine and adult surgery discharges declined by 16 - 21 percent. The second component of the study focused on changes in hospital lengths of stay for adult medicine and adult surgery. It demonstrated that, between the first three quarters of 2019 and 2022, hospital inpatient lengths of stay increased by approximately 19 - 21 percent at the aggregate and hospital specific levels. Effective planning involving utilization indicators such as hospital discharges and efficiency will be necessary if the potential for effective management of this sector is to be preserved. This planning should involve comparisons of data such as hospital discharges and stays, and identification of the sources of these developments at the community level.

Keywords

Hospitals, Hospital Discharges, Health Planning

1. Introduction

Within the last hundred years, the need to support health care has been a major challenge in the United States and elsewhere. Maintaining the health of large populations has required large expert staffs and extensive financial resources to support them.

Much of this challenge has grown out of the fact that health care has developed in a rapid manner through a wide range of private and public organizations. Providers and payors have worked to provide care with good intentions,

but not always in an organized manner [1] [2].

Within these parameters, the planning of health care services has not always had the highest priority. Health planning has frequently been relegated to a lower priority than the provision of care and the resources needed to pay for it [3].

One of the most interesting environments for the development of health planning has been the United States. Unlike many other nations, the United States developed much of its health care systems through payor organizations. These included publically sponsored payors such as Medicare and Medicaid, as well as not for profit and for profit payors. The result has been a health care system that contains large numbers of providers and payors that function in different ways [4] [5] [6].

Health planning arrived in the United States belatedly. It appeared after providers and payors were already in place. It was contained in the Health Care Planning and Development act that was passed by the federal government in 1976. This legislation provided a federal framework for health planning at the state and regional levels [7] [8].

Health planning at the federal level did not last long. After twenty years, the original legislation expired. States, regions, and localities were left to pursue this function with their own providers of care. This approach resulted in a variety of approaches to planning for needed services [3] [7].

2. Population

This study described examples of efforts to plan the efficiency of health services in the metropolitan area of Syracuse, New York. It included programs to address this subject implemented by local providers.

The focus of these efforts was the Syracuse hospitals. These included Crouse Hospital (18,217 inpatient beds excluding well newborns, 2021); St. Joseph's Hospital Health Center (20,720 inpatient beds excluding well newborns, 2021), and Upstate University Hospital (32,245 inpatient beds excluding well newborns, 2021).

The Syracuse hospitals provide a full range of acute care to an immediate services area of approximately 600,000. They also provide tertiary services to the 11 county Central New York Health Service Area with a population of 1,400,000.

Historically, the Syracuse Hospitals have worked cooperatively to improve the efficiency and outcomes of care in the community. A number of these efforts have involved the Hospital Executive Council, a joint planning organization.

3. Method

This study reviewed efforts by the Syracuse hospitals to evaluate inpatient adult medicine and adult surgery utilization between 2019 and 2022. These years included the time periods before and after the coronavirus epidemic.

This information provided an opportunity to review major utilization indicators as a basis for planning at the community level. The study included January-

March, April-June, and July-September for each of the two years. These intervals included the most recent inpatient data available.

The first component of the study included inpatient adult medicine and adult surgery discharges for January-March, April-June, and July-September for each of the combined totals and within the three hospitals. The analysis focused on changes in numbers of discharges that occurred among the seasonally adjusted quarters.

The analysis focused on percent differences among the three calendar quarters. During the three years, these differences could be used as a basis for the planning of health care services at the community level.

The second component of the analysis included inpatient hospital adult medicine and adult surgery lengths of stay between January-March, April-June, and July-September for the combined hospitals and each of the acute care facilities. As in the discharge data, this analysis focused on changes that occurred among the seasonally adjusted quarters.

4. Results

The initial component of the analysis focused on changes in inpatient adult medicine and adult surgery discharges in the Syracuse hospitals during the three most recent calendar quarters that were available. Relevant data are summarized in **Table 1**.

This information demonstrated that total adult medicine discharges for the combined hospitals declined by 18.47 percent between January-March and July-September 2019 and 2022. These differences were similar during the three time periods, 16.64 - 21.73 percent.

The adult medicine data also identified differences between 2019 and 2022 inpatient discharges within the individual hospitals for January-March and July-September. The largest reductions occurred at St. Joseph's Hospital Health Center, 33.97 percent, while the smallest changes occurred at Crouse Hospital, 0.72 percent.

The adult surgery inpatient data in **Table 1** also demonstrated that inpatient discharges declined by 24.95 percent between January-March and July-September 2019 and 2022 in the Syracuse hospitals. This information declined from 19.27 to 32.11 percent between the calendar quarters. The reductions were larger than those for adult medicine.

The study data also identified reductions in adult medicine discharges also occurred within the individual hospitals. The largest changes involved St. Joseph's Hospital Health Center and Upstate University Hospital 28.08 - 24.52 percent.

These data demonstrated that numbers of inpatients in the Syracuse hospitals have not reached levels that occurred before the movement of inpatients to outpatient services and the coronavirus epidemic. These changes have involved the two largest hospital inpatient services. They suggested that the declines in utilization have been accompanied by reductions in hospital resources.

Table 1. Inpatient hospital adult medicine and adult surgery discharges, by quarter, Syracuse hospitals, January-September 2019, 2022.

	Adult Medicine				Adult Surgery			
	1Q	2Q	3Q	Total	1Q	2Q	3Q	Total
Crouse Hospital								
2019	2064	2159	2145	6368	1142	1234	1109	3485
2022	2033	2224	2065	6322	875	1036	882	2793
Percent Difference	-1.50	3.01	-3.73	-0.72	-23.38	-16.05	-20.47	-19.86
St. Joseph's Hospital Health Center								
2019	3437	3401	3207	10045	2200	2088	2229	6517
2022	2083	2261	2289	6633	1444	1657	1586	4687
Percent Difference	-39.39	-33.52	-28.62	-33.97	-34.36	-20.64	-28.85	-28.08
Upstate University Hospital-SUNY UMU								
2019	3886	3984	4088	11958	1924	2045	2051	6020
2022	3231	3471	3473	10175	1256	1640	1648	4544
Percent Difference	-16.86	-12.88	-15.04	-14.91	-34.72	-19.80	-19.65	-24.52
Total								
2019	9387	9544	9440	28371	5266	5367	5389	16022
2022	7347	7956	7827	23130	3575	4333	4116	12024
Percent Difference	-21.73	-16.64	-17.09	-18.47	-32.11	-19.27	-23.62	-24.95

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 second component of the study involved changes in adult medicine and adult surgery inpatient lengths of stay in the Syracuse hospitals during the three most recent calendar quarters. Relevant data are summarized in **Table 2**.

This information demonstrated that inpatient adult medicine stays for the combined hospitals increased by 21.28 percent between January-March and July-September 2019 and 2022. These increases were similar during the three calendar quarters, 19.42 to 22.88 percent. These increases amounted to reductions in inpatient efficiency.

The data demonstrated that changes in hospital stays differed among the three hospitals. The smallest increases were produced by St. Joseph's Hospital Health Center, 11.81 percent. The largest increases were generated by Crouse Hospital, 28.08 percent.

The study data indicated the inpatient lengths of stay for adult surgery also increased during the three time periods, 19.59 percent. Reductions for the combined hospitals ranged from 17.76 to 22.56 percent.

At the individual hospital level, inpatient lengths of stay increased from 15.91

Table 2. Inpatient Hospital Adult Medicine and Adult Surgery Mean Lengths of Stay (Days), by Quarter, Syracuse hospitals, January-September 2019, 2022

	Adult Medicine				Adult Surgery			
	1Q	2Q	3Q	Total	1Q	2Q	3Q	Total
Crouse Hospital								
2019	5.18	4.93	4.75	4.95	4.42	4.09	4.49	4.33
2022	6.85	6.13	6.07	6.34	5.94	5.35	5.81	5.68
Percent Difference	32.24	24.34	27.79	28.08	34.39	30.81	29.40	31.18
St. Joseph's Hospital Health Center								
2019	4.49	4.23	4.24	4.32	4.84	4.75	4.57	4.72
2022	4.91	4.71	4.89	4.83	5.36	5.64	5.70	5.57
Percent Difference	9.35	11.35	15.33	11.81	10.74	18.74	24.73	18.01
Upstate University Hospital-SUNY UMU								
2019	5.35	5.21	5.08	5.21	7.10	6.71	6.58	6.79
2022	6.44	6.12	6.24	6.26	8.50	7.58	7.68	7.87
Percent Difference	20.37	17.47	22.83	20.15	19.72	12.97	16.72	15.91
Total								
2019	5.00	4.79	4.72	4.84	5.58	5.35	5.32	5.41
2022	6.12	5.72	5.80	5.87	6.61	6.30	6.52	6.47
Percent Difference	22.40	19.42	22.88	21.58	18.46	17.76	22.56	19.59

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.

percent at Upstate University Hospital to 31.18 percent at Crouse Hospital. Differences in stays were also identified for the individual three month periods.

The length of stay data suggested that the inpatient efficiency in the Syracuse hospitals declined during the period of the study. The longer inpatient lengths of stay consumed additional hospital resources and reduced efficiency for both major services.

5. Conclusions

The first component of the study focused on changes in hospital discharges for adult medicine and adult surgery. It demonstrated that, between the first three quarters of 2019 and 2022, before and after the coronavirus epidemic, numbers of adult medicine and adult surgery discharges declined by 16 - 21 percent.

The study demonstrated that these changes were related to reductions in the use of inpatient care over time. These changes implied that hospital revenue and resources declined between 2019 and 2022. They resulted from the movement of inpatients to outpatient care, as well as the coronavirus.

The second component of the study focused on changes in hospital lengths of stay for adult medicine and adult surgery. It demonstrated that, between the first three quarters of 2019 and 2022, hospital inpatient lengths of stay increased by approximately 19 - 21 percent at the aggregate and hospital specific levels.

The study suggested that these changes were related to declines in hospital efficiency over time. It implied that increases in lengths of stay were related to longer turnover times for hospital beds. These reductions in efficiency consumed additional hospital resources.

6. Discussion

Historically the evolution of health care in the United States has focused on the use of inpatient services over time. This utilization has developed at the community level through aggregate and institution specific data.

This study evaluated changes in inpatient adult medicine and adult surgery services in the metropolitan area of Syracuse New York. These are the two largest inpatient services. The study involved the use of these services as a basis for health care planning over time.

The past several decades have demonstrated the importance of health care to the societies and the economies of health care in the United States and other nations. The data in this study suggested the limitations of this sector at the community level.

Effective planning involving utilization indicators such as hospital discharges and efficiency will be necessary if the potential for effective management of this sector is to be preserved. This planning should involve comparisons of data such as hospital discharges and stays, and identification of the sources of these developments at the community level.

Conflicts of Interest

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

References

- [1] Emerson, H. (1945) *Local Health United for the Nation*. Commonwealth Fund, New York.
- [2] Rosen, G. (1958) *A History of Public Health*. M.D. Publications, New York.
<https://doi.org/10.1037/11322-000>
- [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, New Haven, 11958.
- [4] Hyman, H.H. (1982) *Health Planning: A Systematic Approach*. London.
- [5] Marquez, N., Moreno, D., Klonsky, A. and Dolovich, S. (2022) Racial and Ethnic Inequalities in COVID 19 Mortality. *Health Affairs*, **41**, 1626-1634.
<https://doi.org/10.1377/hlthaff.2022.00390>
- [6] Nwadiuko, J. and Bustamante, A. (2022) Little or No Correlation Found between

Emigrant Entry and COVID Infection Rates. *Health Affairs*, **41**, 1635-1644.

<https://doi.org/10.1377/hlthaff.2021.01955>

- [7] May, J.J. (1967) *Health Planning: Its Past and Potential*. University of Chicago, Chicago.
- [8] Stebbins, E.L. (1972) *History and Background of Health Care in the United States*. Waverly Press, Baltimore.