

Reducing Extended Hospital Lengths of Stay

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Abstract

In the United States, the costs of health care have become a major burden for the health care system. In order to address this problem, the hospitals of Syracuse, New York, developed programs to provide subacute and complex care. The Subacute programs provided patient transportation services for dialysis and other types of care outside hospitals. They also developed programs for services such as intravenous therapy in nursing homes. The Complex Care Programs, such as intravenous therapy and mental health services, have provided alternatives to extended care in hospitals. During the past five years, utilization of these programs has varied, declining between 2019 and 2022, and then increasing between 2022 and 2024. The programs have avoided the need for 1530 - 2974 patient days in hospitals. The programs saved the Syracuse hospitals approximately \$600 per inpatient day. This amounted to savings of \$918,000 - \$1,784,400 per year. These programs demonstrated how relatively small mechanisms can save large amounts of health care resources.

Keywords

Hospitals, Hospital Efficiency, Hospital Lengths of Stay

1. Introduction

Historically, the management of health care utilization has been a major challenge in the United States. Hospitals have needed to address this issue because of the severity of illness of the patients whom they serve and because of the differences among providers of care [1] [2].

In recent years, the scarcity of health care resources, especially nurses, has added to this problem. Hospitals have been challenged by the needs of other providers such as nursing homes and ambulatory care practitioners [3] [4].

Major issues related to this situation are the needs of hospital inpatients who require large amounts of resources. Inpatient hospitals, in particular, consume large amounts of care. Expenditures for this care address labor for nursing and

other needs, pharmaceuticals, and testing [5] [6].

At the community level, hospitals need to maintain efficiency by treating inpatients and moving them to appropriate discharge statuses. They include discharges home, long term care services, and ambulatory care. Delays in discharge from hospitals can reduce the quality of care and limit efficiency [6] [7] [8].

In order to support the efficiency of care at the community level, some providers have attempted to reduce extended lengths of stay by identifying these patients and implementing programs to address them. These efforts can be developed by individual hospitals or by groups of providers [7] [9] [10].

This study described the use of these programs in one community. It included the use of specific initiatives for individual hospitals as well as groups of providers. The programs were employed by the hospitals, long term care services such as nursing homes, and ambulatory care associates. The objectives of the programs have focused on improving the efficiency of care for individual providers at the community level.

2. Population

This study focused on improving the efficiency of inpatient hospitals at the community level. It involved the inpatient hospitals of Syracuse, New York. These acute care providers include Crouse Hospital (17,309, inpatient discharges excluding well newborns, 2023), St. Joseph's Hospital Health Center (17,715 inpatient discharges, 2023), and Upstate University Hospital (29,967 inpatient discharges, 2023) [11].

The Syracuse hospitals provide primary and secondary acute care to an immediate service area with 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.

3. Method

The principal objective of these programs was to improve the efficiency of acute care in the service area by reducing extended lengths of stay for patients who remained in acute care for long periods of time. These patients needed inpatient hospital services because they could not be discharged during or immediately after their inpatient acute care stays.

The initial component of the study involved identification of these patients in acute hospitals. These efforts involved identification of the clinical needs of these patients and the services required to develop their treatment plans. This component also required coordination of services in the hospitals with the capabilities of other providers in the community, such as long term care and ambulatory care.

Within the hospitals, development of these services focused on adult medicine and adult surgery. These were the clinical services that generated the largest numbers of extended acute care lengths of stay in the community.

The programs were implemented by the case managers of the Syracuse hospitals in cooperation with nursing homes and ambulatory care providers in the community. The development and operation of the programs were coordinated by the Hospital Executive Council, the planning organization for the hospitals.

The planning process included four efforts, the Subacute Transportation Program, the basic Complex Care Program, the Tier 1 Complex Care Program, and the Tier 4 Complex Care Program. Each of these programs had been developed over a lengthy period of time.

The Subacute Transportation Program was developed to provide dialysis and other services through nursing homes and other long term care providers as an alternative to extending their stays in the hospital. The transportation services that were provided utilized alternative sites of care for dialysis and other services.

The basic Complex Care Program was developed to provide low severity of illness services such as intravenous therapy in nursing homes as an alternative to providing these services in hospitals. The services included high cost antibiotics, wound vacs with or without antibiotics, and behavioral therapies.

The Tier 1 Complex Care Program was developed to provide high cost antibiotics such as Ampicillin, Ertipenim, Meripenim, Unasyn and Zyvox. Participating therapies also included wound vacs and comfort care. Patients with Medicaid pending were also eligible.

The Tier 4 Complex Care Program included extremely high cost medications including Daptomycin, Micafungin, and Tigecycline. Patients receiving Chemotherapy, and other high cost infusions were also eligible.

The Subacute and Complex Care Programs were monitored and evaluated by the Hospital Executive Council using simple descriptive statistics. This process included utilization data such as numbers of participating patients by month and year. This process also included numbers of hospital days saved through use of the programs.

Evaluation of the programs also included financial data. This was based on numbers of hospital patient days saved and grant funding levels. The costs of the programs were administered by the Hospital Executive Council.

The staff of the Hospital Executive Council was responsible for administering the Subacute and Complex Care Programs. The case managers in the hospitals were responsible for clinical coordination in the community.

4. Results

The first component of the study focused on the utilization of the Subacute and Complex Care Programs in the Syracuse hospitals. Relevant data are summarized in **Table 1**.

This information summarized use of the programs between 2019 and 2023, the most recent years for which complete data were available. The data indicated that, during this period, use of the programs gradually declined, then increased. The data for January-March 2024 demonstrated substantial increases in

Table 1. Long term care subacute and complex care programs, Syracuse Hospitals, January-December 2019-2023, January-March 2024.

| Program | Number of Patients | | | | | |
|------------------------|---|------|-------|------|------|---------------|
| | 2019 | 2020 | 2021 | 2022 | 2023 | Jan-Mar 2024* |
| Offsite Transportation | 43 | 29 | 31 | 26 | 28 | 6 |
| Complex Care | 15 | 11 | 14 | 4 | 6 | 6 |
| Complex Care-Tier 1 | 23 | 21 | 16 | 7 | 10 | 19 |
| Complex Care-Tier 4 | 11 | 9 | 9 | 8 | 8 | 3 |
| Total Patients | 92 | 70 | 70 | 45 | 52 | 34 |
| Program | Number of Inpatient Hospital Days Saved | | | | | |
| | 2019 | 2020 | 2021 | 2022 | 2023 | Jan-Mar 2024* |
| Offsite Transportation | 1,204 | 812 | 868 | 728 | 784 | 168 |
| Complex Care | 420 | 308 | 392 | 112 | 168 | 168 |
| Complex Care-Tier 1 | 690 | 630 | 480 | 210 | 300 | 570 |
| Complex Care-Tier 4 | 660 | 540 | 540 | 480 | 480 | 180 |
| Total Program Days | 2974 | 2290 | 2,280 | 1530 | 1732 | 1086 |

*Data include confirmed cases only; Prepared by Hospital Executive Council.

use of the Subacute and Complex Care Programs.

The data demonstrated that use of the individual programs varied during the five year period. The Subacute Offsite Transportation Program generated the highest utilization, 157 patients. The Tier 1 Complex Care Programs produced the next highest utilization, 77 patients, followed by the basic Complex Care Program, 50 patients, and Tier 4 Complex Care Program, 45 patients.

During 2024, use of the Complex Care programs rose substantially. This increase in utilization was generated by recent interest in saving additional patient days in the hospitals.

The information in **Table 2** demonstrated that large numbers of inpatient days in hospitals could be provided outside these providers. It showed that thousands of inpatient days could be saved outside hospitals in the community. During the five year period, each of the Complex Care programs supported the provision of acute care outside hospitals.

Additional information concerning the use of the Subacute and Complex Care Programs was summarized in **Table 2**. This information also included financial information.

This information included numbers of inpatient hospital patient days saved through use of the programs. This indicator varied because of differences in use of the programs within the hospitals.

The numbers of hospital days saved reflected reduced use of the Subacute Offsite Transportation Program because this service involved low severity of illness patients. It did not involve direct use of acute care in the hospitals. The Subacute Offsite Transportation program demonstrated the use of basic services that did

Table 2. Long term care subacute and complex care programs, financial mechanisms, Syracuse hospitals, January-December 2019-2023, January-March 2024.

| Program | Grant Funding | | | | | |
|------------------------|---------------|-----------|-----------|-----------|-----------|---------------|
| | 2019 | 2020 | 2021 | 2022 | 2023 | Jan-Mar 2024* |
| Offsite Transportation | \$61,800 | \$34,800 | \$37,200 | \$31,200 | \$34,800 | \$7,200 |
| Complex Care | \$45,000 | \$33,000 | \$42,000 | \$12,000 | \$18,000 | \$18,000 |
| Complex Care-Tier 1 | \$115,000 | \$105,000 | \$80,000 | \$35,000 | \$50,000 | \$95,000 |
| Complex Care-Tier 4 | \$110,000 | \$90,000 | \$90,000 | \$80,000 | \$80,000 | \$30,000 |
| Total Program Funds | \$331,800 | \$262,800 | \$249,200 | \$158,200 | \$182,800 | \$150,200 |

| Program | Potential Hospital Days Saved @ \$600/Day | | | | | |
|------------------------|---|-------------|-------------|-----------|-------------|---------------|
| | 2019 | 2020 | 2021 | 2022 | 2023 | Jan-Mar 2024* |
| Offsite Transportation | \$722,400 | \$487,200 | \$520,800 | \$436,800 | \$470,400 | \$100,800 |
| Complex Care | \$252,000 | \$184,800 | \$235,200 | \$67,200 | \$100,800 | \$100,800 |
| Complex Care-Tier 1 | \$414,000 | \$378,000 | \$288,000 | \$126,000 | \$180,000 | \$342,000 |
| Complex Care-Tier 4 | \$396,000 | \$324,000 | \$324,000 | \$288,000 | \$288,000 | \$108,000 |
| Total Program Funds | \$1,784,400 | \$1,374,000 | \$1,368,000 | \$918,000 | \$1,039,200 | \$651,600 |

*Data include confirmed cases only. Prepared by Hospital Executive Council.

not involve complicated clinical care.

The Complex Care Programs involved the provision of acute care in nursing homes and other facilities as an alternative to acute care in hospitals. These programs provided an alternative approach to acute care at the community level.

The data in **Table 2** included the financial mechanisms for use of the Subacute and Complex Care Programs in hospitals. These programs were funded through grant funding from the hospitals in order to avoid providing payments for the care of individual patients. The grant funding was based on a minimum number of patients for each level of care.

The program development funding was based on a savings of \$600 per day. This was estimated to be the cost of acute care patient days at the end of a patient's acute care stay. These were the inpatient acute care stays days with potential for movement outside hospitals.

The study demonstrated that the total costs of inpatient acute care days saved ranged from \$100,000 to more than \$300,000. The movement of these days to outpatient settings effectively generated additional capacity in the hospitals. It also developed additional capacity in the health care system.

5. Discussion

In the United States, the costs of health care have become a major burden for the health care system. The need to address this issue has become an important challenge for providers and consumers of care. This study describes efforts to address these issues by improving the efficiency of providers at the community

level.

One of the most important sources of health care costs for providers of care has been inpatient hospitalization. This area has been one of the most important areas of health care expenses. In addition to providers, it also has an impact on health care consumers. An important source of these expenses is inpatients who remain in hospitals for extended periods of time.

In order to address this problem, the hospitals of Syracuse, New York, developed programs to provide subacute and complex care. These programs provide incentives for reduction of extended stays in hospitals. The incentives included program development funds for discharge of these patients.

The Subacute programs provided patient transportation services for dialysis and other types of care outside hospitals. They also developed programs such as intravenous therapy in nursing homes. The Complex Care Programs, such as intravenous therapy and mental health services, have provided alternatives to extended care in hospitals.

The Subacute and Complex Care Programs were funded by the Syracuse hospitals. They were coordinated by the Hospital Executive Council, the planning organization for those providers. The staff of the Council administers the programs and collected funding from the hospitals.

During the past five years, utilization of these programs has varied, declining between 2019 and 2022, and then increasing between 2022 and 2024. The programs have avoided the need for 1530 - 2974 patient days in hospitals. These savings included large amounts of staff time, pharmaceuticals, and tests.

The programs saved the Syracuse hospitals approximately \$600 per inpatient day. This amounted to \$918,000 - \$1,784,400 per year. These programs demonstrated how relatively small mechanisms can save large amounts of health care resources.

Conflicts of Interest

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

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