

# Improving Hospital Stays with Community Wide Programs

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## Abstract

This study described a series of programs implemented in Syracuse, New York to support the movement of long term acute care patients to skilled nursing facilities. The Difficult to Place Program involved the identification of these patients and the communication of information concerning them between hospitals and nursing homes on a continuing basis. These patients involved approximately 20 percent of new admissions to nursing homes. The Subacute Programs included services such as intravenous therapy and offsite transportation that were not originally available in area nursing homes. The Subacute Program stimulated the development of these services in long term care. The Complex Care Programs have included services for patients with high severity of illness such as multiple intravenous antibiotic therapy and high cost medications. The Subacute and Complex Care Programs included 5 - 6 percent of Difficult to Place patients. The study demonstrated that these programs reduced the number of annual adult medicine and adult surgery patient days by 2288 between 2011 and 2017.

## Keywords

Hospital Lengths of Stay, Nursing Homes, Long Term Care

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## 1. Introduction

In the United States, the urgency of efforts to reduce health care spending is increasing. The cost of health care per capita is almost 30 percent more than the cost in the next highest nation. The ability of American businesses to compete in global markets is limited by the amount of health care spending in their produc-

tion costs. It has also been recognized that the efficiency of care is related to improved outcomes [1] [2].

One of the largest components of health care spending in the United States is hospital care. As the major inpatient providers at the community level, hospitals and nursing homes have been sources of care for patients with the highest severity of illness. This level of care has been based on the fact that both provide continuous 24 hour/7 day inpatient nursing services [3] [4].

Historically, some efforts to limit hospital spending have focused on shifting stays and admissions to other levels of care, such as nursing homes and ambulatory services. Hospitals have addressed the needs of patients with the highest severity of illness on an episodic basis. Nursing homes have helped improve the efficiency of care by providing follow-up inpatient services for patients who no longer require acute care but cannot be discharged home alone. Nursing homes have also helped avoid hospital readmissions for patients who need continuous post hospital care [5] [6].

In recent years, these issues have led to the development of a variety of innovative programs as hospitals and nursing homes have attempted to work together. Most include mechanisms to improve the efficiency and outcomes of care within parameters established by payers and other health care organizations [7] [8] [9] [10].

## 2. Population

This study described the recent development of a series of programs between the hospitals and nursing homes in the metropolitan area of Syracuse, New York. This area includes 3 acute hospitals, Crouse Hospital (18,935 discharges including well newborns, 2017), St. Joseph's hospital Health Center (24,886 discharges, 2017), and Upstate University Hospital (32,411 discharges, 2017). The area also includes 12 nursing homes that generated 7290 new admissions during 2017.

The Syracuse hospitals and nursing homes provide primary and secondary acute care to an immediate service area with a population of approximately 600,000. The hospitals also provide tertiary care services to the 11 county Central New York Health Service Area with a population of approximately 1,400,000.

Historically, the Syracuse hospitals, nursing homes, and certified home health agencies have worked cooperatively to improve the efficiency and outcomes of care in the area. Most of these programs have been developed through the Hospital Executive Council, the collaborative planning organization for the hospitals [11].

## 3. Method

This study described the utilization and impact of cooperative efforts to improve care by the Syracuse hospitals and long term care providers between 2007 and 2017. A number of these efforts were continuations of programs implemented in the previous decade.

Historically, the Syracuse hospitals have maintained an inpatient admission

rate among the most conservative in New York State. The inpatient lengths of stay for the hospitals have been longer than the national average, especially for discharges to nursing homes and home health care. Much of this additional utilization has been generated by patients with relatively long stays.

In order to address these issues, the Syracuse hospitals developed a Difficult to Place Program beginning in 1998. The hospitals worked together to develop a set of core criteria for patients who were Difficult to Place in nursing homes and home health care. Each hospital could add additional criteria based on its own experience with Difficult to Place patients.

Each hospital has distributed a daily list of Difficult to Place patients to nursing homes and home health agencies in the area. The Hospital Executive Council has distributed a weekly list for the combined hospitals. The Hospital Executive Council list included all Difficult to Place patients discharged within the preceding seven days with the name and date of the admitting nursing home as well as Difficult to Place patients who remained in each hospital.

At the end of each month, the Hospital Executive Council has also distributed a Difficult to Place Summary for the previous month. The summary included numbers of Difficult to Place patients admitted within the month by nursing homes.

In order to address the needs of specific populations that were the most Difficult to Place, the Syracuse Hospitals and a number of local nursing homes have developed a series of Subacute and Complex Care Programs. The objective of these initiatives was to support the development of programs that skilled nursing facilities were not able to create with their own resources.

The Subacute Programs addressed individual post hospital services such as offsite transportation for dialysis, intravenous therapy, other single medications, and bariatric services. The Complex Care Programs addressed combinations of long term acute care services such as multiple intravenous antibiotics, specific high cost antibiotics, and extensive wound care. The Complex Care Programs involved more sophisticated clinical care and higher costs than the Subacute Programs.

The Subacute and Complex Care Programs were supported by Program Development funds. These resources were administered by the Hospital Executive Council. They were collected by the Council from the member hospitals and distributed in the form of grants to nursing homes admitting at least four patients. The volume criteria ensured that nursing homes did not receive funding for individual patients.

The first Subacute and Complex Care programs were implemented in 2004. Since then, individual programs have been developed to meet additional needs and phased out when no longer required. For example, the original intravenous therapy program was implemented in 2004 and phased out when a number of nursing homes had implemented their own services and no longer required start up funding.

The Difficult to Place, Subacute, and Complex Care Programs were developed over a long period of time involving three hospitals and a number of nursing homes. The full range of activities that comprised this process is beyond the scope of this study.

The first component of the study summarized utilization of the Subacute and Complex Care Programs between 2007 and 2017. Data were provided for the combined Syracuse hospitals and nursing homes.

The second component of the study identified lengths of stay in the combined Syracuse hospitals for discharges to nursing homes and certified home health care between 2011 and 2017. The stays were compared with severity adjusted national averages based on the All Patients Refined Diagnosis Related Group System developed by 3M™ Health Information Systems.

## 4. Results

The initial component of the study focused on utilization of programs implemented by the Syracuse hospitals and long term care providers to improve the efficiency of the health care system. Relevant data are summarized in **Table 1**.

The data concerning the Difficult to Place Program demonstrated annual admissions to nursing homes increased from 1027 to 1984 between 2007 and 2015 before declining to 1485 in 2017. The increase resulted from a combination of factors, including a 30.6 percent rise in the total number of new admissions to nursing homes between 2009 and 2015 and more extensive use of the Program by hospitals to reduce stays by referring larger numbers of patients to long term care. The increase in referrals probably included some overuse of the Program.

The data for the most recent years of the study suggested that use of the Difficult to Place Program leveled off between 2015 and 2017. This resulted in Difficult to Place patients accounting for approximately 20 percent of new admissions to nursing homes by 2017.

The study data also demonstrated that utilization for most of the Subacute Programs declined throughout the period. The amount of Program Development funds supporting these services declined between 2009 and 2017.

These trends resulted from the development of permanent programs for subacute services such as single intravenous antibiotic therapy, certain high cost medications, and bariatric services during this period. Once these services became permanent, Program Development funds were no longer necessary.

By 2017, the only Subacute Program that remained was the Patient Transportation Program, which supported stretcher transports to services not available in area nursing homes such as dialysis. The mean amount of funding for this service, approximately \$1,900, also reflected reduced use of the Program. The population and demographics of the population remained largely static during this time period.

During the most recent years of the study, the Complex Care Programs were initiated. These included multiple intravenous antibiotic therapy and long term

**Table 1.** Difficult to place nursing home placement utilization, Syracuse hospitals, 2007-2017.

	Number of Patients					
	2007	2009	2011	2013	2015	2017
Number of Difficult to Place Admissions	1027	1072	1247	1885	1984	1485
Number of New Admissions to Nursing Homes	6887	6319	6374	6704	8255	7290
Percent of New Admissions Difficult to Place	14.9	17.0	19.6	28.1	24.1	20.4
Subacute Programs						
Patient Transportation	0	23	17	13	30	43
Single Oral Medications	101	50	42	13	0	0
Single IV Medications	65	43	43	37	29	0
Single Other Medications	18	23	21	17	32	0
Bariatric	0	18	15	11	10	0
Extensive Wound Care	16	15	11	15	17	0
Other	0	0	6	2	0	0
Subacute Program Total	200	172	155	108	118	43
Complex Care Programs						
Multiple IV Antibiotics	0	0	0	2	22	26
Wound Care and Antibiotics	0	0	0	0	13	15
Other	0	0	0	0	3	0
Complex Care Program Total	0	0	0	2	38	41
Program Development Funds						
Subacute Programs	\$141,200	\$214,500	\$206,931	\$143,825	\$181,550	\$84,600
Complex Care Programs	\$0	\$0	\$0	\$4200	\$109,300	\$225,000

Source: Hospital Executive Council.

high cost antibiotics in nursing homes. The higher complexity of these services was reflected in the mean levels of Program Development Funding, \$2,800 to \$5,400, during 2015 and 2017.

The Syracuse hospitals and the Hospital Executive Council anticipate that the utilization levels for the Difficult to Place, Subacute, and Complex Care Programs for 2017 will approximate use of these initiatives for the immediate future. Based on these estimates, approximately 20 percent of new admissions to nursing homes will be Difficult to Place and 5 - 6 percent of the Difficult to Place patients will involve Subacute or Complex Care services.

The second component of the study concerned the estimated impact of the programs on inpatient lengths of stay for the Syracuse hospitals. This information was developed in the context of the severity of illness of these populations. Relevant data are summarized in **Table 2**.

The study data demonstrated that adult medicine lengths of stay for

**Table 2.** Hospital inpatient mean lengths of stay, adult medicine and adult surgery, discharges to nursing homes and home care, Syracuse hospitals, 2011-2017.

	2011	2013	2015	2017
<b>Discharges to Nursing Homes</b>				
<b>Adult Medicine</b>				
Number of Discharges	5237	4884	5623	5510
Mean Length of Stay (Days)	8.26	8.38	8.25	7.94
Severity Adjusted National Average (Days)	5.77	6.15	6.09	5.78
Length of Stay Difference	2.49	2.23	2.16	2.16
Patient Days Difference	13040.13	10891.32	12145.68	11901.60
<b>Adult Surgery</b>				
Number of Discharges	2931	3000	3445	3211
Mean Length of Stay (Days)	10.31	10.49	11.16	10.42
Severity Adjusted National Average (Days)	7.53	8.04	8.49	8.24
Length of Stay Difference	2.78	2.45	2.67	2.18
Patient Days Difference	8148.18	7350.00	9198.15	6999.98
<b>Discharges to Home Care</b>				
<b>Adult Medicine</b>				
Number of Discharges	6750	7400	6311	7331
Mean Length of Stay (Days)	6.68	6.25	6.42	5.61
Severity Adjusted National Average (Days)	5.46	5.70	5.71	5.38
Length of Stay Difference	1.22	0.55	0.71	0.23
Patient Days Difference	8235.00	4070.00	4480.81	1686.13
<b>Adult Surgery</b>				
Number of Discharges	4813	5051	4996	5158
Mean Length of Stay (Days)	7.34	7.07	6.86	6.20
Severity Adjusted National Average (Days)	6.63	6.80	6.64	6.60
Length of Stay Difference	0.71	0.27	0.22	-0.40
Patient Days Difference	3417.23	1363.77	1099.12	-2063.20

Data exclude obstetrics, mental health, alcohol/substance abuse treatment, rehabilitation and patients aged 0 - 17 years. Source: Hospital Executive Council.

discharges to nursing homes increased from 8.26 to 8.38 days between 2011 and 2013, before declining to 7.94 days in 2017. The difference between the adult medicine length of stay for the Syracuse hospitals and the severity adjusted national average declined from 2.49 to 2.16 days between 2011 and 2017.

During this period, the severity of illness of adult medicine patients in the hospitals increased between 2011 and 2015 as indicated by the rising severity adjusted national averages between these time periods. This resulted from the movement of short stay adult medicine patients to medical observation begin-

ning in 2014. This change resulted in an increase in severity of illness for remaining adult medicine inpatients. As a result of progress in length of stay reduction, the number of excess inpatient days for the service declined from 13,040 to 11,901 between 2011 and 2017.

The study data also demonstrated that adult surgery mean lengths of stay for discharges to nursing homes increased from 10.31 to 11.16 days between 2011 and 2015, before declining to 10.42 days in 2017. The severity of illness of adult surgery patients increased through most of this period, as indicated by the severity adjusted average length of stay for these patients. This increase resulted from the addition of surgical procedures and the aging of the inpatient surgery population. As a result of progress in length of stay reduction, the difference between the stay for the combined Syracuse hospitals and the severity adjusted national average declined from 2.78 to 2.18 days and the number of excess inpatient days declined from 8148 to 6999 between 2011 and 2017.

Although the programs implemented by the Syracuse hospitals and the Hospital Executive Council did not focus on home health care, it was recognized that they probably had some influence on use of this service. The study data demonstrated that between 2011 and 2017, the mean length of stay for adult medicine patients discharged to home health care declined from 6.68 to 5.61 days and the number of excess inpatient days declined from 8235 to 1686. At the same time, the mean length of stay for adult surgery patients discharged to home health care declined from 7.34 to 6.20 days. This was paralleled by a change from 3417 excess days to 2063 days saved. Some of the patient days saved for discharges to home care probably resulted from these programs.

## 5. Discussion

In the United States and elsewhere, the reduction of health care expenses continues to be a priority. Substitution of less expensive services has been one approach to this issue, especially through length of stay reduction.

This study described the recent history of programs implemented by the Syracuse hospitals, the Hospital Executive Council, and a number of nursing homes. The objectives of these programs were to support the transfer of long term acute care patient days to inpatient days in skilled nursing facilities. These initiatives have been implemented on a multihospital basis with a number of local nursing homes.

By 2017, the Difficult to Place Program implemented in Syracuse involved approximately 20 percent of new admissions to nursing homes. Most of these patients were individuals with chronic diagnoses and extended stays that did not make them candidates for rehabilitation programs.

The Subacute Programs were first implemented in 2004. They involved the development of services such as antibiotic therapy and patient transportation that were not originally available in area nursing homes.

Most importantly, the Subacute Programs were successful in stimulating the

development of these services in Syracuse. As nursing homes developed their own services, most of the Subacute Programs were phased out.

The Complex Care Programs were implemented within the past three years. They have involved the development of services for patients with high severity of illness such as multiple intravenous antibiotic therapy and high cost antibiotic medications. These Programs are the future of long term acute care in Syracuse. They were supported by relatively high levels of Program Development funds. They will probably expand during the next several years.

The study demonstrated that, for discharges to nursing homes, these programs reduced the total number of excess adult medicine and adult surgery patient days by 2288 between 2011 and 2017. At a conservative late stay cost of \$600 per patient day, this resulted in an annual savings of \$1,372,800.

At the times the programs were implemented, the participating providers were already involved in efforts to reduce hospital lengths of stay. Beyond the program development funds, the programs did not generate additional staff costs for the providers.

These Programs have provided one example of the types of services that can be implemented on a community wide basis to improve the efficiency of health care. They were implemented with limited costs through cooperation among hospital and long term care providers.

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