

## Statistical Brief #6

# Potentially Avoidable Hospitalizations: New York State Medicaid Program, 2009

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## Introduction

Hospital admissions for ambulatory care sensitive conditions are increasingly viewed as a way to improve the coordination of services between the inpatient and outpatient settings and to promote higher quality of care of outpatient care. Potentially preventable readmissions (PPR) are hospital admissions that could potentially have been prevented with the appropriate care during the initial admission, or adequate discharge planning and follow-up and coordination of care between the inpatient and outpatient settings. Prevention quality indicators (PQI) identify ambulatory care sensitive conditions for which hospital admissions might have been avoided if the patient had received timely and adequate care in the community. Previous statistical briefs have analyzed 2007 New York State Medicaid inpatient data to identify potentially preventable readmissions using the 3M PPR Software, version 26.1. Avoidable admissions, as indicated by the AHRQ prevention quality indicators, were also analyzed using 2007 Medicaid inpatient data (Statistical Brief #5). Together, potentially preventable readmissions and avoidable admissions are used in this report to identify potentially avoidable hospitalizations for the Medicaid population in New York State in 2009.

This report analyzes Medicaid inpatient hospital discharges for 2009 from all Article 28 (acute inpatient) hospitals. The PPR software, version 28.0, was used to identify readmissions that were potentially preventable within 30 days of the initial admission. The AHRQ logic, version 4.2, was used to identify avoidable admissions based on all the adult PQIs and a subset of 4 pediatric quality indicators. The potentially preventable readmissions were identified first and then set aside. The remaining admissions were analyzed to determine if any could have been avoided, as indicated by the prevention quality indicators. By using this approach, if the admission was already identified as a PPR, it could not be counted again as a PQI and therefore the double counting of an admission as both a potentially preventable readmission and avoidable admission was circumvented. If the hospitalization was identified as either a PPR or PQI, it was considered a potentially avoidable hospitalization. Results are presented for both fee for service (FFS) and managed care (MC) admissions, as well as by the recipient's region of residence, New York City (NYC) and the rest of the state (ROS).

## Findings

### *Potentially Preventable Readmissions by Region*

The number and cost of potentially preventable readmissions within 30 days of the initial admission by recipient status and region are reported in Table 1. In 2009, 62,043 potentially preventable readmissions occurred after an initial admission. These readmissions cost a total of \$589 million. Patients living in NYC accounted for 69% of these readmissions and 74% of the total cost. Nearly three-fourths of the PPRs (72%) and approximately 80% of the total cost for PPRs were associated with FFS admissions. In NYC, 73% of all PPRs were FFS admissions, compared to 70% in the rest of the state. FFS admissions in NYC represented the highest number of PPRs and also the highest cost.

## HIGHLIGHTS

Two types of potentially avoidable hospitalizations were identified: potentially preventable readmissions (readmissions that could potentially have been prevented with the appropriate inpatient or post-discharge care) and hospital admissions for ambulatory care sensitive conditions.

In 2009, there were 62,043 potentially preventable readmissions occurring within 30 days of an initial admission costing a total of \$589 million.

There were an additional 90,546 potentially avoidable ambulatory care sensitive admissions, costing \$824 million.

Together, there were a total of 152,589 potentially avoidable hospitalizations costing \$1.4 billion, \$1.1 billion for fee for service inpatient admissions and \$335 million for managed care inpatient admissions.

13% of hospitalizations for managed care recipients and 20% of hospitalizations for fee for service recipients were potentially avoidable

New York City recipients accounted for 67% of all the potentially avoidable hospitalizations and 72% of the total dollars spent on these hospitalizations.

## ***Avoidable Admissions by Region***

An avoidable admission was defined as an admission that was for an ambulatory care sensitive condition, as defined by the PQI logic. An admission could be identified by more than one PQI, but in this analysis if the admission flagged on multiple PQIs it was counted only once as an avoidable admission. In 2009, there were a total of 90,546 avoidable admissions, not already identified as a potentially preventable readmission, costing \$824 million. Table 2 illustrates that 58,868 avoidable admissions (65%) were for NYC recipients. These NYC admissions were 70% of the total cost for all avoidable admissions. Slightly over two-thirds of all avoidable admissions (68%) were FFS, accounting for 74% of the overall cost of avoidable admissions. As was the case for PPRs, the majority of avoidable admissions and associated costs were FFS admissions in the NYC region.

Table 5 contains the number of avoidable admissions for each PQI by recipient status. Avoidable admissions are the number of admissions that were identified by each particular PQI (numerator). At risk admissions are the number of admissions that met the inclusion criteria to be considered for the PQI (denominator). An admission could have more than one PQI, so the total number of avoidable admissions, if summed, is more than the total avoidable admissions in Table 2. Statewide, the most frequent avoidable admissions were admissions for adult asthma, bacterial pneumonia and congestive heart failure. For managed care admissions, avoidable admissions were most frequently identified by admissions for adult asthma, pediatric asthma and low birth weight. The most frequent prevention quality indicators for fee for service admissions were congestive heart failure, bacterial pneumonia and adult asthma. Perforated appendix and pediatric asthma admissions were the prevention quality indicators with the highest number of admissions per 100 admissions eligible, regardless of recipient status. Also frequent were low birth weight admissions for FFS recipients and pediatric gastroenteritis for managed care admissions.

## ***Potentially Avoidable Hospitalizations by Region***

A potentially avoidable hospitalization was classified as any hospital admission that was either a potentially preventable readmission or an avoidable admission as identified by the PQIs. Table 3 contains all the hospital inpatient discharges and cost for Medicaid in 2009 by recipient status and region.

Table 4 also contains the same information for the potentially avoidable hospitalizations. For NYC residents, 18% of their discharges in 2009 were potentially avoidable hospitalizations, compared to 16% in the rest of the state.

In managed care, 13% of discharges were potentially avoidable whereas 20% of FFS were potentially avoidable hospitalizations. The total cost of the 152,589 potentially avoidable hospitalizations statewide was slightly over \$1.4 billion (\$1.1 billion for fee for service admissions and \$335 million for managed care admissions). NYC recipients accounted for 67% of all the potentially avoidable hospitalizations and 72% of the total cost.

## ***Data Source and Methods***

The data upon which these analyses were performed were extracted from New York State's Medicaid OHIP Data Mart. The data set contained 871,496 inpatient hospital discharges from article 28 facilities during 2009.

The first step was to define those admissions that were potentially preventable readmissions. The PPR software, created by 3M, version 28.0 was used, with the readmission window set at 30 days. The results in this brief cannot be compared to the PPR results presented in Statistical Brief #2, as version 28.0 was used for these analyses and version 26.1 of the PPR software was used for the 2007 analyses. There have been changes to the logic (particularly the types of events to include and exclude) so the PPR rates are not comparable.

Then the remaining admissions were run through the PQI numerator logic to determine if the admission was for an ambulatory care sensitive condition and therefore the admission could have been avoided. The PQI logic from version 4.2 (September 2010 release) was used. All the PQIs were evaluated, along with the 4 pediatric quality indicators listed above. The PQI numerator logic was used to identify PQI admissions. The denominator was defined as those hospital inpatient admissions that were not excluded by any of the numerator or denominator exclusion criteria. For example, in PQI 1, Diabetes Short-term Complications, the denominator was those admissions not already defined as a potentially preventable readmission, age 18 and over, and the MDC was not 14 or missing. Transfers were not excluded (as the PQI logic suggests) because this information was not in the data set. The numerator was the admissions in the at risk population that had one of the primary diagnosis codes for diabetes short-term complications.

The admission costs were determined using the paid amount on the claim for FFS, which had the GME portion of the bill factored into the paid amount. For managed care records, the cost was estimated using the shadow pricing algorithm. The GME portion of the bill was not included in the shadow price cost.

**Table 1. Number and Cost of 30 Day Potentially Preventable Readmissions, by Medicaid Type and Region**

	Fee for Service Admissions	Fee for Service Cost	Managed Care Admissions	Managed Care Cost	Total Admissions	Total Cost
<b>NYC</b>	31,342	\$349,071,190	11,640	\$87,747,192	42,982	\$436,818,382
<b>ROS</b>	13,339	\$116,650,955	5,722	\$36,029,959	19,061	\$152,680,914
<b>Statewide</b>	44,681	\$465,722,145	17,362	\$123,777,151	62,043	\$589,499,296

**Table 2. Number and Cost of Avoidable Admissions, by Medicaid Type and Region**

	Fee for Service Admissions	Fee for Service Cost	Managed Care Admissions	Managed Care Cost	Total Admissions	Total Cost
<b>NYC</b>	37,917	\$421,328,697	20,951	\$156,012,812	58,868	\$577,341,509
<b>ROS</b>	23,602	\$190,985,693	8,076	\$55,521,984	31,678	\$246,507,677
<b>Statewide</b>	61,519	\$612,314,390	29,027	\$211,534,796	90,546	\$823,849,186

**Table 4. Total Medicaid Inpatient Discharges, by Medicaid Type and Region**

	Fee for Service Admissions	Fee for Service Cost	Managed Care Admissions	Managed Care Cost	Total Admissions	Total Cost
<b>NYC</b>	317,926	\$3,120,862,538	234,883	\$1,372,025,905	552,809	\$4,492,888,442
<b>ROS</b>	205,661	\$1,414,718,947	113,026	\$540,458,207	318,687	\$1,955,177,154
<b>Statewide</b>	523,587	\$4,535,581,484	347,909	\$1,912,484,112	871,496	\$6,448,065,596

**Table 5. Total Potentially Avoidable Hospitalizations, by Medicaid Type and Region**

	Fee for Service Admissions	Fee for Service Cost	Managed Care Admissions	Managed Care Cost	Total Admissions	Total Cost
<b>NYC</b>	69,259	\$770,399,887	32,591	\$243,760,004	101,850	\$1,014,159,891
<b>ROS</b>	36,941	\$307,636,648	13,798	\$91,551,943	50,739	\$399,188,591
<b>Statewide</b>	106,200	\$1,078,036,535	46,389	\$335,311,947	152,589	\$1,413,348,482

**Table 5. Frequency and Rate of Avoidable Admission, by Prevention Quality Indicator and Medicaid Type**

Prevention Quality Indicator	Fee for Service Admissions			Managed Care Admissions			Total Admissions		
	Avoidable Admissions	At Risk Admissions	Rate per 100	Avoidable Admissions	At Risk Admissions	Rate per 100	Avoidable Admissions	At Risk Admissions	Rate per 100
PQI #1 Diabetes Short-Term Complication Admissions	2,243	382,090	0.59	1,268	124,404	1.02	3,511	506,494	0.69
PQI #2 Perforated Appendix Admissions	597	2,344	25.47	286	1,599	17.89	883	3,943	22.39
PQI #3 Diabetes Long-Term Complication Admissions	5,263	382,090	1.38	1,812	124,404	1.46	7,075	506,494	1.40
PQI #5 Chronic Obstructive Pulmonary Disease Admissions	5,764	382,090	1.51	1,261	124,404	1.01	7,025	506,494	1.39
PQI #7 Hypertension Admissions	2,926	371,713	0.79	1,060	119,565	0.89	3,986	491,278	0.81
PQI #8 Congestive Heart Failure Admissions	9,688	371,901	2.60	1,945	119,603	1.63	11,633	491,504	2.37
PQI #9 Low Birth Weight Admissions	4,037	37,529	10.76	3,624	75,176	4.82	7,661	112,705	6.80
PQI #10 Dehydration Admissions	2,267	382,090	0.59	532	124,404	0.43	2,799	506,494	0.55
PQI #11 Bacterial Pneumonia Admissions	9,467	340,974	2.78	2,302	117,117	1.97	11,769	458,091	2.57
PQI #12 Urinary Tract Infection Admissions	6,630	342,959	1.93	1,618	118,097	1.37	8,248	461,056	1.79
PQI #13 Angina Without Procedure Admissions	959	371,901	0.26	528	119,603	0.44	1,487	491,504	0.30
PQI #14 Uncontrolled Diabetes Admissions	1,661	382,090	0.43	672	124,404	0.54	2,333	506,494	0.46
PQI #15 Adult Asthma Admissions	7,338	381,785	1.92	4,523	124,316	3.64	11,861	506,101	2.34
PQI #16 Lower Extremity Amputation among diabetics Admissions	1,182	382,068	0.31	366	124,401	0.29	1,548	506,469	0.31
<b>Pediatric Prevention Quality Indicator</b>	<b>Avoidable Admissions</b>	<b>At Risk Admissions</b>	<b>Rate per 100</b>	<b>Avoidable Admissions</b>	<b>At Risk Admissions</b>	<b>Rate per 100</b>	<b>Avoidable Admissions</b>	<b>At Risk Admissions</b>	<b>Rate per 100</b>
PDI #14 Pediatric Asthma Admissions	1,249	14,175	8.81	4,366	24,652	17.71	5,615	38,827	14.46
PDI #15 Diabetes Short-Term Complication Admissions	111	10,337	1.07	278	14,343	1.94	389	24,680	1.58
PDI #16 Gastroenteritis Admissions	612	19,065	3.21	2,043	36,935	5.53	2,655	56,000	4.74
PDI #18 Urinary Tract Infection Admissions	251	19,520	1.29	802	38,665	2.07	1,053	58,185	1.81