HEALTHCARE COST AND UTILIZATION PROJECT

Agency for Healthcare Research and Quality

STATISTICAL BRIEF #66

January 2009

Medicare Hospital Stays: Comparisons between the Fee-for-Service Plan and Alternative Plans, 2006

Bernard Friedman, Ph.D., H. Joanna Jiang, Ph.D., and C. Allison Russo, M.P.H.

Highlights

- Patients in alternative plans accounted for 14.4 percent of all elderly Medicare hospital stays in 2006. These patients were somewhat younger, from higher income neighborhoods, and more often from minority ethnic groups than patients in the mainstream FFS plan.
- Hospitalized patients covered by alternative plans tended to have a lower severity of illness (35.5 percent with major or extreme loss of function versus 38.5 in FFS plan), but were more likely to be admitted through emergency departments (67.4 percent versus 58.6 percent in FFS plan).
- Overall, Medicare patients in alternative plans used fewer hospital resources than those in the FFS plan by averaging a shorter length of stay and a lower total cost per hospitalization.
- In general, the most common principal reasons for hospitalization among Medicare enrollees in both FFS plans and alternative plans were similar, as were the utilization of specific procedures during hospitalization.
- Enrollees in alternative plans had few substantial and consistent differences in the proportion of potentially preventable hospitalizations, as compared to enrollees in FFS plans. About 18 percent of stays among both groups were potentially preventable admissions.

Introduction

More than 37 percent of hospital discharges in 2006 were beneficiaries of Medicare, who accounted for 47 percent of total hospital costs.[1] The proportion of Medicare beneficiaries enrolled in plans that are alternative to the mainstream fee-for-service (FFS) plan grew from 10 percent in 1995 to 20 percent in 2007 according to the Congressional Budget Office.[2] Most of these alternative plans are part of the Medicare Advantage program that pays plans a capitated fee per enrollee per month. The Medicare program does not collect detailed hospital discharge summaries for this important subset of patients.

Many differences exist between alternative plans and the mainstream FFS plan that may result in differing hospital utilization patterns. First, the alternative plans can selectively negotiate with hospitals and physicians, adopt policies to limit particular services, and offer additional services, such as preventative care services, care management programs, and prescription drug coverage. Second, due to differing enrollment distributions, alternative plans may not attract a representative cross-section of mainstream Medicare FFS enrollees. Also, the alternative plans cannot insist upon using payment rates and quality improvement incentives employed by the mainstream Medicare FFS program.

The purpose of this Statistical Brief is to describe basic differences in hospital stays between these two segments of Medicare hospital discharges. Only elderly Medicare beneficiaries (65 years and older) are included. Differences in patient characteristics, as well as utilization characteristics such as severity of illness, discharge status, and resource use per case are described. Moreover, information on principal reasons for admission, commonly performed procedures, and potentially avoidable hospital stays is presented. Data are drawn from 13 states that distinguish Medicare FFS plans versus alternative Medicare plans. These state databases contain about 38 percent of all elderly Medicare discharges in the country.

[1] Statistics from HCUPnet at website http://hcupnet.ahrq.gov.
[2] U.S. Congressional Budget Office, Statement of Peter Orszag, Director, before the Senate Finance Committee, published 4/11/2007.

Findings

In 2006, approximately 5.7 million hospitalizations occurred among Medicare enrollees in 13 states (AZ, CA, FL, GA, KS, MD, MA, MI, NJ, NY, OH, TN, and WI) whose hospital discharge data distinguish Medicare FFS plans and alternative Medicare plans. Beneficiaries enrolled in alternative Medicare plans accounted for 14.4 percent of these hospital stays.

Hospitalized Medicare enrollees in the FFS plan versus alternative plans, by patient characteristics
Compared to patients in the FFS plan, hospitalized Medicare patients in alternative plans were somewhat younger and more often from minority ethnic groups, but less often from lower income neighborhoods (table 1). Perhaps indicative of the population enrolled in these programs, the percentage of hospitalized patients 85 years and older was slightly lower in the alternative Medicare plans (20.5 percent versus 23.6 percent for the FFS plan), with the distribution skewed toward the 65 to 74 age group.

Ethnic minorities accounted for a larger share of hospitalized Medicare enrollees in alternative plans, particularly among Hispanics (figure 1). Whites accounted for 73.3 percent of alternative Medicare plan hospitalizations compared to 80.7 percent of stays covered by the FFS plan. This difference was largely attributed to the higher percentage of hospitalizations among Hispanics in the alternative plans (11.5 percent versus 6.0 percent in the FFS plan). Blacks also accounted for a slightly larger share of hospitalizations covered by Medicare alternative plans—10.5 percent versus 9.4 percent in the FFS plan.

Although ethnic minorities accounted for a higher percentage of hospitalized Medicare enrollees in the alternative plans, patients in these plans were less often from lower income neighborhoods (49.4 percent versus 53.3 percent in the FFS plan).

Hospitalized Medicare enrollees in the FFS plan versus alternative plans, by utilization characteristics
Table 1 also demonstrates that the average hospital stay was nearly one day shorter among alternative plan enrollees (5.2 days versus 5.9 days in the FFS plan). Hospitalizations covered by Medicare alternative plans also had a lower total cost per stay ($10,800 versus $11,100 for stays covered by the FFS plan).

Moreover, hospitalized Medicare enrollees in alternative plans tended to have lower severity of illness scores—35.5 percent had major or extreme loss of function compared to 38.5 percent in the FFS plan (figure 2). Yet, as shown in table 1, the percentage of patients admitted through the emergency department was significantly higher (67.4 percent versus 58.6 percent in the FFS plan). Compared to patients in the FFS plan, a higher proportion of alternative plan patients had routine discharges (52.2 percent versus 47.2 percent in the FFS plan), and fewer were discharged to long-term care or alternative care facilities (24.0 percent versus 29.0 percent in the FFS plan).

Common principal diagnoses and frequently used procedures among hospitalized Medicare enrollees in the FFS plan versus alternative plans
In general, the most common principal reasons for hospitalization among Medicare enrollees in both FFS plans and alternative plans were similar (table 2). Yet, the proportion of hospitalizations for non-specific chest pain was about 40 percent higher among enrollees in alternative Medicare plans, while the proportion of hospitalizations for acute myocardial infarction (heart attack) was nearly 27 percent higher. Alternatively, the percentage of hospitalizations for rehabilitation care among patients in the FFS plan is twice that found among patients in alternative plans (2.2 percent versus 1.1 percent among patients in alternative plans).

Similarly, the utilization of procedures during hospitalization among Medicare enrollees in FFS plans and alternative plans was generally comparable (table 3). However, other vascular catheterization procedures, which includes the use of a catheter to measure blood pressure more effectively or administer intravenous fluids or medications, were performed in 4.5 percent of stays covered by FFS plans—16 percent higher than the 3.8 percent of stays covered by alternative Medicare plans. Conversely, the use of CT head scans occurred at a rate nearly 40 percent higher among hospitalized patients in alternative Medicare plans (1.6 percent versus 1.1 percent among patients in the FFS plan).

Potentially preventable hospitalizations among hospitalized Medicare enrollees in the FFS plan versus alternative plans
Though alternative plans have a financial incentive to substitute more and better ambulatory care for inpatient care, figure 3 demonstrates that patients in alternative plans and the FFS plan had an equal proportion of potentially preventable hospitalizations – about 18 percent. Moreover, the differences in the proportion of hospitalizations for 13 potentially preventable admission indicators among both groups of enrollees were neither substantial nor consistent (table 4). The most common potentially preventable hospitalization among Medicare enrollees was for congestive heart failure. Admissions for this condition accounted for 5.8 percent of patients in the FFS plan and 5.6 percent of patients in alternative plans. Hospitalized patients in alternative plans also had slightly lower percentages of admissions for other preventable conditions such as bacterial pneumonia, chronic obstructive pulmonary disease (COPD), urinary tract infection, and dehydration. However, patients in alternative plans had somewhat higher percentages of admissions than those in the FFS plan among indicators for long term complications of diabetes, hypertension, lower extremity amputation, angina, and short term complications of diabetes. Although the differing age and disease severity distributions shown in table 1 and figure 2 suggests that hospitalized patients in alternative plan are generally healthier, this effect on preventable admissions could be offset by the higher proportion of hospitalized alternative plan enrollees from minority groups, which tend to have a higher prevalence of chronic diseases such as hypertension and diabetes.

Data Source

The estimates in this Statistical Brief are based on all available discharges from the HCUP 2006 Statewide Inpatient Databases for the following 13 states: AZ, CA, FL, GA, KS, MD, MA, MI, NJ, NY, OH, TN, and WI.

Definitions

Types of hospitals included in HCUP
HCUP is based on data from community hospitals, defined as short-term, non-Federal, general and other hospitals, excluding hospital units of other institutions (e.g., prisons). HCUP data include OB-GYN, ENT, orthopedic, cancer, pediatric, public, and academic medical hospitals. They exclude long-term care, rehabilitation, psychiatric, and alcoholism and chemical dependency hospitals, but these types of discharges are included if they are from community hospitals.

Unit of analysis
The unit of analysis is the hospital discharge (i.e., the hospital stay), not a person or patient. This means that a person who is admitted to the hospital multiple times in one year will be counted each time as a separate "discharge" from the hospital.

Cost estimation
Total hospital charges for any hospital discharge were converted to costs using cost-to-charge ratios (CCRs) based on hospital accounting reports from the Centers for Medicare and Medicaid Services (CMS).[3] Costs are meant to reflect the actual costs of production, while charges represent what the hospital billed for the case. When applied to all discharges at the hospital, the hospital-wide inpatient CCR removes the effects of well-known differences in markup between hospitals. In a subset of states, detailed charges for every case are reported. Each detailed charge at a hospital in those states can be converted to cost using CMS accounting data at the departmental level. Component costs for each hospital discharge in the states with detailed data are added and pooled by Clinical Classification (CCS) category of the patient. This yields a set of adjustments that correct hospital-wide CCRs for systematic differences in the composition of services in different CCS categories. Hospital cost and charges do not include professional (physician) fees billed separately.

[3] HCUP Cost-to-Charge Ratio Files (CCR). Healthcare Cost and Utilization Project (HCUP). 2001–2006. U.S. Agency for Healthcare Research and Quality, Rockville, MD. See http://www.hcup-us.ahrq.gov.

Primary payer
Each hospitalization and its related hospital bill are attributed to the payer who was expected by the hospital to pay the major portion of the bill (i.e., the expected primary payer). In the 13 states for this report, Medicare coverage is divided into mainstream FFS coverage and alternative plans that are mostly Medicare Advantage plans paid by capitation rates from CMS.

Diagnoses, Procedures and Clinical Classifications Software (CCS)
The CCS categories for diagnoses or procedures offer clinically meaningful categories.[4] This "clinical grouper" makes it easier to quickly understand patterns of principal diagnoses and procedure use.

Prevention Quality Indicators
The Prevention Quality Indicators (PQIs) are part of a set of AHRQ Quality Indicators (QIs) developed by investigators at Stanford University and the University of California under a contract with AHRQ. The PQIs are a set of measures that can be used with hospital inpatient discharge data to identify quality of care for "ambulatory care-sensitive conditions." These are conditions for which good outpatient care can potentially prevent the need for hospitalization or for which early intervention can prevent complications or more severe disease. PQI rates can also be affected by other factors, such as disease prevalence.

Further information on the AHRQ QIs, including documentation and free software downloads, is available at http://www.qualityindicators.ahrq.gov/index.htm. This Web site includes information on the new version of the PQIs, Version 3.1. It also includes information on the new Pediatric Quality Indicators (PDIs), which includes the hospital admission rate measures for pediatric asthma and pediatric gastroenteritis.

About HCUP

HCUP is a family of powerful health care databases, software tools, and products for advancing research. Sponsored by the Agency for Healthcare Research and Quality (AHRQ), HCUP includes the largest all-payer encounter-level collection of longitudinal health care data (inpatient, ambulatory surgery, and emergency department) in the United States, beginning in 1988. HCUP is a Federal-State-Industry Partnership that brings together the data collection efforts of many organizations—such as State data organizations, hospital associations, private data organizations, and the Federal government—to create a national information resource.

For more information about HCUP, visit http://www.hcup-us.ahrq.gov/.

HCUP would not be possible without the contributions of the following data collection Partners from across the United States:

Arizona Department of Health Services
Arkansas Department of Health
California Office of Statewide Health Planning and Development
Colorado Hospital Association
Connecticut Hospital Association
Florida Agency for Health Care Administration
Georgia Hospital Association
Hawaii Health Information Corporation
Illinois Department of Public Health
Indiana Hospital Association
Iowa Hospital Association
Kansas Hospital Association
Kentucky Cabinet for Health and Family Services
Maine Health Data Organization
Maryland Health Services Cost Review Commission

[4] HCUP CCS. Healthcare Cost and Utilization Project (HCUP). August 2006. U.S. Agency for Healthcare Research and Quality, Rockville, MD. http://www.hcup-us.ahrq.gov.

Massachusetts Division of Health Care Finance and Policy
Michigan Health & Hospital Association
Minnesota Hospital Association
Missouri Hospital Industry Data Institute
Nebraska Hospital Association
Nevada Department of Health and Human Services
New Hampshire Department of Health & Human Services
New Jersey Department of Health and Senior Services
New York State Department of Health
North Carolina Department of Health and Human Services
Ohio Hospital Association
Oklahoma State Department of Health
Oregon Association of Hospitals and Health Systems
Rhode Island Department of Health
South Carolina State Budget & Control Board
South Dakota Association of Healthcare Organizations
Tennessee Hospital Association
Texas Department of State Health Services
Utah Department of Health
Vermont Association of Hospitals and Health Systems
Virginia Health Information
Washington State Department of Health
West Virginia Health Care Authority
Wisconsin Department of Health and Family Services
Wyoming Hospital Association

For additional HCUP statistics, visit HCUPnet, our interactive query system at http://hcupnet.ahrq.gov/.

For More Information

For a detailed description of HCUP, please refer to the following publications:

Steiner, C., Elixhauser, A., Schnaier, J. The Healthcare Cost and Utilization Project: An Overview. *Effective Clinical Practice* 5(3):143–51, 2002.

Suggested Citation

Freidman, B. (AHRQ), Jiang, H.J. (AHRQ) and Russo, C.A. (Thomson Reuters). *Medicare Hospital Stays: Comparisons between the Fee-for-Service Plan and Alternative Plans, 2006*. HCUP Statistical Brief #66. January 2009. Agency for Healthcare Research and Quality, Rockville, MD. http://www.hcup-us.ahrq.gov/reports/statbriefs/sb66.pdf

* * *

AHRQ welcomes questions and comments from readers of this publication who are interested in obtaining more information about access, cost, use, financing, and quality of health care in the United States. We also invite you to tell us how you are using this Statistical Brief and other HCUP data and tools, and to share suggestions on how HCUP products might be enhanced to further meet your needs. Please e-mail us at hcup@ahrq.gov or send a letter to the address below:

Irene Fraser, Ph.D., Director
Center for Delivery, Organization, and Markets
Agency for Healthcare Research and Quality
540 Gaither Road
Rockville, MD 20850

Table 1. Characteristics of Hospitalized Medicare Enrollees Age 65 and Older, 2006*

	Medicare Enrollees in FFS Plan	Medicare Enrollees in Alternative Plans	All Medicare Enrollees	*p*-value**
N of Discharges:	4,863,657	815,382	5,679,039	
Patient Characteristics:				
Male (%)	42.0	44.4	42.4	<0.01
Age				<0.01
65-74 years (%)	34.4	36.2	34.6	
75-84 years (%)	42.0	43.4	42.2	
85+ years (%)	23.6	20.5	23.2	
Median Income in Patient ZIP Code: Lower Half of National Distribution (%)	53.3	49.4	52.7	<0.01
Utilization Characteristics:				
Average Length of Stay (days)	5.9	5.2	5.8	<0.01
Average Total Cost of Stay (cost of production)	$11,100	$10,800	$11,100	<0.01
Admission Source: Emergency Department (%)	58.6	67.4	59.9	<0.01
Average Number of Different Chronic Conditions	4.6	4.5	4.6	<0.01
Discharge Status				<0.01
Routine (%)	47.2	52.2	48.0	
Transfer to Short-Term Hospital (%)	2.5	2.9	2.6	
Transfer to Other Facility (including long-term care) (%)	29.0	24.0	28.3	
Home Health Care (%)	16.6	16.2	16.5	
Died (%)	4.1	4.0	4.1	*

* Includes 13 states with reporting on type of Medicare enrollment (AZ, CA, FL, GA, KS, MD, MA, MI, NJ, NY, OH, TN, and WI).
** For a continuous variable, or for a dichotomous variable, the test is a t-test for group difference in means between enrollees in the FFS plan and alternative plans; categorical variables are tested by chi-square for dissimilar breakdown rates.
Source: Agency for Healthcare Research and Quality, Center for Delivery, Organization, and Markets, Healthcare Cost and Utilization Project, State Inpatient Databases, 2006.

Table 2. Most Common Principal Diagnoses Among Hospitalized Medicare Enrollees Age 65 and Older, 2006*

		Medicare Enrollees in Mainstream FFS Program			Medicare Enrollees in Alternative Plans		
Rank All	**Top 20 Principal Diagnoses, CCS Category**	**N**	**Rank FFS**	**%**	**N**	**Rank Alt**	**%**
	N of Discharges	4,863,657		.	815,382		.
1	Congestive heart failure, nonhypertensive	294,585	1	6.1	47,914	1	5.9
2	Pneumonia	243,408	2	5.0	35,878	3	4.4
3	Coronary atherosclerosis and other heart diseases	220,247	3	4.5	38,461	2	4.7
4	Cardiac dysrhythmias	177,823	4	3.7	30,958	4	3.8
5	Osteoarthritis	159,983	5	3.3	27,629	6	3.4
6	Septicemia (except in labor)	153,314	6	3.2	22,947	9	2.8
7	Acute myocardial infarction	132,409	8	2.7	28,115	5	3.5
8	Chronic obstructive pulmonary disease and bronchiectasis	136,639	7	2.8	21,135	10	2.6
9	Acute cerebrovascular disease	129,111	9	2.7	25,084	7	3.1
10	Urinary tract infections	117,205	10	2.4	17,998	11	2.2
11	Complication of device, implant or graft	107,960	11	2.2	16,753	13	2.1
12	Nonspecific chest pain	100,111	13	2.1	23,567	8	2.9
13	Rehabilitation care, fitting of prostheses, and adjustment of devices	107,951	12	2.2	8,860	26	1.1
14	Fracture of neck of femur (hip)	97,945	14	2.0	17,345	12	2.1
15	Fluid and electrolyte disorders	95,197	15	2.0	14,532	15	1.8
16	Acute and unspecified renal failure	89,245	16	1.8	15,013	14	1.8
17	Respiratory failure, insufficiency, arrest (adult)	82,574	17	1.7	12,394	18	1.5
18	Gastrointestinal hemorrhage	79,063	18	1.6	14,093	16	1.7
19	Spondylosis, intervertabral disc disorders, other back problems	75,582	19	1.6	11,201	21	1.4
20	Syncope	71,232	20	1.5	13,612	17	1.7

*Includes 13 states with reporting on type of Medicare enrollment (AZ, CA, FL, GA, KS, MD, MA, MI, NJ, NY, OH, TN, and WI).
Source: Agency for Healthcare Research and Quality, Center for Delivery, Organization, and Markets, Healthcare Cost and Utilization Project, State Inpatient Databases, 2006.

Table 3. Most Commonly Utilized Procedures Among Hospitalized Medicare Enrollees Age 65 and Older, 2006*

		Medicare Enrollees in Mainstream FFS Program			Medicare Enrollees in Alternative Plans		
Rank All	**Top 20 All-Listed Procedures, CCS Category**	**N**	**Rank FFS**	**%**	**N**	**Rank Alt**	**%**
1	Blood transfusion	542,333	1	8.1	102,995	1	8.8
2	Other vascular catheterization, not heart	302,660	2	4.5	44,258	5	3.8
3	Diagnostic cardiac catheterization, coronary arteriography	285,936	3	4.3	50,798	3	4.4
4	Other O.R. procedures on vessels other than head and neck	283,914	4	4.3	46,859	4	4.0
5	Other therapeutic procedures	267,837	5	4.0	54,956	2	4.7
6	Upper gastrointestinal endoscopy, biopsy	246,345	6	3.7	39,094	6	3.4
7	Respiratory intubation and mechanical ventilation	215,917	7	3.2	38,395	7	3.3
8	Other non-O.R. therapeutic cardiovascular procedures	193,404	8	2.9	32,383	9	2.8
9	Diagnostic ultrasound of heart (echocardiogram)	167,612	9	2.5	32,953	8	2.8
10	Percutaneous coronary angioplasty (PTCA)	157,791	10	2.4	26,028	10	2.2
11	Hemodialysis	145,990	11	2.2	20,853	12	1.8
12	Colonoscopy and biopsy	128,393	12	1.9	22,219	11	1.9
13	Arthroplasty knee	113,843	13	1.7	19,311	13	1.7
14	Insertion, revision, replacement, removal of cardiac pacemaker or cardioverter/defibr	110,755	14	1.7	19,237	14	1.7
15	Enteral and parenteral nutrition	104,546	15	1.6	15,675	17	1.4
16	Hip replacement, total and partial	90,243	16	1.4	16,150	16	1.4
17	Physical therapy exercises, manipulation, and other procedures	86,574	17	1.3	13,421	19	1.2
18	Incision of pleura, thoracentesis, chest drainage	81,521	18	1.2	14,028	18	1.2
19	Computerized axial tomography (CT) scan head	74,392	20	1.1	18,092	15	1.6
20	Treatment, fracture or dislocation of hip and femur	74,681	19	1.1	13,220	20	1.1

*Includes 13 states with reporting on type of Medicare enrollment (AZ, CA, FL, GA, KS, MD, MA, MI, NJ, NY, OH, TN, WI).

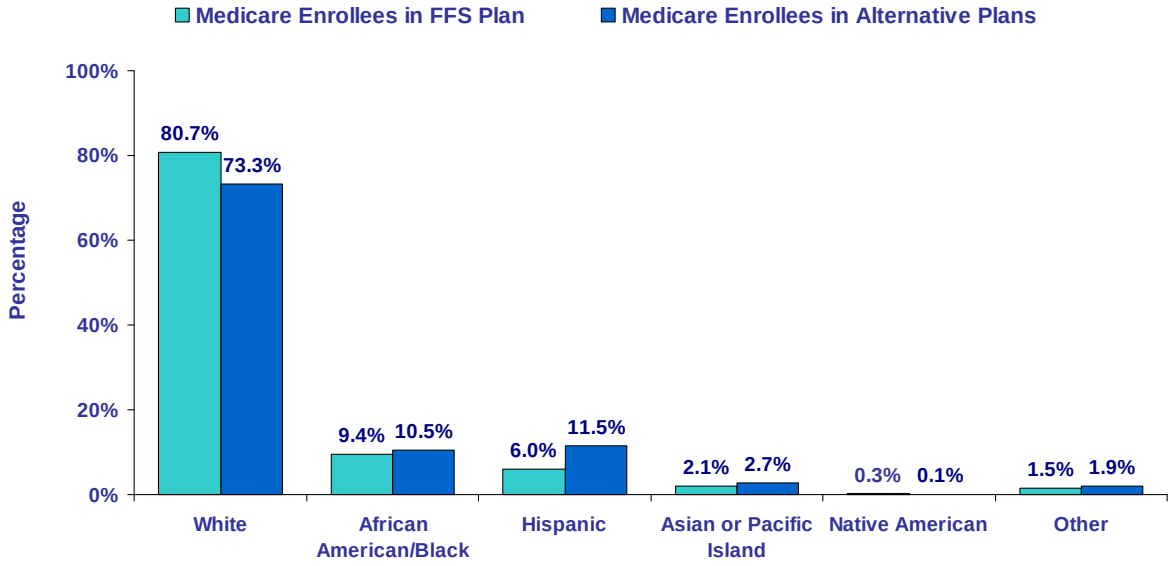
Source: Agency for Healthcare Research and Quality, Center for Delivery, Organization, and Markets, Healthcare Cost and Utilization Project, State Inpatient Databases, 2006.

Table 4. Indicators for Potentially Preventable Hospitalizations Among Hospitalized Medicare Enrollees Age 65 and Older, 2006*

Potentially Preventable Admission Indicator**:	Medicare Enrollees in FFS Program		Medicare Enrollees in Alternative Plans	
	N	%†	N	%†
Congestive heart failure	283,687	5.83	45,465	5.58
Bacterial pneumonia	210,728	4.33	31,951	3.92
COPD	104,254	2.14	16,664	2.04
Urinary tract infection	97,916	2.01	14,985	1.84
Dehydration	57,571	1.18	8,252	1.01
Diabetes long term complications	45,464	0.93	9,628	1.18
Adult asthma	33,408	0.69	5,809	0.71
Hypertension	17,226	0.35	3,275	0.40
Lower extremity amputation	13,470	0.28	2,792	0.34
Angina	11,046	0.23	2,373	0.29
Diabetes uncontrolled	5,206	0.11	931	0.11
Perforated appendix	4,713	0.10	922	0.11
Diabetes short term complications	4,608	0.09	1,012	0.12

* Includes 13 states with reporting on type of Medicare enrollment (AZ, CA, FL, GA, KS, MD, MA, MI, NJ, NY, OH, TN, and WI).
** Specified in documented measures and downloadable software for the AHRQ Prevention Quality Indicators (PQIs) at http://qualityindicators.ahrq.gov.
† Percent of all Medicare discharges with this coverage type.
Source: Agency for Healthcare Research and Quality, Center for Delivery, Organization, and Markets, Healthcare Cost and Utilization Project, State Inpatient Databases, 2006.

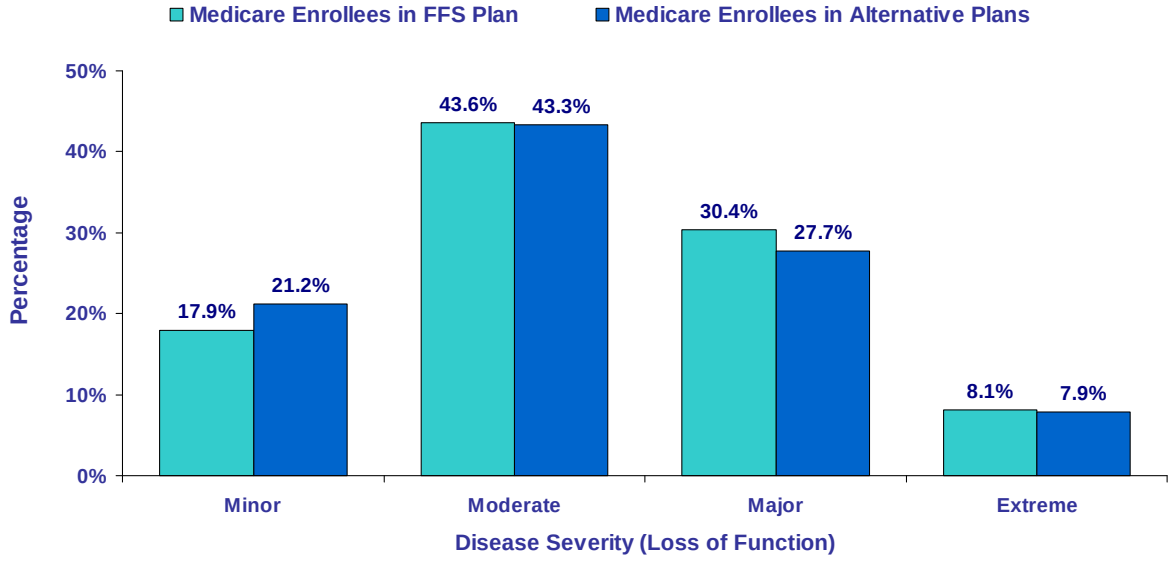
Figure 1. Patients in Medicare alternative plans were more often from ethnic minority groups than patients in mainstream FFS plan, 2006*



* Includes only states that systematically report race and ethnicity data, as well as report on type of Medicare enrollment

Source: Agency for Healthcare Research and Quality, Center for Delivery, Organization, and Markets, Healthcare Cost and Utilization Project, State Inpatient Databases, 2006

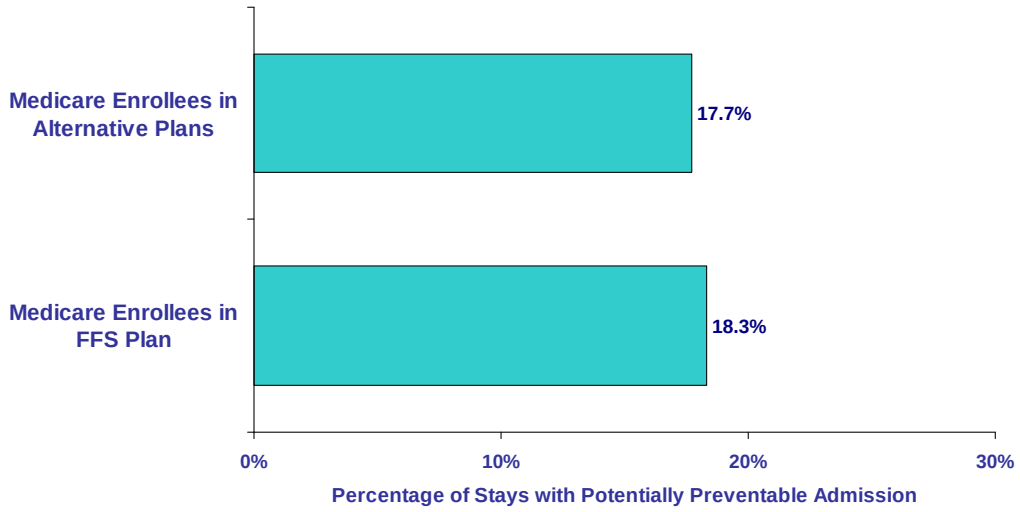
Figure 2. Patients in Medicare alternative plans tended to have a lower severity of illness , 2006*



* Includes only states that report on type of Medicare enrollment (AZ, CA, FL, GA, KS, MD, MA, MI, NJ, NY, OH, TN, and WI)

Source: Agency for Healthcare Research and Quality, Center for Delivery, Organization, and Markets, Healthcare Cost and Utilization Project, State Inpatient Databases, 2006

Figure 3. Patients in Medicare alternative plans and the FFS plan had an equal proportion of potentially preventable hospitalizations, 2006*



* Includes only states that report on type of Medicare enrollment (AZ, CA, FL, GA, KS, MD, MA, MI, NJ, NY, OH, TN, and WI)

Source: Agency for Healthcare Research and Quality, Center for Delivery, Organization, and Markets, Healthcare Cost and Utilization Project, State Inpatient Databases, 2006