

**Study of Physician-owned Specialty Hospitals  
Required in Section 507(c)(2) of the Medicare Prescription Drug,  
Improvement, and Modernization Act of 2003**

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# **CMS Study of Physician-owned Specialty Hospitals Required in Section 507(c)(2) of the MMA**

## **Executive Summary**

### **Congressional mandate**

The Medicare Prescription Drug, Improvement, and Modernization Act of 2003 (MMA) imposed an 18 month moratorium (through June 8, 2005) on physician referrals to new specialty hospitals in which the physician has an ownership interest, except for those specialty hospitals already in development as of November 18, 2003. Section 507 of the MMA requires the Medicare Payment Advisory Commission (MedPAC) and the Secretary of the Department of Health and Human Services (HHS) to study physician-owned cardiac, surgery, and orthopedic specialty hospitals, and to report the results of their studies to Congress by March 8, 2005. HHS was asked to: study referral patterns of specialty hospital owners; compare the quality of care and patient satisfaction with such care received in these hospitals with local full-service community hospitals; and to assess the differences in uncompensated care between specialty hospitals and local full-service community hospitals, and the relative value of any tax exemption available to community hospitals. The Centers for Medicare & Medicaid Services (CMS) contracted with RTI International to conduct parts of the study.

### **Study methods**

Because the ownership data required for the study is not presently collected by CMS, a sample approach was used to answer the questions on referral patterns and uncompensated care. Therefore, a sample of 11 physician-owned specialty hospitals was selected from a total of 67 hospitals that were operational in 2003. The sample included four cardiac hospitals, five orthopedic hospitals, and two surgery hospitals and covered six market areas (Dayton, OH, Fresno, CA, Rapid City, SD, Hot Springs, AR, Oklahoma City, OK, and Tucson, AZ). Within each market area, visits were made to each physician-owned specialty hospital and to several competitor hospitals. By “competitor” hospitals, we mean community hospitals and academic medical centers within 20 miles of a specialty hospital. Hospital executives, clinicians, managers, physician owners, non-owner physicians, emergency department staff, and finance staff were interviewed in each physician-owned specialty hospital. Executives at several competitor hospitals in each market area were also interviewed, in order to understand their issues with the specialty hospitals. Data obtained from the IRS submissions from non-profit hospitals in the six market areas and financial information collected from the 11 physician-owned hospitals in the sample were used to compute and compare uncompensated care relative to tax payments.

Medicare claims data from the entire population of physician-owned specialty hospitals was used to assess the quality of care using the inpatient hospital quality indicators developed by HHS’ Agency for Healthcare Research and Quality (AHRQ). Patient focus group information was also used to assess patient satisfaction and to elucidate the quality of care findings from claims data.

## **Differences between cardiac and orthopedic/surgery hospitals**

Site visits showed that the cardiac hospitals differed significantly from the orthopedic/surgery hospitals. Cardiac hospitals resemble full service hospitals because of their size (50–80 beds, with an Average Daily Census (ADC) of 40.4 for hospitals open more than a year), the presence of emergency departments, and their community outreach programs. All of the cardiac hospitals (16 were operational in 2003 for more than a year) were built exclusively for cardiac care. They treated about 38,000 Medicare cases, which represent 80% of the cases treated in 2003 by all physician-owned specialty hospitals. Medicare patients account for a very high proportion of inpatient days, averaging 67% nationwide. On average, physicians' aggregate ownership share is 34% in the cardiac hospitals in the study, although the average ownership share per physician is only 0.9%. Based on information gathered from all 16 cardiac hospitals, an entity such as the MedCath Corporation or a non-profit hospital typically owns a 51% majority share, and physicians own the remaining 49%.

Orthopedic/surgery hospitals resemble Ambulatory Surgery Centers (ASCs), lack active emergency departments, and focus on outpatient services (their aggregate ADC is only about 4.5). Physicians tend to own the majority interest, averaging 80% in aggregate for the orthopedic/surgery hospitals in the sample study, although the average ownership share per physician is only 2.2%; the balance is typically owned by a non-profit hospital or a national corporation. Medicare patients represents about 36% of the inpatient days in these facilities.

## **Findings**

**Referral patterns:** From case study interviews, it appears that physicians in general are constrained in where they refer patients by several factors, including patient preferences, managed care networks, specialty hospital location, and taking emergency department “call” from local competitor hospitals. Using ownership data provided by the 11 specialty hospitals in our sample, we found Medicare referrals to physician-owned hospitals came primarily from physician-owners. The proportion of all Medicare cardiac cases in three cardiac specialty hospitals visited that were referred by physician-owners ranged from 61% to 82%. In the five orthopedic hospitals visited, physician-owners referred between 48% and 98% of the orthopedic cases, and in one surgery hospital, physician-owners referred 90% of the cases.

We examined the extent to which physician-owners refer Medicare patients to other facilities, given the financial incentive to refer patients to their own facility. In two cardiac hospitals visited, owners had a clear preference for referring inpatient cases to their owned hospital, with 65% and 75% of all their cases admitted to their hospital. In the third specialty cardiac hospital visited, owners referred almost the same percentage of cases to their facilities as to competitor hospitals in the area. Physician-owners in all orthopedic/surgery specialty hospitals visited, except for one, referred most of their orthopedic or surgery inpatient cases to their competitor hospitals. This is not surprising, given the very small inpatient census at these hospitals. Consequently, we did not see clear, consistent patterns of preference for referring to specialty hospitals among physician owners relative to their peers.

The Medicare cardiac patients treated in competitor hospitals were more severely ill than those treated in physician-owned cardiac specialty hospitals in most of the six study sites. The

difference in severity levels between competitor hospitals and physician-owned cardiac hospitals was not large and the distribution of severity levels was not uniform. One cardiac hospital that we visited had patient severity levels that were higher than its eight competitor hospitals. Although the number of cases was too small to draw definitive conclusions for the orthopedic and surgery specialty hospitals, the severity level of cases involving the same or similar procedures appears to be much lower in these specialty hospitals than in the competitor hospitals.

Based on the population of all specialty hospitals, the proportion of patients transferred from cardiac hospitals to competitor hospitals is about the same as the proportion of patients transferred between competitor hospitals. The proportion of patients transferred from cardiac hospitals to competitor hospitals who were severely ill was similar to that of patients in the same Diagnostic Related Group (DRGs) who were transferred between competitor hospitals. Consequently, the notion that specialty cardiac hospitals are transferring more severely ill patients to general hospitals was not supported by our study. Patients transferred into cardiac hospitals have slightly lower severity levels on average than patients transferred into competitor hospitals for cardiac services. Due to the small number of cases, no conclusions could be drawn about the severity levels of transfer patients in the physician-owned orthopedic/surgery hospitals.

Compared to competitor hospitals, specialty hospitals (particularly orthopedic and surgery hospitals) have proportionately fewer admissions from the Emergency Department (ED). Generally, the cardiac specialty hospitals operate modest sized (8 – 10 bed), fully equipped, and 24 / 7 staffed EDs. Of the 12 physician-owned cardiac hospitals with EDs, 23% of their Medicare cases used the ED as the admitting source. A smaller percentage of patients were admitted through the ED in specialty hospitals than in competitor hospitals, particularly for orthopedic and surgery hospitals. The percentage of severely ill patients admitted through the ED in the population of specialty cardiac hospitals is slightly lower than the percentage of severely ill patients admitted through the ED of competitor hospitals. Within the study sample of cardiac hospitals visited, the severity of Medicare patients admitted through the ED was slightly higher than those admitted to competitor hospitals. The notion that specialty cardiac hospitals are systematically screening out more severely ill patients using the ED is not supported by our findings. Due to the small number of cases, no conclusions could be drawn about the severity levels of patients admitted from the ED in the physician-owned orthopedic/surgery hospitals.

***Quality of Care / Patient Satisfaction:*** Based on an analysis of the claims from the population of specialty hospitals, the cardiac hospitals delivered high quality of care that was as good as or better than their competitor hospitals. Because of the small number of discharges, a statistically valid assessment could not be made for orthopedic/surgery hospitals. Patient satisfaction was very high in both cardiac and orthopedic/surgery hospitals, as Medicare beneficiaries enjoyed large private rooms, quiet surroundings, adjacent sleeping rooms for their family members if needed, easy parking, and good food.

***Uncompensated Care and Tax Benefits:*** The specialty hospitals in the study provided financial information that allowed us to compute their taxes paid and their uncompensated care as a proportion of net revenues. Because the specialty hospitals are much smaller than their competitors, their share of the total uncompensated care in the community was very small. On the other hand, the specialty hospitals paid real estate and property taxes, as well as income and

sales taxes, whereas non-profit community hospitals did not. As a result, the total proportion of net revenue that specialty hospitals devoted to uncompensated care and taxes combined exceeded the proportion of net revenues that community hospitals devoted to uncompensated care.

## Chapter 1: Introduction

In 2003, the Government Accountability Office (GAO) investigated the recent growth of specialty hospitals. It found that these new specialty hospitals are largely for-profit and owned, in part, by physicians. Advocates of these hospitals contend that the focused mission and dedicated resources of specialty hospitals both improve quality and reduce costs. Critics contend that they siphon off the most profitable procedures and patient cases, thus eroding the financial health of neighboring general hospitals and impairing their ability to provide emergency care and other essential community services. Critics also contend that physician ownership of specialty hospitals creates financial incentives that may inappropriately affect physicians' clinical and referral behavior.<sup>1</sup>

Section 1877 of the Social Security Act (commonly referred to as “the physician self-referral law”) generally prohibits physicians from referring Medicare patients to entities in which they (or their immediate family members) have financial interests. The law was enacted after a number of studies, primarily in academic literature, found that physicians who had ownership or investment interests in freestanding clinical laboratories, diagnostic imaging centers, or physical therapy centers to which they referred patients ordered more services than physicians without those financial relationships.<sup>2</sup> The law applies only to referrals for designated health services (DHS), which include, among others, inpatient and outpatient services. The law includes an exception, however, that permits physicians who have an ownership or investment interest in an entire hospital, as opposed to only in a hospital subdivision, and who also are authorized to perform services there, to refer patients to that hospital. The physician self-referral law does not apply to physician referrals to an ambulatory surgery center (ASC) to the extent that the ASC is not providing a designated health service (DHS).

The GAO found that physician-owned specialty hospitals had a lower percentage of severely ill patients than other hospitals, were much less likely to have emergency departments, treated smaller percentages of Medicaid patients, and derived a smaller share of their revenues from inpatient services. The study did not distinguish cardiac from orthopedic/surgery specialty hospitals. Based in part on this study and other factors, Section 507(c)(2) of the Medicare Modernization Act of 2003 (MMA), required the Medicare Payment Advisory Commission (MedPAC) and the Secretary of the Department of Health and Human Services (HHS) to study specific issues concerning specialty hospitals and to report their findings to the Congress. The specialty hospitals of interest are those that have physician ownership and are primarily or exclusively engaged in the care and treatment of patients with a cardiac condition, orthopedic condition, or those receiving a surgical procedure, as well as any other specialized category of

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<sup>1</sup> GAO-04-167, “Specialty Hospitals: Geographic Location, Services Provided, and Financial Performance,” October 2003.

<sup>2</sup> Iglehart, J., “The Emergence of Physician-Owned Specialty Hospitals,” *New England Journal of Medicine*, 352: 1, January 6, 2005, p. 81.

services that the Secretary designates. The MedPAC study was to focus on financial impacts and payment distributional issues, whereas the HHS study was to focus on physician-owner referral patterns, quality of care, patient satisfaction, and uncompensated care.

Specifically Section 507(c)(2) of the MMA required the Secretary to conduct a study of a representative sample of specialty hospitals:

1. To determine the percentage of patients admitted to physician-owned specialty hospitals who are referred by physicians with an ownership interest;
2. To determine the referral patterns of physician owners, including the percentage of patients they referred to physician-owned specialty hospitals and the percentage of patients they referred to local full-service community hospitals for the same condition;
3. To compare the quality of care furnished in physician-owned specialty hospitals and in local full-service community hospitals for similar conditions and patient satisfaction with such care;
4. To assess the differences in uncompensated care, as defined by the Secretary, between the specialty hospital and local full-service community hospitals, and the relative value of any tax exemption available to [community] hospitals.

The report on the study shall include recommendations for legislation or administrative changes.

Opponents of physician-owned specialty hospitals argue that physician owners can direct admissions to their owned facility for financial gain. By “cherry picking” the easiest cases, physicians arguably can increase net income in their specialty hospital, which is ultimately distributed to the owners, or reinvested in the hospital. The first and second tasks assigned by the Congress relate to the referral patterns of physician owners. Based on a sample of 11 physician-owned hospitals chosen for this study (four cardiac, five orthopedic, and two surgery), we compared the severity of medical condition and other patient attributes with respect to referrals made by physician owners and non-owner physicians.

The Congress is concerned about the quality of care and patient satisfaction in physician-owned specialty hospitals. Findings from the third task assigned by Congress provide insights into this issue.

Another criticism involves the diminished capacity of community hospitals to provide uncompensated care. Critics contend that the physician-owned hospitals have siphoned off profitable services from community hospitals, and as a result, lower earnings are available to support uncompensated care. Because physicians are permitted to have ownership interests in ambulatory surgery centers to which they refer patients, the criticism is relevant to only inpatient services. Physician-owned specialty hospitals have acknowledged that they have lower levels of uncompensated care, but contend that they pay property, sales, and income taxes in lieu of

providing uncompensated care. Findings from the fourth task assigned by Congress provide insights into the issue of uncompensated care and tax payments.

Ownership data could be obtained for only the 11 facilities that were visited in six market areas in the fall of 2004. Consequently, the referral patterns of physician owners could only be analyzed for the specialty and competitor hospitals in the six market areas. The analysis of the quality of care could be performed using Medicare claims data from the entire population of specialty hospitals and their competitors, since it did not involve physician ownership. Additional sources of information included financial information provided by the 11 specialty hospital sample, and the IRS tax returns from competitor hospitals in the six market areas. This report is based in a large part on the work done by RTI International, which was under contract to CMS.

In order to understand the dynamics in the six markets, and the operations at specialty hospitals, we interviewed hospital executives in both specialty hospitals and competitor hospitals. Physician investors, non-investor physicians with admitting privileges, and other clinical staff of specialty hospitals were also questioned. The site visits showed that the cardiac hospitals differed significantly from the orthopedic and surgery hospitals, as shown by the statistics for the population and the 11 hospital sample in *Table 1-1*. Consequently, discussions and analysis of the specialty hospitals reflect this dichotomy. Orthopedic and surgery hospitals are grouped together and analyzed separately from cardiac hospitals in most of our study.

Cardiac hospitals resemble full service hospitals because of their size (50–80 beds, with an average daily census (ADC) of 40.4 for hospitals open more than a year), the presence of emergency departments, and their community outreach programs. In 2003, 17 cardiac hospitals were operational, of which 16 had been in operation for more than one year. They treated about 38,000 Medicare cases, which represented about 80 percent of the cases treated by the physician-owned specialty hospitals in 2003. Medicare patients accounted for a very high proportion of inpatient days, averaging 67% nationwide. In aggregate, physicians own a 34% share of the four cardiac hospitals in the study. This differs somewhat from the number reported for cardiac hospitals nationwide, which is 49%. Typically, a corporation such as MedCath or a local non-profit hospital owns the majority share. The average ownership share per physician in a cardiac hospital is only 0.9%, based upon hospitals in our study.

Emergency services were provided in 12 of the 17 cardiac hospitals and appear to be an important source of admissions, particularly for non-cardiac patients, which accounted for 23% admissions from the Emergency Department (ED) for hospitals providing these services. The five cardiac hospitals that lacked EDs stated that they were either providing tertiary cardiac care to patients who may be admitted from a rural hospital emergency department or that these services are provided by their majority non-profit hospital owners, and there was no reason for duplication.

Orthopedic/surgery hospitals resemble ASCs because of their focus on outpatient procedures (their average ADC is only about 4.5). Physicians tend to own the majority interest, averaging 80% in aggregate for the orthopedic/surgery hospitals in the study (although the average ownership share per physician is only 1.1%), and the balance typically is owned by a

non-profit hospital or national corporation. Medicare patients represent about 36% of the inpatient days in these facilities. Only two out of a total of 50 orthopedic/surgery specialty hospitals that billed Medicare in 2003 appear to actively provide ED services.

The remainder of this report is organized as follows: Chapter 2 summarizes the study methodology. Chapter 3 discusses the financial incentives that physician owners face in investing in a specialty hospital. Chapter 4 presents the findings from the referral analysis. Chapter 5 summarizes the findings on quality of care and patient satisfaction. Chapter 6 compares uncompensated care to tax payments. Conclusions are presented in Chapter 7.

**Table 1-1**

**Cardiac and Orthopedic/Surgery Specialty Hospitals in 2003**

	<b>Type of Hospital</b>	
	<b>Cardiac</b>	<b>Orthopedic/ Surgery</b>
<b>PROVIDERS</b>		
<b>Number billing Medicare in:</b>		
1998	3	18
2003	17	50
<b>Number with Emergency Departments</b> (hospitals treating more than 5% of cases in ED)	12	2
<b>Average Daily Census (for all cases)</b> (for hospitals opened 1 year or more)	40.4	4.5
<b>MEDICARE CHARACTERISTICS</b>		
Medicare percentage of days	67%	36%
Cases	37,600	9,600
Average Length of Stay	3.6	2.8
Proportion of cardiac cases	82%	-
Case Mix Index	2.154	1.715
Average age	74	71
<b>OWNERSHIP</b>		
<b>Typical ownership mix (1)</b>		
Total physician's share	49%	80%
Corporate / hospital share	51%	20%
<b>Average physician's ownership share</b> (in 11 facility study sample)	0.9%	1.1%

**Source:** MedPAR, Medicare Cost Reports, 11 facility sample for ownership.

**Note 1:** The typical ownership mix for cardiac hospitals was determined from site visits and phone interviews with non-site visit cardiac hospitals. The ownership shares for ortho/surgery hospitals are based on the facilities in the study sample.

## Chapter 2: Methods

### *Identification of Specialty Hospitals*

Section 507(a) of the MMA defines specialty hospitals to be those hospitals “primarily or exclusively engaged in the care and treatment of one of the following categories: (i) Patients with a cardiac condition. (ii) Patients with an orthopedic condition. (iii) Patients receiving a surgical procedure,” and any other category deemed by the Secretary to be a “specialty” and subject to the 18-month hospital moratorium.

For purposes of our study, we defined physician-owned specialty hospitals using the MedPAC criteria, but with the additional requirement that cardiac and orthopedic hospitals perform at least five major procedures. To be considered a cardiac specialty hospital, 45% or more of its Medicare cases must be in the Major Diagnostic Category (MDC) 5, Diseases and Disorders of the Circulatory System. Orthopedic hospitals must have 45% of its cases in MDC 8, Diseases and Disorders of the Musculoskeletal System and Connective Tissue. Surgery hospitals had to have 45% or more of their discharges involving a surgical procedure. Hospitals with 15 or fewer Medicare discharges were dropped because of their low volume. After meeting the volume and specialty criteria, hospitals were identified for the population of specialty hospitals if they had any physician ownership. Using these criteria, **Table 2-1** shows that 76 hospitals were identified as the number of physician-owned specialty hospitals that were operational by the end of 2004:

**Table 2-1**  
**Number of Specialty Hospitals**

	Number Billing Medicare by Dec 31, 2004		Number Billing Medicare by Dec 31, 2003	
	Total Population	With more than 100 discharges	Total Population	With more than 100 discharges
<b>Cardiac</b>	20	20	17	17
<b>Orthopedic</b>	43	34	40	25
<b>Surgery</b>	<u>13</u>	<u>7</u>	<u>10</u>	<u>3</u>
<b>Total</b>	76	61	67	45

### *Study Sample*

A sample approach was used to address the Congressional tasks on physician referral patterns and uncompensated care, because CMS does not routinely collect this data. The patient

satisfaction task was completed by using only samples of patients treated in specialty and competitor hospitals, as well as through site visits. The quality of care task was addressed by using claims data from the population of all specialty hospitals and their competitors. Interviews with clinicians and management during site visits, and patient focus groups were used to corroborate the findings on quality that were derived from the claims data.

Because there is little published information available about these specialty hospitals, a case study approach was used to help understand the dynamics of the industry and to help interpret the data that would be collected. Site visits were made to a sample of 11 physician-owned specialty hospitals (four cardiac, five orthopedic, and two surgery) and to competitor hospitals in six market areas. The market areas were selected based on our interest in an area, and not on any expectation of hospital participation. The six cities selected for sites visits were: Tucson, Arizona; Hot Springs, Arkansas; Fresno, California; Oklahoma City, Oklahoma; Rapid City, South Dakota; and Dayton, Ohio. During the site visits, managers, owners, and the clinical staff of the physician-owned hospitals were questioned in a day-long interview process. Executives at area competitor hospitals were also interviewed in order to gain an understanding of their concerns and issues with the specialty hospital. Outside the hospital, beneficiaries who were treated at each type of hospital (competitor / specialty) were interviewed in eight focus groups located in three of the six market areas.

A random approach was not used to choose facilities because of the disproportionate number of cardiac hospital cases (80% of the specialty hospital cases, but only 25% of the facilities), the inadequate number of cases for analysis in the orthopedic/surgery hospitals, and the need to visit sites that could represent a range of circumstances. Consequently, we developed the following site selection criteria based on what we needed to learn:

**For all specialty hospitals:**

- Have as much geographic diversity (both urban and rural) as visits to six market areas would allow.
- Visit mature hospitals, as well as recent start-ups in order to understand the evolution of the industry.
- Visit hospitals that had an adequate level of cases to analyze and include in patient focus groups.

**For cardiac hospitals:**

- Limit the cardiac hospital visits to no more than two MedCath hospitals (they are the majority owner in nine hospitals), because similar operating protocols and ownership arrangements are used in their facilities.
- Visit cardiac hospitals that had non-profit hospital owners.

### **Specialty hospitals visited**

**Table 2-2** summarizes characteristics of the specialty hospitals visited. The following describes our thinking in choosing the site visit hospitals and the market areas:

#### **Cardiac Hospitals**

We wanted to visit two MedCath hospitals and MedCath agreed to make any of their facilities available for site visits. We selected the Tucson Heart Hospital and The Dayton Heart Hospital. The Tucson Heart Hospital was chosen because it is one of the oldest facilities (organized in 1997), and is located in a very competitive market that has a high concentration of managed care. The Dayton Heart Hospital was chosen because the population of Dayton was not growing, the State eliminated its Certificate of Need (CON) law in 1997, and the Hospital was the subject of very intense public battles even before it opened. By visiting a stable population growth area, the impact of diverting admissions from local hospitals should be easier to determine. To contrast, we visited two non-MedCath hospitals that had non-profit hospitals as their majority owner. These hospitals were located in Oklahoma City, OK and Fresno, CA.

To be thorough, we contacted all but two of the 12 remaining cardiac hospitals (either directly or through the MedCath corporate office) in order to verify that our understandings gained from visiting four cardiac hospitals were representative. The other facilities contacted told us about their organization, operations, business models, clinical approach, owners, referral base, financing, etc. In most cases, the information that we gathered in our site visits was similar to the operations described by the contacted hospitals. To gain further comfort, we also reviewed the requests from specialty hospitals for advisory opinions concerning Section 507 of the MMA and analyzed the descriptions of their hospital ownership.

#### ***Orthopedic and Surgery Hospitals***

Oklahoma City appears to be a hub of entrepreneurial activity for specialty hospitals, and has been used in case studies. Consequently, CMS visited three orthopedic /surgery hospitals in Oklahoma City, two of which were profitable, and one which was unprofitable.

Rapid City, SD has two physician-owned orthopedic/surgery hospitals that are located across the street from the only competitor hospital in the area. With only one community hospital, the impact of diverting referrals to the specialty hospitals could be readily seen. We visited the Same Day Surgery Center, and the Black Hills Surgery Center, which was one of three specialty hospitals in South Dakota that sold its majority stake in an initial public offering in 2004.

Additionally, we visited the HealthPark Hospital in Hot Springs, AR to better understand how the market dynamics worked in small rural areas. Finally, we went to one of the oldest physician-owned orthopedic hospitals in the United States, the Fresno Surgery Center, which is located in Fresno, CA. Again, we wanted an idea of how a mature orthopedic hospital operates, and the problems that it faced.

### ***Competitor Hospitals***

The study design required that comparisons be made between the physician-owned hospitals and competitor hospitals, both within a market, and for the population. Competitor hospitals must be located in the same market area within 20 miles of the physician-owned hospital(s). Under this strict geographical area definition, competitor hospitals included academic medical centers, which were encountered in Tucson and Oklahoma City. Because the comparisons are made for each type of physician-owned hospital, i.e., cardiology, and orthopedic/surgery, the discharges from competitor hospitals were stratified by specialty. For example, in comparing cardiac hospital cases, only the MDC 5 cases from the competing community hospital are used.

### ***Study Approach***

To address the directive from Congress concerning physician referral patterns, claims data were merged with ownership data provided by each of the 11 facilities in the study sample. Each Medicare inpatient claim has the Unique Provider Identification Number (UPIN) of the admitting / attending physician, the surgeon (if a procedure is done), and other physicians (if involved). The attending / admitting physician UPIN numbers of physician owners were linked with inpatient claims, so that referral patterns could be traced within a market area. On the claims of both specialty and competitor hospitals in the six site visit market areas, the UPIN was coded on almost 100% of the bills. The numbers furnished for the physician owners by the 11 facilities in the study sample were verified with the names shown in the UPIN registry. In addition, physician focus groups and other financial and ownership data can help determine the financial incentives physicians may face in their referral decisions. Comparisons between the referral patterns of owners and non-owners were made within a market area. Physicians are considered to lack privileges at a specialty hospital if they do not admit to the specialty hospital; consequently, such physicians are excluded from some analyses.

The directives concerning quality and patient satisfaction were answered using two approaches. Medicare claims data from the population of all specialty hospitals and their competitors were analyzed using the AHRQ quality indicator methodology. Additionally, eight focus groups comprised of Medicare patients treated in specialty and competitor hospitals helped elucidate the experiences in each type of hospital.

Data from the IRS submissions for competitor hospitals, and financial data collected from the 11 facilities in the study sample were used to determine real estate and sales tax payments, estimate income tax liability, and determine uncompensated care costs. Because the specialty hospitals are much smaller than competitor hospitals, tax payments and uncompensated care

were made relative to net revenue for comparison purposes. Net revenue has been used as the relative base in other studies and also avoids the tautology of having a component of cost, bad debts, as part of the relative base. Charges cannot be used for comparison purposes, as they are not standardized across institutions.

### ***Study Limitations***

Although the observed patterns give a reasonable picture of a range of specialty hospital types in different markets, the findings regarding the 11 facility study sample may not be representative of all specialty hospitals. Where possible, we used the entire population of physician-owned specialty hospitals to address the study tasks. The study of quality and the analysis of severity levels, except where ownership was involved, use the entire population of physician-owned specialty hospitals. Analysis that required data beyond the Medicare claims could be done with only a sample. Specific limitations are discussed in greater detail in each chapter.

**Table 2-2**  
**CMS Site Visit Facility Characteristics**

Area	Specialty Hospital	Year Inpatient Opened	Inpatient Beds Capacity	2003 Avg. Daily Census	Case Mix Index	DSH %	Payer Mix			
							Medicare	Medicaid	Other	
<b>CARDIAC HOSPITALS</b>		<b>AREA</b>								
1	Tucson Heart Hospital	1998	60	28.3	1.959	0.110	73%	6%	21%	
2	Oklahoma Heart Hospital	2002	78	58.5	n/a	n/a	62%	0%	38%	
3	Fresno Heart Hospital	2003	60	15.1	n/a	n/a	65%	0%	35%	
4	Dayton Heart Hospital	1999	47	36.5	2.188	0.076	70%	5%	26%	
<b>ORTHOPEDIC / SURGERY HOSPITALS</b>										
1	Oklahoma Spine Hospital	1999	18	8.7	1.509	0.038	9%	0%	91%	
2	Center for Special Surgery (Physicians)	1999	51	2.6	1.347	0.099	84%	4%	12%	
3	Center for Multispecialty Surgery	2002	18	2.0	n/a	n/a	36%	0%	64%	
4	Black Hills Surgery Center	1997	23	8.4	2.115	0.116	44%	4%	52%	
5	Same Day Surgery Center	2000	6	1.6	1.150	0.065	17%	6%	78%	
6	Fresno Surgery Center	1993	20	12.3	1.620	0.031	18%	0%	82%	
7	Health Park Hospital	2002	20	9.9	1.251	0.034	83%	0%	17%	

Sources: Medicare Cost Reports, 2003 and 2005 Regulatory Impact File, site data requests (DSH and CMI)

## Chapter 3: Financial Considerations of Physician Ownership

### *Financial Incentive of Ownership*

If physician-owned shares were valued highly, it could be reasoned that investors faced strong financial incentives to promote profitable referrals. Because the orthopedic/surgery hospitals have a small inpatient business, most referrals to these hospitals would be for outpatient services, which, to the extent they are not designated health services (DHS), are not affected by the physician self-referral law. Because cardiac hospitals revenues are predominantly inpatient, their physician investors would likely face the strongest financial incentives to divert inpatient admissions to their owned facility. In order to gain an understanding of the financial implications, background information on specialty hospital ownership is presented below.

### *Ownership in site visit hospitals*

The ownership mix in the 11 specialty hospitals is shown in *Table 3-1* below.

**Table 3-1**

#### Average Ownership Mix in 11 Hospital Sample

Type of investor	Hospital Type			
	Cardiac (1)		Ortho/surgery	
Active physicians and physician groups	34.3%		76.7%	
Inactive physician, non-physician, and other	3.9%		3.3%	
Corporation / Partnership / Non-profit hospital	61.8%		20.0%	
	100.0%		100.0%	

  

Active Physician Ownership Shares	Hospital Type			
	Number of Investors	Average Share	Number of Investors	Average Share
Active physician owners				
Shares over 5%	1	9.8%	40	7.1%
Shares under 5%	146	0.9%	187	1.1%
Total for all shares	147	0.9%	227	2.2%

**Source:** Data submitted by 11 specialty hospitals, 2004.

**Note 1:** More recently opened cardiac hospitals appear to have ownership shares of: 51% corporate / non-profit hospital and 49% physician investors.

In our sample of four cardiac hospitals, the majority owners of both the Fresno Heart and the Oklahoma Heart Hospitals were non-profit hospitals, whereas MedCath Corporation was the majority owner in the Tucson and Dayton Heart Hospitals. The proportion of physician ownership in these two

MedCath hospitals, which are among the oldest cardiac specialty hospitals, is lower than in more recently developed cardiac hospitals. Based upon information provided by the industry and data submitted by hospitals to CMS for the determination of their status under the moratorium, it appears that the typical aggregate physician ownership interest in a specialty cardiac hospital is 49% where an institutional owner is involved. It is likely that the financial strength of the majority owner obviated the need for physician owners to guarantee loans or make loans to the hospital limited liability corporation (LLC), or other entity that owns the cardiac hospital.

In the seven orthopedic/surgery hospitals visited, non-physician investors owned on average 20% of the hospital. Orthopedic/surgery hospitals that did not have institutional ownership required the physician owners to guarantee debt, make loans, or hold an interest in a related real estate LLC that leased the facility to the hospital LLC. In some, the hospital was indirectly owned by LLC(s) that had interests in related organizations. Because of this complexity, determining ownership interests in the orthopedic/surgery hospitals was not as straightforward as in the cardiac hospitals.

### ***Physician Investment in Specialty Hospitals***

The size of hospital, the working capital needed for operations, and the capital needs determine the amount of investment required in a specialty hospital. Ownership mix can affect the ability of a hospital to borrow funds. Without institutional investors physicians may have to personally guarantee loans, interest rates may be higher and access to capital can be more limited.

The price paid for ownership shares varied substantially across the site visit facilities. In the cardiac hospitals visited, the price paid for a 1% share, which approximates the average ownership share of .9%, ranged between \$28,000 and \$72,000. For the orthopedic/surgery hospitals visited, the price paid for a 2% share, which approximates the average ownership share of 2.2%, ranged between \$30,000 and \$120,000. Because of differences in the year the hospital was established, the size and type of the hospital facility, the presence of loan guarantees by owners, and the capital financing mix, an average ownership share price would be meaningless and thus, is not computed.

### ***Margins***

The value of a financial investment is typically associated with the earnings potential. **Table 3-2** and **Table 3-3** show the total margins<sup>3</sup> (using all payers, services) computed from the Medicare cost reports for the physician-owned specialty hospitals and competitor hospitals in the six market areas visited.

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<sup>3</sup> Total margin = ((net patient revenues + total other income)-(total operating expenses + other expenses)) / (net patient revenues + total other income).

**Cardiac Hospitals in the site visits (Table 3-2)**

The Tucson Heart Hospital is the oldest cardiac hospital in the sample, having opened in 1997. By 1999, it had a total hospital margin (income/net revenue on all payers, all services) of -18.7% and did not turn a profit until 2002. The Dayton Heart Hospital opened in 1999, sustaining a -25.5% loss in 1999, but reaching profitability by 2002. In 2003, the Dayton Heart Hospital had the highest total hospital margin of any cardiac hospital in the sample, 19.6%. This margin surpassed the average margin in 2003 for the area competitor hospitals, which was 5.3%. Dayton Heart also was the only cardiac hospital in the site visit sample to have a higher case severity compared to its community hospital competitors (see Chapter 4: Physician Referrals). The Oklahoma Heart Hospital opened in 2002. It had a -107.7% margin in this first year, in which patients were admitted in only the last 3 months of the fiscal year. However, in the first full year of operations, 2003, it turned a profit with a margin of 3.6%. Dayton and Tucson were not profitable until the fourth year of operations, whereas Oklahoma was profitable in its first full year of operations, ostensibly because its majority owner, a non-profit hospital, was able to divert patients to the Heart Hospital. Because it opened in 2003, margins for 2003 were not available for the Fresno Heart Hospital.

**Table 3-2**

**Total Hospital Margins**

<b>CARDIAC</b>	<b>Total Hospital Margins</b>				
	<b>1999</b>	<b>2000</b>	<b>2001</b>	<b>2002</b>	<b>2003</b>
<b>Site / Specialty Hospital</b>					
<b>Tucson, AZ</b>					
Competitor Hospitals	0.9%	9.9%	7.0%	3.2%	-1.5%
Tucson Heart Hospital	-18.7%	not avail	-0.4%	3.3%	0.1%
<b>Dayton, OH</b>					
Competitor Hospitals	4.6%	4.6%	2.6%	0.8%	5.3%
Dayton Heart Hospital	-25.5%	not avail	-3.4%	12.8%	19.6%
<b>Oklahoma City, OK</b>					
Competitor Hospitals	6.4%	6.0%	4.4%	5.4%	4.9%
Oklahoma Heart Hospital				-107.7%	3.6%
<b>Fresno, CA</b>					
Competitor Hospitals	-2.3%	-0.1%	1.4%	1.0%	
Fesno Heart Hospital	<b>(Opened 2003)</b>				

Source: Computed from Medicare Cost Reports

**Orthopedic/Surgery hospitals in the site visits (Table 3-3)**

HealthPark Hospital was opened in 2002, and had a first year loss of -34.7% which was reduced to a loss of -9.6% in the second year of operation. The Fresno Surgery Center is the oldest hospital in the study, having opened its inpatient unit in 1993. It had been operational as an ASC for almost a decade earlier. The Fresno Surgery Center was profitable in 2000, with a margin of 5.0%, but began incurring small losses after 2001, with total hospital margins of -1.8% in 2002 and -1.5% in 2003.

The Oklahoma Spine Hospital was organized in 1999 and became profitable in its first full year of operation. It had an average a daily census of 8.7 in 2003, but treated very few Medicare patients, with Medicare patients representing about 9% of its 2003 inpatient days. Its total hospital margins were 40.7% in 2002 and 35.9% in 2003, well above the average margin of roughly 5% in competitor hospitals. The Physicians Hospital of Oklahoma, opened in 1999, had a loss of 6.8% in 2003, after a gain of 7.8% in 2002. The Oklahoma Multi-Specialty Hospital, opened in 2002, had a gain of 9.6% in the first year of operations, followed by a gain of 38.2% in 2003.

**Table 3-3**

**Total Hospital Margins**

<b>ORTHOPEDIC / SURGERY</b>	<b>Total Hospital Margins</b>				
	<b>1999</b>	<b>2000</b>	<b>2001</b>	<b>2002</b>	<b>2003</b>
<b>Hot Springs, AR</b>					
Competitor Hospitals	3.1%	6.0%	6.8%	3.7%	-2.4%
Health Park Hospital				-34.7%	-9.6%
<b>Fresno, CA</b>					
Competitor Hospitals	-2.3%	-0.1%	1.4%	1.0%	
Fresno Surgery Center	-6.6%	5.0%	2.4%	-1.8%	-1.5%
<b>Oklahoma City, OK</b>					
Competitor Hospitals	6.4%	6.0%	4.4%	5.4%	4.9%
Physicians Hospital of Oklahoma	-57.3%	-9.8%	38.9%	7.8%	-6.8%
Oklahoma Spine Hospital		49.7%	-14.2%	40.7%	35.9%
Oklahoma Multispecialty Hospital				9.6%	38.2%
<b>Rapid City, SD</b>					
Competitor Hospitals	7.7%	7.2%	0.0%	1.9%	
Black Hills Surgery Center	15.6%	19.3%	23.4%	32.2%	40.2%
Same Day Surgery Center	3.3%	6.8%	11.0%	17.4%	

Source: Computed from Medicare Cost Reports

The two physician-owned specialty hospitals in Rapid City, SD, were among the most profitable in the sample. The Black Hills Surgery Center, opened in 1997, had increasingly higher margins ranging from 15.6% in 1999 to 40.2% in 2003. The Same Day Surgery Center had been entirely owned by a non-profit hospital prior to 2000, at which time it was reorganized with physicians owning 60%. It had a similar margin trajectory as Black Hills, increasing from 6.8% in 2000 to 17.4% in 2002 (2003 was not available).

### ***Cash Disbursements***

The partnership and LLC agreements that were reviewed typically limited dividend payouts to generated income, but restricted cash disbursements until other obligations, such as working capital loans, were covered. For income tax purposes, the partnership or LLC income is treated as a pass-through to the owners, who would then pay income taxes based on their own tax status. Thus, it is possible that a physician owner could incur an income tax liability, but without receiving the cash from the hospital entity to cover it. Hospitals with accumulated negative earnings are unlikely to return any cash to their investors, and may be prohibited from doing so under the partnership / LLC agreements. Only one cardiac hospital in the sample, the Dayton Heart Hospital, appeared to have adequate income and working capital to return cash to their investors. Because they were in start-up phases, the Fresno Heart and Oklahoma Heart hospitals are unlikely to pay dividends. Because the orthopedic/surgery hospitals were more profitable than the cardiac hospitals, these hospitals should be more able to return cash to their investors.

An investment return can come from earnings, or through the change in the market value of a security. If shares are sold, the owner may receive the original purchase price, plus any appreciation. In 2002, the MedCath Corporation purchased shares from physician owners of the Tucson and Dayton Heart Hospitals in order to have a majority interest in all its facilities for its initial public offering. Thus, depending on the valuation, those physician owners received a return of their original purchase price, as well as any appreciation on those shares.

### ***Investment Risk***

A hospital generally must have positive earnings in order to pay dividends or other cash disbursements to their investors. A hospital in its formative stages of development normally will have higher average costs than an established hospital, and thus lower income. A new hospital must recover the start-up costs of opening a new facility, hiring staff before any patient services are delivered, and developing new programs and protocols. After the initial start-up phase, a new hospital must develop a patient base and reputation in the community. Thus, it may be years before a new hospital is profitable.

Start-up costs, as well as investment risk, may be reduced by expanding an existing service or facility, rather than opening an entirely new facility. All cardiac hospitals visited were started in new facilities that ranged between 50 and 80 beds. The inpatient capacity in orthopedic/surgery hospitals was much smaller, and in some cases was added to an existing ASC operation. Thus the risk of opening a large specialty hospital that is focused on inpatient services is much greater than that of building a small inpatient unit in an established ASC. Based on the 2003 Medicare cost report submissions, the average daily census in physician-owned orthopedic/surgery hospitals was 4.5 patients, compared to 40.4 patients

in physician-owned cardiac hospitals. The ownership profiles reflect this risk differential, as most cardiac hospitals have a strong general partner involved.

Some site visit hospitals were very profitable, whereas others were not. However, there is no assurance that a hospital will ever reach a profitable level of operations, or have a viable business model. A case in point is the Heart Hospital of Milwaukee, a MedCath hospital, which opened in 2004. It was sold within nine months of commencing operations to a competitor non-profit hospital at a loss. The Milwaukee Journal Sentinel reported: “The area's saturation with heart programs - at least a dozen - made it difficult for the heart hospital to get established. Another factor was that the hospital could not get enough referrals from primary care physicians (November 8, 2004).” The Business Journal of Greater Milwaukee reported that “The closure of the Heart Hospital of Milwaukee likely will leave its physician investors with a loss of about \$3 million (December 10, 2004).”

### ***Limitations on ownership transfer***

We reviewed the investment documentation in nine specialty hospitals, including four cardiac hospitals under development. The purpose of this review was to help assess the investment risk of these shares, because risk is one determining factor of the market value of an investment. Common themes in the Operating Agreements and/or Private Placement Memorandum are as follows:

- The shares can be subscribed by only “accredited investors” as defined in Regulation D of the Securities Act of 1933. Investors must have adequate net worth and income.
- The shares are privately placed, which means that there is no organized public market.
- New investors who buy existing shares must also have the same qualifications as the original investor: a practicing physician in a selected specialty and/or community.
- Physician owners who retire or who are deceased cannot continue to hold the shares indefinitely, but must sell to another qualified investor, or back to the hospital entity.
- The allocation of the gain or loss can be made only in accordance with each owner’s proportional ownership interest. No statements were found to indicate that distributions would be based on referrals or generated business.

Therefore, the limited liquidity of equity investments in non-publicly traded specialty hospitals increases the risk of these investments.

### ***Market Value of Physician Investment in a Specialty Hospital***

Ideally, to assess the strength of an ownership incentive, investment returns should be compared with physician referrals. To find investment returns, the market value of physician shares is needed. This value could come potentially from the price of recently sold shares. Because physician ownership of ASCs is not affected by the physician self-referral law to the extent that DHS are not provided, the earnings of only the inpatient services are relevant to study the financial incentives faced by physician

owners in their referral decisions. Few physician-owned shares have been sold, and there was no data on the market value of these private transactions because the sales are private. The affected hospital entity is not a party to the transaction, except to the extent that it must determine if the investor criteria have been satisfied. Consequently, share values cannot be determined using market prices.

Because companies are typically valued at a multiple of expected earnings, one valuation approach would be to multiply the income available to investors by a multiple. Lacking private sales data, it may be possible to use the market value of a public offering to estimate the value of a physician ownership share. In an initial public offering by the Medical Facilities Corporation in March 2004, the physician owners at three orthopedic/surgery hospitals in South Dakota sold 51% of their investment stake in an “income participating security.” This is the only public offering by physician-owned hospitals of a security with equity characteristics. However, it is difficult to infer a market value for the inpatient business because the three involved hospitals are predominantly focused on outpatient services. Therefore, there is no publicly available data that can be used to infer a market multiple.

The private placement offering memorandum referenced the repurchase of shares in some circumstances at 1 times earnings and to 5 times earnings. Note that these multiples are based on earnings before taxes. With the profitability of many specialty hospitals, particularly cardiac, still uncertain, applying any multiple to an unknown inpatient earnings stream is somewhat speculative at this point in the development of these hospitals. Thus, the strength of the ownership incentive from referrals cannot be deduced at this time using an equity valuation approach.

### ***Conclusion***

With a limited secondary market for physician shares, the confidential nature of this market, the uncertainty of the earnings streams for hospitals in a developmental stage, and no market tested multiple available, it is impossible at this point to value the physician-owned shares. The combined inpatient and outpatient margins in some specialty hospitals, particularly the orthopedic/surgery hospitals, have been much higher than competitor hospitals, based on our sample. However, the margins for other specialty hospitals, particularly the cardiac, have been lower. It is unknown if this financial performance is due to hospitals being in a start-up stage, being subject to adverse market conditions, or having management issues. The loss suffered by physician investors at the Heart Hospital of Milwaukee attests to the fact that an investment in a specialty hospital is not without risk. Consequently, these investments may be characterized as being risky. If physician investors act to maximize their investment value while minimizing their investment risk, the expectation is that they should refer a substantial portion of their patients to their owned hospital.

The limitations on ownership transfer and the reliance on an unorganized, private market in which the shares must be sold undoubtedly increase the financial risk to investors.

## Chapter 4: Referral Patterns

In mandating this study of physician-owned specialty hospitals, Congress required information on the following related to referrals by physician owners of specialty hospitals:

1. The percentage of patients admitted to physician-owned specialty hospitals who are referred by physicians with an ownership interest;
2. Referral patterns of physician owners, including the percentage of patients they referred to physician-owned specialty hospitals and the percentage of patients they referred to local full-service community hospitals for the same conditions.

To address these referral issues, we developed a set of research questions. These research questions operationalize the tasks specifically raised by Congress into questions that could be analyzed with the available data.

To provide information on the percentage of patients admitted to physician-owned specialty hospitals by physicians with an ownership interest (Issue 1), we investigated the referral patterns of physician owners relative to other physicians in the community treating patients with the same types of diagnoses. The underlying key issue is whether physician-owners of specialty hospitals refer patients primarily to their own facilities, presumably driven by profit incentives. To place referrals to specialty hospitals by physician owners in context, we also analyzed the referral patterns of physician non-owners within market areas. This overall picture of referral patterns within local markets provides a reasonable analysis of whether physician owners have referral patterns that are different – and of potential policy concern – relative to physicians without a financial interest in specialty hospitals. Therefore, we developed the following research question:

- 1. Do specialty hospital physician owners refer patients primarily to their own facilities, and how does their behavior differ, if at all, from non-owners who also admit to the specialty hospital?***

To investigate referral patterns of physician owners (i.e., to specialty hospitals versus competitor community hospitals) for patients with the same condition, we analyzed referrals for specific major diagnostic categories relevant to different specialty hospitals (Issue 2). However, to fully understand referral patterns for patients “with the same condition,” we also compared the relative acuity levels of patients within major diagnostic categories (MDCs). A core policy concern is not only whether physician owners refer a greater proportion of patients to the specialty hospitals, but also whether the cases referred to specialty hospitals by physician owners are more profitable than cases they refer to competitor community hospitals. In general, lower acuity cases within the same MDC are likely to be the most profitable. In this regard, we also looked at the acuity levels of patients transferred between specialty and competitor hospitals, and the severity level of patients admitted through the Emergency Departments (ED). Specifically, we developed the following research questions:

- 2. Do specialty hospitals in general, and physician owners in particular, systematically treat Medicare patients with a lower acuity than patients in peer competitor hospitals with the same condition?***

3. *Do specialty hospitals transfer patients with higher acuity to peer competitor hospitals more often than do other peer hospitals and do they receive fewer high acuity patients in return?*
4. *Do specialty hospitals admit fewer, less acutely ill, patients through their EDs than do peer competitor hospitals?*

Considered together, answers to these research questions should provide Congress with an understanding of how physician ownership in specialty hospitals may affect referrals to specialty and competitor community hospitals, as well as how the types of patients treated at these competing hospitals may differ.

In studying physician referrals, we drew upon four sources of quantitative and qualitative information:

- Medicare claims for the population of physician-owned specialty hospitals, including the 11 facilities in the study sample, and competitor hospitals for calendar year 2003.
- Ownership shares reported for physician owners in the 11 facilities in the study sample.
- Extensive interviews with physician owners, non-owner physicians, executives, and managers in the 11 facilities in the study sample.
- Interviews with executives in at least two peer competitor hospitals in each of the six market areas (except Rapid City, which has only one community hospital).

By linking Medicare claims to physician owners, we could compare referral patterns of owners with non-owners, but only in the six cities for which ownership data was available. This analysis of referral patterns has a number of limitations that should be recognized. First, based on available resources and time to conduct this study, we were only able to visit and gather information on physician owners in the 11 facilities in the study sample. Although we believe the patterns we observe give a reasonable picture of a range of specialty hospital types in different markets, our findings may not be representative of all specialty hospitals. In fact, our results suggest it is hard to characterize specialty hospitals as a whole or even stratified by cardiac, orthopedic, or general surgery orientation. Our results also suggest that market structure and local competition have a great deal to do with referral patterns and ownership effects. Due to the limited time available, and being constrained to six cities for some analyses, we were not able to control for other market factors in an attempt to isolate the ownership effect from all other factors molding referral decisions.

Second, even though we identified ownership shares for 375 physicians in specialty hospitals, we were limited in our ability to statistically test for ownership effects on referral patterns due to small sample sizes—especially after stratifying by type of specialty hospital. We have no information on secondary referrals, that is, if a physician-owner refers a patient to a non-owner physician (such as a surgeon) for a procedure in the specialty hospital. In this case, the referral will be attributed to a non-owner physician.

Third, all of our quantitative analyses of referrals are limited to Medicare claims. Patient referrals based on other payers cannot be considered here because no comprehensive all-payer database exists.

Also, referral patterns of physicians who do not participate in Medicare are not considered, because these physicians constitute a very small number of physicians admitting to hospitals.

Fourth, it is clear from our case study interviews that not all peer competitor hospitals are true competitors. In 5 of the 11 specialty hospitals we visited, “competitor” community hospitals actually owned part of the specialty hospital, and in two instances, they were the majority stockholder. This can have a significant effect on referral patterns.

***Research Question 1: Do specialty hospital physician owners refer patients primarily to their own facilities, and how does their behavior differ, if at all, from non-owners who also admit to the specialty hospital?***

We could not observe directly physician referral decisions. We can, however, observe where patients are treated as a result of these decisions. In this set of analyses, we look at Medicare discharges for a range of DRGs that specialty hospitals treat: cardiac, orthopedic and general surgery. Presumably, if the financial incentives of ownership affect referral decisions, we would expect to observe a high percentage of discharges for physician owners from their own specialty hospitals relative to physician non-owners. Because we found some differences in results between the different types of specialty hospitals – cardiac, orthopedic and general surgery – we present separate findings for each group. In each analysis, physicians with Medicare discharges are categorized as non-owners or owners of the local heart specialty hospital. Non-owners are then separated according to whether they have no or some discharges from the specialty hospital in that market. On the assumption that non-owners with no discharges at the specialty hospital do not have admitting privileges at the specialty hospital, they were excluded from the analysis.

***Cardiac Hospital Referrals: Table 4 - 1*** shows Medicare cardiac discharges for cardiac specialty and competitor hospitals by physician ownership status. Results are presented separately for each of the markets with cardiac specialty hospitals that we visited (Dayton, Oklahoma City and Tucson).<sup>4</sup>

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<sup>4</sup> The Fresno Heart Hospital (FHH) was open for only the last three months of 2003. Although it would have been possible to use only the claims from the last quarter of 2003, physician referral patterns during the start-up period might not have been representative of referral patterns once the FHH became established in the community. Consequently, FHH and its competitors are not included in Table 4-1.

**Table 4-1****Cardiac Discharges by Hospital and Ownership Status of Referring Physicians  
For the Site Visit Market Areas**

Hospital where patient treated	Number of Discharges		Proportion of Referrals to Specialty Hospitals (Row Percentages)		Proportion of All Physician Referrals to Each Facility Type (Column Percentages)	
	Non-owners with privileges	Owners	Non-owners with privileges	Owners	Non-owners with privileges	Owners
Dayton Heart Hospital	456	1,344	25%	75%	31%	65%***
Competitors	998	738			69	35
Total discharges	1,454	2,082			100	100
Oklahoma Heart Hospital	643	2,895	18	82	76	75
Competitors	200	988			24	25
Total discharges	843	3,883			100	100
Tucson Heart Hospital	621	965	39	61	33	53***
Competitors	1,267	867			67	47
Total discharges	1,888	1,832			100	100

NOTE: \*\*\* indicates statistically significant at the 1% level (statistical significance refers to the column difference between specialty hospital and competitor hospitals)

SOURCE: CY 2003 Medicare IPPS claims and ownership data from 11 facilities.

Some interesting patterns emerge from the analysis of cardiac hospitals. First, owners of all cardiac hospitals referred patients to both their owned and to competitor hospitals. Second, some non-owners also had admitting privileges to the local specialty heart hospital. Third, for owners in all three areas, the majority of their inpatient cardiac discharges were to their local specialty heart hospital. Fourth, the share of cardiac discharges to the local specialty heart hospital varied by area for both non-owners and owners.

In Dayton, physician owners referred 65% of their cardiac cases to the Dayton Heart Hospital, and 35% to competitor hospitals. The referral patterns of non-owners having admitting privileges were just the opposite of owners, with 31% of their cardiac discharges at the Dayton Heart Hospital, and 69% at competitors. Thus in Dayton, the higher owner referral percentage could be consistent with behavior to increase investment value, since non-owners referral patterns differed from that of owners. This inference is premature, as it does not consider acuity levels.

Owners of the Tucson Heart Hospital referred a little over half of their cardiac cases (53%) to their owned hospital, and just under a half (47%) to competitor hospitals. The referral patterns of Tucson non-owners having admitting privileges were similar to that of Dayton non-owners, with 33% of their cardiac discharges at the Tucson Heart Hospital, and 67% at competitors. The highest percentage of referrals was at the Oklahoma Heart Hospital, where owners referred 75% of their 2003 cardiology cases to their owned hospital. However, the non-owners also referred a similar percentage to the Oklahoma Heart Hospital. Thus, somewhat unexpectedly, the referral behavior of physician non-owners is similar to physician owners in Oklahoma City.

In contrast to the specialty heart hospitals in Dayton and Tucson, the Oklahoma Heart Hospital is physically connected by a short tunnel to its investment partner, a full-service general hospital. It is not known what role this physical and ownership connection plays in the referral behavior of non-owner physicians in Oklahoma City compared to the non-owner physicians in Dayton and Tucson.

***Orthopedic Specialty Hospitals:*** *Table 4-2* shows Medicare orthopedic discharges for orthopedic specialty and competitor hospitals by physician ownership status. Results are presented separately for each of the markets with orthopedic specialty hospitals (Fresno, Oklahoma City, and Rapid City). Both owners and non-owners admit orthopedic patients to both local orthopedic specialty hospitals and their competitor hospitals. Both owners and non-owners admit most of their orthopedic cases to competitor hospitals, although the share varies by area. And although owners admit a higher share of their patients to orthopedic specialty hospitals than non-owners do, the difference between owners and non-owners is no more than seven percentage points.

**Table 4-2**

**Orthopedic Discharges by Hospital and Ownership Status of Referring Physicians  
For the Site Visit Market Areas**

Hospital where patient treated	Number of Discharges		Proportion of Referrals to Specialty Hospitals (Row Percentages)		Proportion of All Physician Referrals to Each Facility Type (Column Percentages)	
	Non-owners with privileges	Owners	Non-owners with privileges	Owners	Non-owners with privileges	Owners
Fresno Surgery Center	84	199	30%	70%	21%	24%
Competitors	310	624			79	76
Total discharges	394	823			100	100
Oklahoma City Orthopedic Specialty Hospitals (5)	289	269	52	48	39	46**
Competitors	449	313			61	54
Total discharges	738	582			100	100
Black Hills Surgery Center	8	378	2	98	35	41
Competitors	15	535			65	59
Total discharges	23	913			100	100

NOTE: Figures for the five Oklahoma City orthopedic specialty hospitals are combined.

\*\* indicates statistically significant at the 5% level.

SOURCE: CY 2003 Medicare IPPS claims and ownership data from 11 facilities.

**Surgery Specialty Hospitals:** Finally, we looked at Medicare discharges from surgery specialty and competitor hospitals by physician ownership categories. **Table 4-3** shows Medicare discharges for surgery specialty and competitor hospitals by physician ownership status. Results are presented separately for each of the markets with surgery specialty hospitals (Hot Springs, AR and Rapid City, SD) that we visited. For surgery hospitals, we see some of the same patterns observed for cardiac and orthopedic Medicare discharges.

In Hot Springs, as in many of the other sites, physician non-owners show a preference for competitor hospitals by admitting 88% of their Medicare cases to those facilities. Physician owners of HealthPark Hospital, on the other hand, admitted most of their Medicare surgery patients (68%) to their owned hospital. In Rapid City, however, physician non-owners show a small preference for the competitor hospital by admitting 61% of their Medicare cases to that facility (which has an ownership

stake in Same Day Surgery Center). Among physician owners, all of the Medicare discharges within the top eight general surgery DRGs were discharged from the competitor hospital. This result should be interpreted with caution, however; we believe that physician owners at the Same Day Surgery Center likely have Medicare discharges from this specialty hospital in other DRGs.

**Table 4-3**  
**Surgery Discharges by Hospital and Ownership Status of Referring Physicians**  
**For the Site Visit Market Areas**

Hospital where patient treated	Number of Discharges		Proportion of Referrals to Specialty Hospitals (Row Percentages)		Proportion of All Physician Referrals to Each Facility Type (Column Percentages)	
	Non-owners with privileges	Owners	Non-owners with privileges	Owners	Non-owners with privileges	Owners
HealthPark Hospital	24	218	10%	90%	12%	68%***
Competitors	170	103			88	32
Total discharges	194	321			100	100
Same Day Surgery Center	14	0			39	0***
Competitors	22	394			61	100
Total discharges	36	394			100	100

\*\*\*Indicates statistically significant at the 1% level.

SOURCE: CY 2003 Medicare IPPS claims and ownership data from 11 facilities.

**Referrals by ownership share (Table 4.4):** If financial incentives were a major factor in referral decisions, physician owners with the largest ownership shares may also have the largest referral shares, as they would have the most to lose or gain. This question can be stated slightly differently: Are physician owners who have the largest ownership shares more likely to refer patients to their own specialty hospital?

**Table 4.4** shows the percentage of referrals by ownership share categories for cardiac, orthopedic, and surgery hospitals. The table shows that as ownership levels increase, so do the percentage of physician referrals to their owned hospital. However, this association is weak. For cardiac hospitals, the

table can be interpreted as follows: Of the 43 physician owners of cardiac specialty hospitals who own less than a 0.5% share: 77% did not refer any patients, 14% referred up to half their patients, and 10% referred more than half their patients to their owned cardiac hospital. Of the 41 physician owners of cardiac specialty hospitals with an ownership share between 0.5% and 1%: 15% referred no patients, 32% referred up to half their patients, and 54% referred more than half their patients to their owned cardiac hospital. Of physician owners of cardiac specialty hospitals with a 1% or larger share: 20% referred no patients, 35% referred half their patients, and 46% referred more than half their patients to their owned cardiac hospital.

**Table 4.4**

**Physician Ownership and Referral Shares to Specialty Hospitals  
For the Site Visit Market Areas**

<b>Physician Owners – Percent Of Ownership</b>	<b>Number of Owners</b>	<b>Percent of Owner Referrals to Their Specialty Hospital</b>		
<b>Cardiac Hospitals</b>		<b>0%</b>	<b>1-50%</b>	<b>51-100%</b>
<b>0 - .5%</b>	43	77%	14 %	10%
<b>.5 - 1%</b>	41	15	32	54
<b>&gt; 1%</b>	46	20	35	46
<b>Total referring MDs</b>	130	37%	27%	37%
<b>Orthopedic Hospitals</b>				
<b>0 - .5%</b>	21	67%	24%	10%
<b>.5 - 1%</b>	20	60	35	5
<b>&gt; 1%</b>	38	53	26	21
<b>&gt; 5%</b>	19	11	11	79
<b>Total referring MDs</b>	98	49%	24%	26%
<b>Surgery Hospitals</b>				
<b>0 – 1%</b>	7	86%	14%	0%
<b>1 – 5%</b>	18	72	6	22
<b>&gt; 5%</b>	7	29	29	43
<b>Total referring MDs</b>	32	66%	13%	22%

SOURCE: CY 2003 Medicare IPPS claims and ownership data from 11 facilities.

Note: The total number of physicians in *Table 4-4* does not equal the number of physician investors in *Table 3-1* because the practice of some physicians is primarily outpatient and lacked inpatient admissions, and/or the physician may have moved from an area and no longer generates Medicare inpatient claims in his or her owned hospital.

**Conclusion:** Medicare referrals to physician-owned hospitals come primarily from the physician owners. The middle columns (Proportion of Referrals to Specialty Hospitals) of Tables 4-1, 4-2, and 4-3 show the percentage of Medicare patients who are referred to the specialty hospitals by the physician

owners for cases primarily treated in each type of specialty hospital. The proportion of all cardiac cases referred by owners ranged from 61% at the Tucson Heart Hospital to 82% at the Oklahoma Heart Hospital. In the five orthopedic hospitals, physician-owners referred between 48% and 98% of the cases, and in one surgery hospital, physician-owners referred 90% of the cases.

A different, but seemingly similar question involves the referral patterns of the physician owners: What proportion of their total Medicare cases were referred to their owned hospital? This question is important because it shows the extent to which physician-owners directed their “business” to their owned hospital. High referral percentages by physician-owners could suggest that patients are being directed in line with financial incentives, although other factors are also likely involved in a referral decision.

In two cardiac hospitals visited, owners had a clear preference for referring cases to their owned hospital, with 65% and 75% of all their cases admitted to their hospital. In the third specialty cardiac hospital visited, owners referred almost the same number of cases to their facility as to competitor hospitals in the area. Physician-owners in all orthopedic/surgery specialty hospitals visited, except for one, referred most of their orthopedic or surgery cases to their competitor hospitals. This is not surprising, given the very small inpatient census at these hospitals. Consequently, we did not see clear, consistent patterns of preference for referring to specialty hospitals among physician owners relative to their peers.

To consider the relative size of ownership among physician owners, we also analyzed referral patterns based on ownership size categories in **Table 4.4**. This analysis suggests that there is a mildly positive correlation between the size of the physician’s ownership share and the percentage of his or her patients treated at the specialty hospital. We found only weak evidence that physicians with the greatest financial incentive refer most of their patients to the specialty hospital. When this weak evidence is combined with the more basic analyses presented in **Tables 4-1** through **4-3**, we are unable to conclude that referrals were driven primarily based on incentives for financial gain.

The empirical evidence supports the hypothesis that ownership has some effect in directing patients to specialty hospitals, although the effect appears to be weak. Physicians who have small ownership shares (shares being less than 0.5%) admit primarily to other hospitals in the community. Thus, their referral behavior is not consistent with the financial incentive to increase shareholder value. Large owners appear to refer more to their facilities, although we could not conclude whether they simply received more referrals because of their reputation in the community or because of their level of hospital ownership.

From case study interviews, it is clear that owners, and all physicians in general, are constrained in where they refer patients by several factors including (a) patient preferences, (b) managed care networks, (c) specialty hospital location, and (d) taking emergency room “call” in local competitor hospitals. Although this analysis is an important first step in understanding the relationship between physician ownership status and referral patterns, it does not take into consideration the specific needs or relative severity -- and potential profitability -- of the patient.

***Research Question 2: Do specialty hospitals in general, and physician owners in particular, systematically treat Medicare patients with a lower acuity than patients in peer competitor hospitals with the same condition?***

An important issue to consider when analyzing referral patterns is whether physician owners of specialty hospitals choose to treat their most severely-ill patients at the competitor hospitals rather than at their own specialty hospitals. Analyses related to this second research question may help clarify whether physician owners of specialty hospitals treat a different – and potentially more profitable – group of patients in the specialty hospitals.

To begin to understand potential differences in the populations treated at specialty versus competitor hospitals, we considered first the disease categories of Medicare patients. The capabilities of specialty hospitals differ depending on whether they are cardiac, orthopedic, or general surgery. To determine whether specialty hospitals do in fact treat a narrow range of focused diseases, we analyzed Medicare claims in specialty hospitals to identify the DRGs for discharges in specialty hospitals. If specialty hospitals do in fact focus primarily on a narrow range of DRGs consistent with their subspecialty (i.e., cardiac, orthopedic or general surgery), this focus would be one difference in the types of populations treated in specialty versus competitor hospitals.

To look at the types of patients treated in specialty hospitals, we considered the classification of patients, treated at cardiac, orthopedic, and surgery physician-owned specialty hospitals by major diagnostic categories (MDCs). For each type of physician-owned specialty hospital, the five most frequent patient MDCs were identified. As expected, the great majority of patients treated in cardiac and orthopedic physician-owned specialty hospitals are in MDCs 5 (circulatory system) and 8 (musculoskeletal system and connective tissue), respectively. For cardiac specialty hospitals, 82% of patients were in MDC 5 and, for orthopedic specialty hospitals, 83.5 patients of patients were in MDC 8. In contrast, as reflected by their MDCs, patients treated in physician-owned surgery specialty hospitals are much more diverse, with three MDCs accounting for about 50% of hospitalizations: MDC 8 with 30.9%, MDC 6 (digestive system) with 12%, and MDC 13 (female reproductive system) with 10.3%.

Having confirmed that discharges from physician-owned specialty hospitals showed the expected service concentration of these facilities, we examined the critical but complex issue of Medicare patient severity. Referring patients of lower patient severity within DRGs could be an indicator of profitability of a patient driving referral.

In our analysis, we used the 3M™ APR-DRG Grouper (version 20) system to assign case mix classifications of patients within DRGs.<sup>5</sup> The APR-DRG classification was used primarily to stratify

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<sup>5</sup> APR-DRGs are an enhanced extension of the basic DRG (diagnosis related group) concept developed by 3M's Clinical Research Group, the National Association of Children's Hospitals and Research Institutes (NACHRI), and several physician groups.

Whereas DRGs focus on the Medicare population, APR-DRGs describe a complete cross-section of acute care patients and are specifically designed to adjust data for severity of illness (How sick is the patient?) and risk of mortality (How likely is it that the patient will die?). The fundamental principle of APR-DRGs is that the severity of illness and risk of mortality are both dependent on the patient's underlying condition. High severity of illness and risk of mortality are characterized by multiple serious diseases and the interactions between the disorders.

comparisons of cases treated by specialty hospitals and competitor hospitals. Particularly important are the 4-level severity groups used in this system: minor, moderate, major, and extreme. These have been developed by 3M Corporation to indicate how complex the treatment is for a given patient. In most analyses of referral patterns, transfers, and outcomes, a two-part severity indicator was used that combined major/extreme into a single “high severity” class. This is a complex system that assigns case mix largely on expected expenditures. Therefore, discharges classified as “major” or “extreme” are expected to be more costly than discharges classified as “minor.”<sup>6</sup>

Using the 3M™ APR-DRG Grouper we analyzed the relative severity of patients referred to physician-owned specialty hospitals by comparing specialty hospitals’ percentage of major and extreme hospitalizations with those of their peer competitor hospitals. The share of hospitalizations classified as “major or extreme” varied by type of physician-owned specialty hospital. Because the competitor hospitals are usually general hospitals with a wide diversity of cases, the comparisons were limited to the most frequently treated MDCs in the physician-owned specialty hospitals. MDC 5 is the dominant MDC in cardiac physician-owned specialty hospitals and MDC 8 is the dominant MDC in orthopedic specialty hospitals. For physician-owned surgery specialty hospitals, the eight DRGs with the most hospitalizations<sup>7</sup> were used for comparisons to competitor hospitals.

Because the specific expenditures and other factor relationships among the four APR severity groups are not standard across DRGs, a limitation arises in using the percentage of major and extreme cases to compare patients by facility. If a case is in a higher weight DRG, but lower APR severity class in one hospital, the comparability to a lower weight DRG, but higher APR severity class in another hospital is not clear. For the study of referral patterns, we ignore the effect of DRGs, and rank only on the APR severity class. Because of this limitation, the aggregated severity ranking of cases requires a degree of tolerance in interpreting the result. To the extent the hospitals have a similar DRG distribution, the severity mix contains information. To the degree that lower severity admissions are more profitable, as indicated in the MedPAC report<sup>8</sup>, higher proportions of low severity cases could be beneficial to owners even if the patients are being appropriately referred given that the community hospital may be better equipped to handle complicated cases.

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The 3M™ APR-DRG methodology is the most widely used severity-of-illness and risk-of-mortality adjustment tool available today. It has become the standard for adjusting large volumes of data to account for differences related to the individual’s severity of illness or risk of mortality. As a result, the focus can be on the differences in clinical care, thus providing equitable comparisons of quality and cost of care. APR-DRGs are also recognized as the tool of choice by commissions, state agencies, and others who disseminate comparative performance data to regulators, payers, and the general public.

<sup>6</sup> In the analyses of referral patterns, transfers, and outcomes, 3M’s four classes were collapsed into two classes with major and extreme classes combined into a single “high severity” class.

<sup>7</sup> The DRGs are: 209, 337, 336, 359, 358, 356, 500, and 499.

<sup>8</sup> “Report to the Congress: Physician-Owned Specialty Hospitals,” MedPAC, March 2005

**Table 4-5**  
**Distribution of Discharges by Severity of Illness by Type of Specialty Hospital and Their Competitors, 2003**  
**For the Population of All Specialty Hospitals and Their Competitors**

	Number		Admissions severity (APR Categories)				Percent
	Hospitals	Discharges	Minor	Moderate	Major	Extreme	Major-extreme
<b>Cardiac (MDC 5)</b>							
Specialty	17	30,700	29.7%	47.0%	19.7%	3.6%	23.3%
Competitor	98	153,721	23.8	46.7	23.9	5.7	29.5***
Total	115	184,421					
<b>Orthopedic (MDC 8)</b>							
Specialty	40	6,699	55.9	37.8	6.1	0.2	6.3
Competitor	189	100,529	30.1	47.0	20.8	2.1	22.9***
Total	229	107,228					
<b>Surgery</b>							
Specialty	10	495	59.0	32.9	8.1	0.0	8.1
Competitor	31	4,185	36.7	45.3	16.9	1.1	18.0***
Total	41	4,680					

NOTE:

\*\*\*Indicates statistically significant at the 1% level (difference between specialty hospital and competitor hospital, within group).

SOURCE: Medicare IPPS claims, CY 2003.

**Cardiac Specialty Hospitals:** *Table 4-5* shows the percentage distribution of the cardiac discharges across 3M's four severity of illness classes (minor, moderate, major, and extreme) for the physician-owned specialty hospitals and their competitors. Physician-owned cardiac specialty hospitals had 29.7% of their MDC 5 discharges in the minor severity class, whereas their competitors had 23.8%.

Conversely, 3.6% of specialty discharges were in the most extreme severity class, whereas their competitors had 5.7%. The final column in *Table 4-5* shows the combined major/extreme share of discharges. The 17 physician-owned cardiac specialty hospitals had 23.3% of their discharges in the major/extreme class, whereas the competitor hospitals had 29.5% of their discharges in the higher severity groups.

If physician owners are motivated by financial incentives, they may refer less-severe cases to their owned facility under the Medicare per case payment system. In order to assess the severity level of owner referrals, the severity level of the discharges was associated with physician ownership, with the following results. *Table 4-6* shows the severity of cardiac cases stratified by owner category. For cardiac discharges in Dayton, the percentage of cases referred by non-owners to the Dayton Heart Hospital which were high severity, i.e., 41.9%, was much higher than the percentage of severe cases referred by the non-owners to the competitor hospitals, i.e. 29.9%. Likewise, owners of the Dayton Heart Hospital referred a higher percentage of severe cases to their facility, 37.8%, than they referred to competitor hospitals. Because the Dayton Heart Hospital is the second oldest MedCath facility, it may be that, as a specialty facility matures, its service range and ability to treat more severe cases may expand.

In Fresno, it was difficult to infer much due to the small number of cases, as the Fresno Heart Hospital was operating for only a short period in 2003. Except for Dayton, the percentages of major/extreme cases were lower in specialty hospitals than in competitor hospitals; however, the differences in the percentages are not statistically significant, usually because of small sample sizes.

**Table 4-6**

**Cardiac Admissions by Physician-Ownership Status and Severity of Illness  
For the Site Visit Market Areas**

% of cases referred by physician type to hospital type that were major/extreme	Non-owners		Small owners (Less than a 2.5% share)		Large owners (Greater than a 2.5% share)	
	Competitor hospitals	Specialty hospitals	Competitor hospitals	Specialty hospitals	Competitor Hospitals	Specialty hospitals
	<b>Dayton</b>					
Total Admissions	8,205	456	669	1,344	n/a	n/a
% Major/extreme	29.9%	41.9%***	29.9%	37.8%***	n/a	n/a
<b>Fresno</b>						
Total Admissions	3,477	8	1,340	54	1,105	115
% Major/extreme	30.1%	12.5%	16.3%	22.2%	15.0%	8.7%*
<b>Oklahoma City</b>						
Total Admissions	10,903	643	955	1,357	32	1,538
% Major/extreme	27.0%	20.4%***	25.0%	22.3%	34.4%	21.2%
<b>Tucson</b>						
Total Admissions	5,865	653	866	963	n/a	n/a
% Major/extreme	27.9%	24.2%*	21.3%	18.4%	n/a	n/a

NOTE: n/a indicates not applicable because there are no “big” owners (owners with a 2.5% or greater ownership interest).

\*\*\*, \*\*, \* indicates the difference in major/extreme % is statistically significant at, respectively, 1%, 5%, and 10% levels.

SOURCE: CY 2003 Medicare IPSS claims and ownership data from 11 facilities.

**Orthopedic Specialty Hospitals:** The orthopedic physician-owned specialty hospitals had over half (55.9%) of their MDC 8 discharges in the least severe class, whereas their competitors had 30.1% (**Table 4-5**). Orthopedic specialty hospitals had almost no (0.2%) discharges in the most severe class whereas their competitors had 2.1% of their discharges in the most severe class. Orthopedic specialty hospitals had 6.3% of their discharges in the major/extreme classes whereas the competitor hospitals had 22.9% of their discharges in these two highest severity classes. The difference between the physician-owned specialty and competitor hospitals is statistically significant at the 1% level.

**Surgery Specialty Hospitals:** The physician-owned surgery specialty hospitals also had over half (59%) of their discharges in the least severe class whereas their competitors had 36.7% (**Table 4-5**). These specialty hospitals had 0.0% of their discharges in the most severe class whereas their competitors had 1.1%. Surgery specialty hospitals had 8.1% of their discharges in the major/extreme class whereas the competitor hospitals had 18.0% their discharges in these

two highest severity classes – more than twice as high as for the physician-owned specialty hospitals. The difference between the physician-owned specialty and competitor hospitals is also statistically significant at a 1% level.

**Conclusion:** The empirical data in both the large population and the six site market areas shows that the physician-owned specialty hospitals have lower percentages of major/extreme cases compared to competitor hospitals, particularly the orthopedic and surgery hospitals. However, substantial variation in severity levels exists in both specialty and peer hospitals. The physician-owned cardiac hospitals had, on average, 23.3% of their cases in the major/extreme categories, whereas the competitor hospitals had an average 29.5% of their cases in these two higher severity categories. However, severity differences were not consistent across all hospitals; some physician-owned cardiac hospitals had higher severity levels than competitor hospitals. For example, at the Dayton Heart Hospital, owners and non-owners alike referred higher acuity patients to that facility than to competitor hospitals. In this case, the referral patterns of physician-owners were the opposite of the behavior that would promote financial gain. The wide variation in patient acuity among cardiac, orthopedic, and surgery specialty hospitals implies that they are not a homogeneous group.

**Research Question 3: Do specialty hospitals transfer patients with higher acuity to peer competitor hospitals more often than do other peer hospitals and do they receive fewer high acuity patients in return?**

Transfers between specialty and competitor hospitals represent an opportunity for specialty hospitals to transfer the burden of treating sicker patients to competitor hospitals. The transfer of high acuity patients from a cardiac hospital was cited by a competitor hospital executive during the site visit interviews as evidence of “cherry picking.” In order to study this issue, transfer data from the entire population of specialty and competitor hospitals were used because there were too few transfers in the 11 case study sites. A transfer analysis is presented for only the cardiac hospitals, because the number of transfer patients for the orthopedic and surgery hospitals is very small.

A patient being treated in one hospital may be sent or transferred to another inpatient facility in order to continue treatment. This type of transfer is termed a “transfers out” and the hospital is considered the “sending hospital.” The hospital that accepts the transferred patient, or the “transfers in,” is considered the “receiving hospital.” The first claim, from the “sending” hospital is considered a “transfers-out” while the second claim is coded as a “transfers-in.”

In this analysis, two transfer rates were calculated: (1) transfers-out rates; and (2) transfers-in rates. Transfers-out rates were calculated by dividing the transfer-out cases by the number of total discharges in a year (2003). Similarly, transfers-in rates are calculated by dividing transfers-in cases by the number of total discharges in a year (2003). Rates were computed separately for the specialty cardiac and the competitor hospitals for the areas where the cardiac specialty hospitals are located. The transfers-out rates are not identical to the transfers-in rates because specialty and general hospitals are not completely closed systems within a city. Acute general hospitals have higher transfers-in than transfers-out rates because they draw on more hospitals than do specialty hospitals and can treat a wider variety of illnesses. Almost all transfers-outs from specialty hospitals go to general hospitals. The severity level of each

transferred patient is aggregated using the previous method, where the percentage of major/extreme cases is computed. The following discusses the results of the transfer analysis.

**Transfers-out:** The transfers-out rate (*Table 4-7*) for the population of cardiac specialty hospitals in MDC 5 was 1.1%, a rate almost identical to that for other local peer competitor hospitals (for cardiac cases), 1.0%. Cardiac specialty hospitals transferred out 346 cases, with 43.1% in the major/extreme category, whereas competitor hospitals transferred out 1,558 cardiac cases, with 37.6% in the major/extreme category. The difference in severity levels between the transfers, 5.5 percentage points is not statistically significant at a 1% level.

**Transfers-in:** The transfers-in rate for cardiac specialty hospitals was 3.3%, nearly double the rate of local competitor hospitals, 1.8%. Cardiac specialty hospitals transferred in 1,018 cases, with 36.4% in the major/extreme category, whereas competitor hospitals transferred in 2,762 cardiac cases, with 41.1% in the major/extreme category. The difference in severity levels between the transfers, 4.7 percentage points, is statistically significant at a 1% level.

**Table 4-7**

**Transfer Rates and Severity Levels by Specialty and Competitor Hospitals  
For the Population of All Specialty Hospitals and Their Competitors**

	Cardiac (MDC5)			
	Discharges		Transfer Rate	Percent Major / Extreme
	Total	Out / In		
<b>Transfers out</b>				
Specialty hospitals	30,700	346	1.1%	43.1%
Competitor hospitals	155,344	1,558	1.0	37.6
<b>Transfers in</b>				
Specialty hospitals	30,700	1,018	3.3%***	36.4***
Competitor hospitals	155,344	2,762	1.8	41.1

NOTE: \*\*\* indicates statistically significant at the 1% level, compared with competitors.

SOURCE: Medicare IPPS Claims, CY2003.

**Conclusion:** Physician-owned cardiac hospitals transfer patients (transfers-out) to other facilities at about the same rate as experienced for cardiac patients in competitor hospitals. The cardiac specialty hospitals received transferred patients (transfers-in) at about twice the rate as experienced by competitor hospitals. The difference between the severity levels of Medicare patients transferred from specialty cardiac hospitals and to competitor hospitals (for similar cases) is not statistically significant. Consequently, the notion that specialty cardiac hospitals are transferring more severely ill patients to general hospitals is not supported by our findings. Patients transferred into cardiac hospitals have slightly lower severity levels on average than patients transferred into competitor hospitals for cardiac services.

***Research Question 4: Do specialty hospitals admit fewer, less acutely ill, patients through their emergency departments than do peer competitor hospitals?***

We found only limited, weak evidence of a relationship between referral patterns and physician ownership. We also investigated whether factors, besides financial incentives stemming from physician ownership, influence referral patterns of physicians at specialty hospitals. One potential factor is the Emergency Department (ED). EDs embody conflicting incentives for all hospitals. On the one hand, they are an important source of inpatient and outpatient referrals. Yet, on the other hand, EDs also attract a generally higher acuity patient when admitted.

Cardiac specialty hospitals, because of the nature of the illnesses they treat, are more dependent on acutely ill patients than other specialty hospitals. In general, cardiac patients tend to arrive at hospitals more often in an emergency situation and, in order to adequately treat these patients, the cardiac hospitals operate much larger, fully equipped ED services. Except for the Fresno Heart Hospital (which did not have an ED) the cardiac hospitals that we visited operated modest multi-bed EDs with full time emergency care physicians and staff. The cardiac hospitals told us that they would transfer certain complex patients to acute general hospitals after stabilization if they believed they lacked the specialized services required.

The orthopedic and surgery hospitals that we visited, with two exceptions, operated very limited emergency departments that met state requirements with a single bed and on-call physician staffing. Consequently, most of their surgery procedures are likely to be elective and not the result of an emergency admission.

We found that a significant number of specialty hospital owners “took emergency call” at competitor hospitals, which was to the benefit of the both specialty hospital owners and the competitor hospitals. Local acute general competitors needed the expertise of specialty hospital physician owners to treat (and share the burden of) its ED patients.

To explore how ED facilities might affect physician referral patterns, we examined ED utilization and the severity of illness of the patients for the population of specialty and competitor hospitals (**Table 4-8**). About 20% of the cardiac patients in physician-owned cardiac hospitals were admitted through the ED, while about 50% were admitted through the ED at competitor hospitals. For patients admitted through the ED, we compared the percentage of discharges that are major/extreme. We found that the percentage of major/extreme discharges for cardiac ED patients admitted at the cardiac specialty hospitals, 27.3%, was slightly lower than the cardiac patients who were admitted through the ED at competitor hospitals, 31.6%

(Table 4-8). Within the study sample of cardiac hospitals visited, the severity of Medicare patients admitted through the ED was slightly higher than those admitted to competitor hospitals. Due to the small number of cases, no conclusions could be drawn about the severity levels of patients admitted from the EDs of the physician-owned orthopedic/surgery hospitals.

**Table 4-8**

**Cardiac Patients Admitted Through ED by Major/extreme Category  
For the Population of All Cardiac Specialty Hospitals and Their Competitors**

	Competitor Hospitals	Specialty Cardiac Hospitals
Cases admitted through the ED		
Number	66,881	6,322
Percentage of all cardiac cases	52.8%	20.7%
Percentage Major / Extreme	31.6%	27.3%***

NOTE: \*\*\* indicates the difference in major/extreme % is statistically significant at the 1% level.

SOURCE: CY 2003 Medicare IPPS claims.

**Conclusion:** A smaller percentage of patients were admitted through the ED in physician-owned cardiac specialty hospitals than in competitor hospitals. Very few patients were admitted from the ED in the orthopedic and surgery hospitals. The percentage of severely ill patients admitted through the ED of specialty cardiac hospitals was slightly lower than the percentage of severely ill patients admitted through the ED of competitor hospitals. The notion that specialty cardiac hospitals are systematically screening out more severely ill patients using the ED is not supported by our findings.

## Chapter 5: Quality of Care and Patient Satisfaction

In mandating this study of physician-owned specialty hospitals, Congress also required information on the policy issues related to quality of care and patient satisfaction in physician-owned specialty hospitals. The CMS study was required to:

“...compare the quality of care furnished in physician-owned specialty hospitals and in local full-service community hospitals for similar conditions and patient satisfaction with such care ...”

As in our analysis of physician referral patterns, we developed research questions pertaining to the quality and patient satisfaction policy issues specifically raised by Congress. Separate research questions were developed for analyses related to quality of care and patient satisfaction.

Proponents of specialty hospitals contend that by focusing on a limited range of diagnoses and procedures, they have the potential to increase the quality of care provided to their patients. This argument centers on the idea that greater efficiency and expertise comes with focus, practice and repetition. Following this logic, specialty hospitals have the potential to provide high quality of care as a result of their more narrow focus. Specialization could, however, negatively affect quality of care. Specialty hospitals are typically small and the staff has experience with patients in fewer DRGs so that the facility may lack equipment, personnel and/or experience required to treat complex, multi-organ problems that may present following surgery. In contrast, community hospitals often are better equipped to treat a broader array of patients with complex conditions. Therefore, patients with conditions that fall outside the particular area of expertise found in a specialty hospital, or patients who may experience serious complications resulting from the lack of resources or knowledge to deal with acute or emergency situations, may require emergency transfers to other acute care settings. Our study sought to evaluate the extent to which focusing on a limited range of diagnoses and procedures affected quality of care, using both empirical and qualitative analyses. The questions to be addressed in relation to quality of care are:

- 1. Are there measurable differences in the quality of care in specialty versus competitor hospitals?*
- 2. If so, what factors might explain these differences in specialty versus competitor hospitals?*

The sources of data for the quality-of-care analysis includes interview data gathered from the six market area site visits, focus groups of patients from specialty and competitor hospitals, and Medicare claims files containing inpatient PPS claims.

An important but distinct aspect of quality of care is provided by patients' perspectives about the care they receive during their hospital stay. Although patient satisfaction is but one aspect of quality of care, Congress clearly placed emphasis on this issue distinct from clinical quality. Therefore, we considered specifically how patients in both specialty and competitor hospitals viewed the care they received. By their nature, specialty hospitals can differ significantly from competitor hospitals. Specialty hospitals are generally much smaller than

competitor hospitals and offer a limited set of services. By offering a high level of patient amenities, a “customer focus,” specializing on a limited range of diagnoses and procedures, and by offering more clinical staff per patient, specialty hospitals have the potential to provide care that is rated very highly by their patients.

Specialty hospitals often describe themselves as emphasizing service, quality and efficiency. Particular care is taken in specialty hospitals to concentrate on the individual needs of patients. This is more feasible in specialty hospitals relative to competitor hospitals as a result of the smaller size, more limited clinical focus, better staffing, and general emphasis on elective rather than emergency admissions. In general, because of their small size and limited services, specialty hospitals are better able to plan admissions and needed staffing than competitor hospitals; specialty hospitals rarely face overworked staff juggling emergency admissions. As a result, the atmosphere in specialty hospitals tends to be “calmer” and “more friendly” to patients. This core difference in the nature of specialty hospitals likely may affect patient satisfaction. The specific research question we posed related to patient satisfaction was:

### ***3. How do the patients view the care they received in specialty versus competitor hospitals?***

To evaluate patient satisfaction and experience with care, we relied primarily on two sources of data: site visit interviews and focus groups with Medicare beneficiaries who were treated for similar conditions at either a physician-owned specialty hospital or an acute care general hospital in 2004.

Our analyses of quality of care and patient satisfaction have a number of limitations. First, based on available resources and time to conduct this study, we were only able to visit and gather information on some aspects of quality of care and patient satisfaction in 11 specialty hospitals in six cities. Second, the patient satisfaction analysis relies on a limited number of focus groups, which enabled us to hear directly from patients about their experiences and observations. We conducted eight focus groups comprised of Medicare beneficiaries with similar diagnoses and conditions. Three focus groups consisted of patients treated in competitor hospitals, and five focus groups consisted of patients treated in specialty hospitals. To construct the focus groups, we identified beneficiaries who had been hospitalized for the relevant conditions at either a specialty or competitor hospital using claims data, and then randomly selected group participants from these eligible beneficiaries. Although focus group results are not intended to be carried over to the underlying population of Medicare beneficiaries receiving care at either physician-owned specialty hospitals or competitor hospitals, they do provide insights into the patient’s perspective.

Third, all of our quantitative analyses of quality of care are limited to Medicare claims and therefore include only Medicare fee-for-service discharges. Quality of care analyses based on other payers, or Medicare Advantage, cannot be considered here because no comprehensive all-payer database exists. Fourth, though we make comparisons between specialty and competitor hospitals, it is clear from our case study interviews that not all peer competitor hospitals are true competitors. In 5 of the 11 specialty hospitals we visited, “competitor” community hospitals actually owned part of the specialty hospital, and in two instances, they were the majority stockholder.

The following section presents the overall findings of our study related to quality of care and patient satisfaction, organized by the major research questions presented above.

***Research Question 1: Are there measurable differences in the quality of care in specialty versus competitor hospitals?***

Management and executives of the specialty hospitals we visited believed strongly that they achieve improved outcomes for their patients. Reasons for this belief included many of the topics discussed above, including the specialization and size of the hospitals and the higher quality, better trained staff. Executives of specialty hospitals often cited, and gave us, internal reports showing mortality and morbidity rates, lengths of stay, and discharges to support their contention that their hospitals were either the “best in the area” or at least compared very favorably with national norms. Physicians often cited better patient outcomes as a motivating reason for getting involved with a specialty hospital in the first place and the reason for admitting patients to the specialty hospital. A number of the specialty hospitals we visited were initially formed because of physician dissatisfaction with patient outcomes in the local community hospitals, as well as a desire to create an environment where these outcomes could be improved.

To further examine any measurable differences in the quality of care between specialty and competitor hospitals, we turned to analysis of survival and outcomes based upon Medicare claims data. We focused our analysis on patients admitted to cardiac, orthopedic and surgery specialty hospitals and their community hospital competitors during 2003; January 2004 data were used to examine 30-day mortality and readmissions for patients discharged during December, 2003.

The data used to calculate outcomes for heart patients were limited to admissions for conditions covered by MDC 5, which accounts for 82% of Medicare fee-for-service (MFFS) discharges from cardiac specialty hospitals. This allows for a more homogeneous patient mix, provides an emphasis on the heart patients admitted to the cardiac hospitals and their community competitors without including in the comparison a large number of cases (particularly from the competitor hospitals) that fall into these additional MDCs but are not directly related to comparable service lines in the specialty hospitals. Similarly, data used to calculate outcomes for the orthopedic patients were limited to records coded with MDC 8, which accounts for 83% of all MFFS discharges from orthopedic specialty hospitals. The data for surgery patients were limited to records coded with MDC 8, 12 or 13 which accounts for about 50% of all MFFS discharges from surgery specialty hospitals.

To adjust for patient severity, we used the severity score generated by the APR-DRG risk adjustment grouper, a methodology developed by 3M Corporation. The severity score classified each Medicare claim into one of four subclasses of mortality risk: 1) Minor, 2) Moderate, 3) Major, and 4) Extreme. For each analysis, we stratified results by severity score, examining outcomes of admissions with moderate severity (i.e., those with an APR-DRG severity category of Minor or Moderate) and severe (i.e., those with an APR-DRG severity category of Major or Extreme). We calculated the following measures of quality of care:

- mortality during hospitalization and within 30 days of discharge from the hospital;
- complications during hospitalization;
- readmission within 30 days of discharge; and
- discharge disposition.

The analyses focused on hospital performance in the aggregate by comparing all Medicare fee-for-service patients admitted to specialty hospitals during 2003 with their community acute care hospital competitors. All outcomes were stratified by specialty hospital type, i.e., cardiac, orthopedic and surgery and all analyses report results specific to hospital type. In an effort to ensure that patient population at the competitor hospitals closely mirrored that of the specialty hospital, we restricted our analyses to admissions related to specific MDC groups for each hospital. We report results on admissions for MDC 5 at specialty heart hospitals and cardiac patients admitted to the competitor hospitals; MDC 8 at orthopedic hospitals, and MDC 8, 12, and 13 for surgery hospitals and like patients admitted to the acute care competitor hospitals.

In addition, further stratifications were used for each hospital type. For cardiac we calculated the measures for patients having major surgical procedures, for patients having Percutaneous Transluminal Coronary Angioplasty (PTCA) and other cardiac catheterization procedures and for patients admitted with cardiac medical conditions (e.g., congestive heart failure, myocardial infarction, etc.). For the orthopedic hospitals we stratified patients by whether their procedure involved a major procedure, minor procedure, or a medical orthopedic admission; for surgery hospitals we stratified patients by whether their surgery was major or minor. In this way we attempted to compare like patients in specialty and community hospital settings.

***Mortality:*** Mortality is a commonly used measure to evaluate health care quality because it represents a very important event and can be assessed with administrative data. We calculated mortality rates in two ways. In the case of the cardiac procedures and conditions, we used the quality indicator software to calculate the Agency for Healthcare Research and Quality Indicators (AHRQ QI). In addition, we calculated mortality rates for the period of the inpatient stay, as well as the inpatient stay plus the 30-day period following discharge from the hospital, for each of the three types of specialty hospitals and their competitors. We used information from the discharge disposition listed on the claim to identify patients who died during hospitalization. To determine 30 day mortality we used the Medicare Enrollment Data Base to determine whether the beneficiary died within 30 days of discharge from the hospital. These mortality rates are stratified by disease severity using the APR-DRG score (discussed in Chapter 4), and we present results for claims of moderately ill patients separately from those representing severely ill patients. In addition, we used DRGs to divide the heart, orthopedic, and surgical MDCs (5, 8, 12 and 13) into categories based on the intensities of the procedures, and we divided patients by procedure type within specialty hospital category. We believed this would control for differences in procedures conducted at specialty versus competitor hospitals. We conducted t-tests to evaluate the statistical significance in the average (means) between the rates for specialty hospitals and their competitors.<sup>9</sup>

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<sup>9</sup> A t-test is a statistical test that measures the likelihood that two numbers describing two populations actually differ, given that they are estimated from a sample. The p value is the probability that the difference is a chance finding. Thus, a p value of .01 indicates a 1% chance that the numbers differ because we are using a sample.

The Inpatient Quality Indicators (IQIs) for the cardiac specialty hospitals show that the overall quality of care is good (see *Table 5.1* and *Table 5.2*). For each of the four procedure-specific mortality rates (Abdominal Aortic Aneurysm (AAA) repair, Coronary Artery By-pass Graft (CABG), PTCA, and Carotid Endarterectomy) the observed/expected ratios are less than 1, indicating that the specialty hospitals performed better than expected given the hospital's case mix. Similarly, the observed/expected ratio for the two condition-specific mortality rates (Acute Myocardial Infarction without transfer cases (AMI) and Congestive Heart Failure (CHF) are also well below 1. Overall, the competitor hospitals also performed well on the IQIs. The observed/expected ratio was less than 1 for three of the four procedure-specific mortality rates and the two condition-specific mortality rates. It is worth noting that specialty hospitals did appear to perform somewhat better than competitor hospitals on three of the IQIs (i.e., the observed/expected rates were all lower).

**Table 5.1**  
**Cardiac Specialty Hospitals and Community Acute Care Hospital Competitors:**  
**AHRQ Inpatient Quality Indicators, Mortality Rates among Select Surgical Procedures\***  
**For the Population of All Specialty Hospitals and Their Competitors**

	Specialty	Competitor
<b>AAA repair</b>		
Number of deaths	16	101
Population at risk	206	948
Observed rate	77.67	106.54
Expected rate	99.91	141.82
<i>Observed/expected ratio</i>	<i>0.78</i>	<i>0.75</i>
<b>CABG</b>		
Number of deaths	152	484
Population at risk	4,036	10,922
Observed rate	37.66	44.31
Expected rate	47.87	51.50
<i>Observed/expected ratio</i>	<i>0.79</i>	<i>0.86</i>
<b>PTCA</b>		
Number of deaths	93	469
Population at risk	8,925	24,706
Observed rate	10.42	18.98
Expected rate	14.70	19.71
<i>Observed/expected ratio</i>	<i>0.71</i>	<i>0.96</i>
<b>Carotid endarterectomy</b>		
Number of deaths	4	19
Population at risk	142	315
Observed rate	28.17	60.32
Expected rate	49.05	49.31
<i>Observed/expected ratio</i>	<i>0.57</i>	<i>1.22</i>

\*NOTE: The data for observed and expected rates are per 1,000 discharges.

SOURCE: CY 2003 Medicare IPPS claims.

*Observed/Expected ratios* less than 1 indicate better than expected performance or fewer than expected deaths.

**Table 5.2**  
**Cardiac Specialty Hospitals and Community Acute Care Hospital Competitors:**  
**AHRQ Inpatient Quality Indicators, Mortality Rates among Select Medical Admissions\***  
**For the Population of All Specialty Hospitals and Their Competitors**

	Specialty	Competitor
<b>In-hospital mortality rates</b>		
<b>CHF</b>		
Number of deaths	95	1,408
Population at risk	3,001	30,859
Observed rate	31.66	45.63
Expected rate	76.39	76.92
<i>Observed/expected ratio</i>	<i>0.41</i>	<i>0.59</i>
<b>AMI, without transfer cases</b>		
Number of deaths	197	1,649
Population at risk	3,094	14,804
Observed rate	63.67	111.39
Expected Rate	91.78	128.51
<i>Observed/expected ratio</i>	<i>0.69</i>	<i>0.87</i>

\* NOTE: The data for observed and expected rates are per 1,000 discharges.

SOURCE: CY 2003 Medicare IPPS claims.

*Observed/Expected ratios* less than 1 indicate better than expected performance or fewer than expected deaths

The overall mortality rates for inpatient, and for inpatient plus 30-day also indicate that the quality of care in specialty hospitals is good (*see Tables 5.3 – 5.5*). Across the three specialty hospital types, for both moderately ill (APR-DRG Minor or Moderate) and severely ill patients (APR-DGR Major or Extreme), the percentage of patients who died while hospitalized was significantly less for specialty hospitals than that for competitor hospitals, for all DRG groupings. This trend holds true for inpatient plus 30-day mortality rates. The t-test on the difference between the means (average) indicates that these differences are significant at the .1% ( $p < 0.001$ ) level.

**Table 5.3**  
**Heart Specialty Hospitals and Community Acute Care Hospital Competitors:**  
**Overall Mortality Stratified by Patient Severity and by DRG Groupings (MDC=5)**  
**For the Population of All Specialty Hospitals and Their Competitors**

	Inpatient Mortality						Inpatient + 30 day Mortality					
	Specialty			Competitor			Specialty			Competitor		
	# died	N	% died	# Died	N	% died	# died	N	% died	# died	N	% died
Moderate Severity												
Major												
Heart	16	3,326	0.48*	63	8,934	0.71	39	3,326	1.17*	147	8,934	1.65
PTCA, Etc.	19	8,046	0.24*	70	22,525	0.31	72	8,046	.90*	240	22,525	1.07
Other	39	6,690	0.58*	543	53,593	1.01	128	6,690	1.91*	1,886	53,593	3.52
Severe												
Major												
Heart	201	2,076	9.68*	935	7,810	11.97	279	2,076	13.44	1,245	7,810	15.94
PTCA, Etc.	27	1,125	2.40*	231	4,356	5.30	66	1,125	5.87	408	4,356	9.37
Other	157	1,912	8.21*	2244	20,848	10.76	299	1,912	15.64	4,000	20,848	19.19

\* indicates the differences between specialty and competitor hospitals are statistically significant at a .1% level.

NOTE: Moderate Severity includes APR-DRG both severity categories Minor and Moderate; Severe includes APR-DRG both severity categories Major and Extreme

SOURCE: CY 2003 Medicare IPPS claims.

**Table 5.4**  
**Orthopedic Specialty Hospitals and Community Acute Care Hospital Competitors: Overall**  
**Mortality Rates Stratified by Patient Severity and DRG Grouping (MDC=8)**  
**For the Population of All Specialty Hospitals and Their Competitors**

	Inpatient Mortality						Inpatient + 30 day Mortality					
	Specialty			Competitor			Specialty			Competitor		
	# died	N	% died	# died	N	% died	# died	N	% died	# died	N	% died
Moderate Severity												
Major Ortho	0	3,954	0.00*	124	40,192	0.31	5	3,954	.13*	660	40,192	1.64
Minor Ortho	0	1,614	0.00*	6	13,960	0.04	1	1,614	.06*	96	13,960	.69
Medical	0	79	0.00*	102	14,583	0.70	1	79	1.27*	620	14,583	4.25
Severe Severity												
Major Ortho	2	346	0.58*	526	14,178	3.71	4	346	1.16*	1228	14,178	8.66
Minor Ortho	0	24	0.00*	28	829	3.38	0	24	.00*	50	829	6.03
Medical	0	1	0.00	315	4,484	7.03	0	1	.00	830	4,484	18.51

\* indicates the differences between specialty and competitor hospitals are statistically significant at a .1% level.

NOTE: Moderate Severity includes APR-DRG both severity categories Minor and Moderate; Severe includes APR-DRG both severity categories Major and Extreme

SOURCE: CY 2003 Medicare IPPS claims.

**Table 5.5**  
**Surgery Specialty Hospitals and Community Acute Care Hospital Competitors:**  
**In-Hospital and 30 Day Mortality reported by patient severity (MDC = 8, 12, 13)**  
**For the Population of All Specialty Hospitals and Their Competitors**

	Inpatient Mortality						Inpatient + 30 day Mortality					
	Specialty			Competitor			Specialty			Competitor		
	# died	N	% died	# died	N	% died	# died	N	% died	# died	N	% died
Moderate Severity												
Major Surgery	0	191	0.00*	2	2,347	0.09	1	191	0.52*	22	2,347	0.94
Minor Surgery	0	253	0.00	0	877	0.00	0	253	0.00*	1	877	0.11
Severe Severity												
Major Surgery	0	38	0.00*	18	694	2.59	0	38	0.00*	40	694	5.76
Minor Surgery	0	1	0.00	1	8	12.50	0	1	0.00	3	8	37.50

\* indicates the differences between specialty and competitor hospitals are statistically significant at a .1% level.

NOTE: Moderate Severity includes APR-DRG both severity categories Minor and Moderate; Severe includes APR-DRG both severity categories Major and Extreme

SOURCE: CY 2003 Medicare IPPS claims.

**Complications During Hospitalization:** The occurrence of adverse events and complications during hospitalization is another important aspect of health care quality. The Agency for Healthcare Quality and Research’s (AHRQ) Patient Safety Indicators (PSIs) reflect the quality of care inside hospitals by focusing on potentially avoidable complications and iatrogenic events. They are not intended to be definitive quality measures as there are many factors that influence performance on quality indicators - some of which are independent of quality of care. However, high rates may indicate possible quality problems. Because no “right rates” have been established for most indicators, AHRQ suggests comparing rates among providers that are, ideally, as similar as possible in case-mix, socioeconomic status and other demographics (i.e., “peer groups”). We attempted to account for these differences by comparing the ratio of the observed to the expected complication rates, which focuses on performance of specialty and competitor hospitals given their patient mix. The tables below show only a sample of the PSI measures that were computed.

The PSIs indicate that, overall, cardiac specialty and competitor hospitals are performing better than expected in terms of in-hospital complications and adverse events in some PSIs and worse than expected in others (*see Table 5.6*). Note the PSIs where the observed/expected ratios are less than one, indicating that the cardiac specialty hospitals performed better than expected given the hospitals’ case mix. For example, cardiac specialty hospitals have lower than expected rates of infections due to medical care, post operative hip fractures, post operative deep vein thrombosis and post operative sepsis. Both cardiac specialty and competitor hospitals have higher than expected rates of iatrogenic pneumothorax. Competitor hospitals have higher than expected rates on several other PSIs. A similar analysis of Patient Safety Indicators was also performed for orthopedic and surgery specialty hospitals. The small number of discharges prevented us from drawing strong conclusions concerning complication rates for these hospitals.

**Table 5.6**  
**Cardiac Specialty Hospitals and their Acute Care Community Hospital Competitors:**  
**Select AHRQ Patient Safety Indicators**  
**For the Population of All Specialty Hospitals and Their Competitors**

<b>Patient Safety Indicators (PSIs)</b>		
	Specialty Hospitals	Competitor Hospitals
<b>Iatrogenic pneumothorax</b>		
Number of Cases	36	246
Population at risk	24,605	136,056
Observed Rate	1.46	1.81
Expected Rate	0.80	0.76
<i>Observed/expected ratio</i>	<i>1.83</i>	<i>2.38</i>
<b>Selected infections due to medical care</b>		
Number of Cases	39	539
Population at risk	28,562	137,988
Observed Rate	1.37	3.91
Expected Rate	2.42	2.94
<i>Observed/expected ratio</i>	<i>0.56</i>	<i>1.33</i>
<b>Post-op hip fracture</b>		
Number of Cases	4	33
Population at risk	19,549	58,853
Observed Rate	0.20	0.56
Expected Rate	0.36	0.41
<i>Observed/expected ratio</i>	<i>0.57</i>	<i>1.37</i>
<b>Post-op pulmonary embolism or DVT</b>		
Number of Cases	98	576
Population at risk	19,658	59,058
Observed Rate	4.99	9.75
Expected Rate	9.36	10.49
<i>Observed/expected ratio</i>	<i>0.53</i>	<i>0.93</i>
<b>Post-op sepsis</b>		
Number of Cases	22	165
Population at risk	3,848	11,791
Observed Rate	5.72	13.99
Expected Rate	8.53	13.62
<i>Observed/expected ratio</i>	<i>0.67</i>	<i>1.03</i>
<b>Accidental puncture or laceration</b>		
Number of Cases	174	630
Population at risk	30,704	155,441
Observed Rate	5.67	4.05
Expected Rate	4.47	3.07
<i>Observed/expected ratio</i>	<i>1.27</i>	<i>1.32</i>

\* indicates the differences between specialty and competitor hospitals are statistically significant at a .1% level.

NOTE: Observed and Expected rates are per 1,000 cases.

SOURCE: CY 2003 Medicare IPPS claims.

The complete table is in the appendix as Table A1

**Readmissions:** At times, patients are readmitted to the hospital shortly after an initial hospitalization (referred to as index admission) for the same condition, or a complication of that condition, and this may indicate that there was a problem associated with the quality of care received during the index admission. We calculated the number and rate of persons with a readmission within 30 days of being discharged from the hospital; 30 days is a commonly-used window for evaluating readmission rates. Readmission rates were stratified by patient severity level as measured by the APR-DRG, and DRG groupings to ensure that comparisons between the specialty hospitals and their competitors reflect similar groups of patients.

Patients who are readmitted may experience complications that are not accounted for in the PSI analysis. However, readmission rates are not adjusted for hospital case mix. In order to control for some of the differences in case mix between specialty and competitor hospitals, we stratified the sample by APR-DRG severity, and DRG groupings. Although this may account for some of the differences in hospital case mix, we were unable to account for differences in insurance, socioeconomic status, and other patient characteristics that may affect readmission rates. In addition, stratifying our sample in this way created categories with very small numbers (i.e., very few readmission rates), especially among specialty hospitals. Small numbers may also account for some of the seemingly large differences in the readmission rates of specialty and competitor hospitals.

In cardiac specialty hospitals, the proportion of patients in the moderate severity category readmitted after treatment at a cardiac specialty hospital ranges from 5% to nearly 9% depending on intensity of procedure (DRG grouping). This trend was similar for competitor hospitals (proportions ranged from less than 5% to 7.2%), indicating that for moderately ill patients the two hospital types have a similar performance (*see Table 5.7*). A t-test of the difference between means shows that the difference between the readmission rate for competitor and specialty hospitals was significant, with specialty hospitals having higher rates of readmission across all DRG groupings.

These outcomes were more pronounced for severe cardiac patients. A higher proportion of severely ill patients who went to cardiac specialty hospitals across all DRG groupings were readmitted to the hospital when compared to patients who went to competitor hospitals. Readmission rates for specialty hospitals ranged between 14.6% and 15.5% whereas competitor hospital rates were about 11% for all DRG groupings. A t-test for the difference between means confirms that these results are statistically significant; specialty hospital patients were significantly more likely to be readmitted than competitor hospital patients.

**Table 5.7**  
**Cardiac Specialty Hospitals and Competitor Acute Care Hospitals:**  
**Readmission Rates Stratified by Patient Severity and DRG Grouping**  
**For the Population of All Specialty Hospitals and Their Competitors**

	Specialty Hospitals			Competitor Hospitals		
	# readmissions	N	% readmissions	# readmissions	N	% readmissions
<b>Moderate Severity</b>						
Major Heart	278	3,326	8.36	536	8,934	6.00*
PTCA, Etc.	403	8,046	5.01	1,080	22,525	4.79**
Other	594	6,690	8.88	3,902	53,596	7.28*
<b>Severe Severity</b>						
Major Heart	305	2,076	14.69	860	7,812	11.01*
PTCA, Etc.	169	1,125	15.02	477	4,356	10.95*
Other	317	1,912	16.58	2,270	20,849	10.89*

NOTE: Comparisons are limited to patients in MDC 5; non-cardiac admissions are not included in this analysis.

\*, \*\* indicates the differences between specialty and competitor hospitals are statistically significant at the .1% and 5% levels respectively.

SOURCE: CY 2003 Medicare IPPS claims.

In orthopedic specialty hospitals, the percentage of patients in the moderate severity category readmitted after treatment at a specialty hospital ranged from roughly 1.2% to 1.6% (*see Table 5.8*). The percentage of readmissions was slightly higher for competitor hospitals than for orthopedic specialty hospitals, ranging from, approximately, 1.8% to 4.3%. A t-test of the difference between means showed that the difference between orthopedic specialty and competitor hospitals is significant for all DRG groupings. The percentage of orthopedic patients in the severely ill category readmitted to the hospital in all DRG groupings was similar across hospital types. The t-tests showed that the difference in proportion between specialty and competitor hospitals were significant at the  $p < 0.05$  level only for major and minor orthopedic surgical procedures and not significant for medical procedures. This suggests that the competitor and specialty hospitals performed about the same with respect to severely ill orthopedic patients. However, as with moderately ill patients, the number of readmissions at orthopedic specialty hospitals was very small.

**Table 5.8**  
**Orthopedic Specialty Hospitals and Competitor Acute Care Hospital Competitors:**  
**Readmission Rates reported by Patient Severity and DRG grouping (MDC=8)**  
**For the Population of All Specialty Hospitals and Their Competitors**

	Specialty Hospitals			Competitor Hospitals		
	# readmissions	N	% readmissions	# readmissions	N	% Readmissions
<b>Moderate Severity</b>						
Major Ortho	63	3,954	1.59*	1,008	40,193	2.51
Minor Ortho	22	1,614	1.36*	251	13,961	1.80
Medical	1	79	1.27*	638	14,584	4.37
<b>Severe Severity</b>						
Major Ortho	17	346	4.91**	843	14,179	5.95
Minor Ortho	1	24	4.17**	54	829	6.51
Medical	0	1	0.00	317	4,484	7.07

\*, \*\* indicates the differences between specialty and competitor hospitals are statistically significant at the .1% and 5% levels respectively.

NOTE: Moderate Severity includes APR-DRG both severity categories Minor and Moderate; Severe includes APR-DRG both severity categories Major and Extreme

SOURCE: CY 2003 Medicare IPPS claims.

Readmissions to both surgical and competitor hospitals for patients in MDC 8, 12 and 13 were too few in number to draw any significant conclusions from the data (especially among severely ill patients). Readmission rates for moderately ill patients with a major surgical procedure were lower for specialty hospitals whereas rates for minor surgical were lower for competitor hospitals, however, these were not statistically significant. There were very few severely ill patients discharged from specialty hospitals and consequently, the numbers of admissions and readmissions for both DRG groupings are too small relative to competitor hospitals to allow us to have confidence in these results. We would need to repeat these analyses with multiple years of data to reach any reliable conclusions regarding differences in the quality of care provided in surgical specialty hospitals versus their community acute care hospital competitors on this measure.

***Research Question 2: What factors might influence the quality of care rendered in specialty hospitals?***

The previous section used empirical analysis to look for measurable differences in the quality of care between specialty and competitor hospitals. Our findings, in general, suggest that specialty hospitals provide good care. To better understand how specialty hospitals provide care, we examine possible factors using information we collected during our site visits in the six market areas. During our site visits we interviewed a variety of staff members at specialty hospitals, including: staff nurses, nursing leadership, physicians, discharge planners, and quality and utilization directors. We also conducted a limited number of focus groups of specialty and competitor hospital patients in these same site visit markets. Because of time and resource constraints we focused our in-depth interviews on the specialty hospitals. We used these

interviews to help us characterize specialty hospitals with regard to structural and process characteristics that may influence the outcomes of care. These next sections describe some possible factors that influence the quality of care in specialty hospitals based on our site visits and focus groups.

***Specialization:*** During our site visits, we were told repeatedly by a variety of staff that they believed that their ability to focus on a limited number of procedures and diseases facilitated better quality of care. The specialty hospitals tend to hire experienced staff so that many of the staff that we interviewed have years of experience and worked in general hospital settings and are able to compare the work environment in both specialty and competitor hospitals. Physicians generally believed that this focus on a limited set of diseases/procedures improved the ability of nurses and other staff to offer the best quality of care in their markets. Nurses at specialty hospitals told us that they believed quality of care was better because they did not have to be pulled as needed to different types of inpatient wards and care for patients with a broad range of clinical problems. Nurses in particular believed that they could not respond as knowledgeably to patient and other clinical demands in larger, diversified competitor hospitals because of the breadth of subject and expertise required, and greatly valued the opportunity to focus on what they do best. Nurses found the specialty hospital setting to be less stressful and as a result, believed that they were able to provide better quality of care.

***Improved Nurse Staffing Ratios and Expertise:*** During site visits, more clinical staff per patient was cited often as a reason for better quality of care in specialty hospitals. Generally staffing was reported to be no more than three or four patients to a nurse and this staffing level was believed to enable nurses to spend more time with patients and their families. We were told that in competitor hospitals it was not unusual for one nurse to have to monitor 10 or 12 patients. In some specialty hospitals we visited, a single nurse followed a patient throughout the entire stay and this approach was believed to facilitate better communication between the nurse, doctor and patient. Nurses believed they had more time to spend educating patients on their procedures, and helping family members and patient prepare for post-discharge care. It was common for the specialty hospitals to place an emphasis on an all-RN staff with the use of patient care assistants, usually one assistant for one or two RNs.

***Patient Amenities:*** In the site visits, we found that physicians practicing in specialty hospitals believed that the amenities offered to patients improved quality of care. They particularly cited the use of private rooms, which they said helped patients rest and recover better. Also, the emphasis on comfortable surroundings, space for families and better food, physicians and staff argued, play a role in better quality of care. In the focus groups we conducted, beneficiaries receiving care at specialty hospitals had very positive experiences with the hospital environment and expressed appreciation for all the “extras” the hospital provided. Most of these facilities were new. It is possible that newer community hospitals also have some of these amenities.

***Patient Communication and Education:*** Beneficiaries in our focus groups who received services at specialty hospitals believed the nurses were very knowledgeable about the specialty area, which made patients believe they would be well taken care of. This was not a topic that was specifically asked about in the focus groups, but was brought up by the patients in the specialty hospital focus groups, in particular, by patients from the cardiac hospitals

***Emphasis on Quality Monitoring:*** Most, but not all cardiac specialty hospitals, are Joint Commission on Accreditation of Healthcare Organizations (JCAHO) accredited and those that are participate in the quality improvement requirement, as well as patient safety requirements. Many of these cardiac specialty hospitals are conducting several patient safety projects to meet JCAHO requirements, including the use of: acronyms, restraints, verbal orders, and an intervention to prevent patient falls using bed sensors. All the specialty hospitals conducted some form of a patient satisfaction surveys. Problems or negative comments were quickly addressed. In general, we noted similar types of quality monitor efforts at competing community hospitals.

***Clinical Staff Perspectives on Physician Ownership:*** In our site visits, staff at specialty hospitals described the physician owners as being very involved in every aspect of patient care. The physicians monitored patient satisfaction data, established a culture that focused on patient satisfaction and were viewed by the staff as being very approachable and amenable to suggestions that would improve care processes.

***Research Question 3: How do the patients view the care they received in specialty versus competitor hospitals?***

To conceptualize domains of patient satisfaction and experience with care we turned to the Hospital Consumer Assessment of Health Plans (HCAHPS) initiative, an AHRQ/CMS pilot to “uniformly measure and publicly report patients’ perspectives on their inpatient care.” The intent of the HCAHPS is to provide a national standard for collecting patient information that would enable valid comparisons to be made across all hospitals. The domains of interest include<sup>10</sup>:

- Hospital environment
- Clinical Care
  - Care from nurses and doctors
  - Experiences at the hospital
- Overall ratings

The following sections summarize the overall findings from the site visits and focus groups and discuss the results. The results we present focus on areas where there were differences in beneficiary experiences in specialty hospitals versus competitor hospitals. We organized this section on patient perspectives by the domains discussed above: hospital environment, clinical care and overall ratings. Within each domain, we discuss findings from the site visits and focus groups. Several discussion topics from the focus groups are not highlighted here because beneficiary responses did not differ between hospital settings. For example, several questions in the protocol focused on the patient’s experience with the care provided by his or her doctor. There was general consensus among all participants that they were satisfied with the

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<sup>10</sup> HCAHPS was used to frame the discussion in the focus groups. A formal survey was not done. The HCAHPS instrument used is dated October 18, 2004. Source: [www.ahrq.gov](http://www.ahrq.gov)

interactions with their doctors, regardless of care setting, and reported excellent care from their physicians.

***Patient Perspectives on the Hospital Environment:*** Based on the focus groups and site visits, we found patients treated in specialty hospitals very much valued the specialty hospital environment. Specific patient perspectives included the following:

*The environment in the specialty hospital makes recovery “easier.”* Some of the specialty hospitals we visited resembled luxury hotels more than a typical hospital. Lobby entrances and common areas tended to be decorated based on local themes. Muted colors, comfortable seating, soft lighting and quality artwork were often seen in specialty hospitals. These types of amenities were not found at competing community hospitals. Upscale food was also a common theme in many of the specialty hospitals. In the focus groups we conducted, beneficiaries receiving care at a specialty hospitals had very positive experiences with the hospital environment and expressed appreciation at all the “extras” the hospital provided. Beneficiaries commented on the private rooms, the space, lower noise level (i.e., quiet versus noisy), and treatment of family members, including pleasant waiting areas. Beneficiaries treated at a specialty hospital became aware that a higher level of service was available. In contrast, many beneficiaries who went to a competitor hospital expected the inconvenience associated with a shared room, a certain level of noise, fewer ways to accommodate family, including less plush waiting areas, and sometimes teaching rounds and residents and interns. This was generally considered part of the community hospital experience. In all but one specialty hospital focus group, several beneficiaries raised the topic of how the environment seemed to make recovery easier, without being prompted.

*Specialty hospitals were quiet.* Specialty hospitals included in our site visits made conscious attempts to cultivate a more “restful” environment. Overhead pages and announcements, typically heard in hospitals, were replaced by soft instrumental music – or quiet. Some of the facilities we visited had a low census so that it was difficult to say how quiet or noisy the unit would be if it were fully occupied, however, even the specialty hospitals that had a higher census were noticeably quiet. Noise and “bustle” on patient wards was at a minimum and nursing staff carried pagers to be responsive without using overhead paging.

*Beneficiaries found the private rooms at the specialty hospitals to be convenient.* In the specialty hospitals we visited, private rooms were the norm. In some specialty hospitals, private rooms were also decorated and sometimes included linens similar to those found in a hotel rather than in the typical general hospital. Beneficiaries in our focus groups who had an inpatient stay in the specialty hospitals believed that private rooms were very important and reduced the inconvenience and noise usually associated with hospitalization. This was consistent for all types of specialty hospitals. Private rooms offered a quiet environment conducive to sleep and recovery. Beneficiaries believed the accommodations made for family were unusual when compared to the competitor hospitals. Beneficiaries from our focus groups receiving care from the competitor hospitals commented at length on the inconvenience of sharing a hospital room. Several beneficiaries related stories of sharing rooms with people who were loud, belligerent or required fairly intensive care. This created an uncomfortable environment that was often noisy and difficult to sleep in. It is interesting to note that the beneficiaries from our focus groups who were treated in the competitor hospitals expected a certain level of inconvenience associated with

the hospitalization, and this included noise and shared rooms. This was not expressed as dissatisfaction but rather described as the expected norm when being in a hospital.

*Family members were encouraged to stay overnight and treated well by staff at specialty hospitals.* In the majority of the specialty hospitals that we visited, there were fully reclining chair beds where a family member could comfortably spend the night with the patient. The importance of accommodations for family members was echoed in our focus groups. All beneficiaries in our focus groups receiving services at a specialty hospital reported that family members were encouraged to spend the night at the hospital where the rooms were equipped with beds (or recliners) and where the staff provided blankets, pillows and food.

***Patient Perspectives on Clinical Care:*** Based on the focus groups and site visits, we found patients treated in specialty hospitals were highly satisfied with the care they received. Specific patient perspectives included the following:

*Nurses in the specialty hospital were very available and attentive.* In our site visits, we found that specialty hospitals attempted to foster high patient satisfaction in the way they provide clinical care. Probably the biggest difference between specialty and competitor hospitals in this regard relates to nurse staffing ratios. Specialty hospitals tend to have 3 or 4 patients per nurse in the regular units; the ratio is more likely to be 1 to 1 in the cardiac intensive care units at the heart hospitals and 1 to 2 or 3 in the telemetry unit. Competitor hospitals in the same markets also have low (1 to 1 or 1 to 2) nurse to patient ratios in intensive care and telemetry units; however in the regular care units they may have as many as 10 to 12 patients per nurse and rely heavily on nursing assistants. Overall, beneficiaries in our focus groups who went to specialty hospitals were enthusiastic about the nursing care. This topic stimulated a great deal of conversation and was discussed at length. Most participants wanted to relate anecdotes about the nurse or group of nurses that had treated them and several beneficiaries remembered their nurses by name. Beneficiaries who went to competitor community hospitals were generally complimentary about the nursing care they received, but did not discuss the topic at length or with the level of enthusiasm shown by specialty hospital patients.

*Perceived high level of nursing care distinguished the specialty hospitals from the acute care general hospitals.* Beneficiaries in our focus groups thought that the level of knowledge and specialized skills of the nursing staff differed greatly between specialty hospitals and competitor hospitals. In general, beneficiaries at specialty hospitals believed that the nurses were more attentive and knowledgeable at specialty hospitals and, for those who had been hospitalized previously for a serious condition, compared their experience to being in an ICU at a competitor hospital. Remarks about the specialized knowledge of nursing staff were not offered by beneficiaries receiving services at a competitor hospital, except in the context of the ICU.

*Beneficiaries in specialty hospitals did not experience language barriers.* Several beneficiaries from all three competitor hospital focus groups reported having problems communicating with some of the nurses due to the use of foreign nurses. Another beneficiary stated that the specialty hospital seemed to have hired nurses with specific language abilities because the nurses “spoke just about every language you would find” in the area.

*Beneficiaries often choose the doctor rather than the hospital.* Across all types of hospital settings, beneficiaries in our focus groups reported choosing their hospital based on a

referral or recommendation by their doctor. More than half the participants were referred to a specific hospital by their physician, either because that was where their physicians admitted patients or because that hospital was convenient for the beneficiary (i.e., close to home, near family). Of those beneficiaries that were offered a “choice” of hospital (i.e., their doctors suggested two or more hospitals to which they could be admitted), nearly all of them had gone to a specialty hospital. All the patient satisfaction survey data that we reviewed showed very high patient ratings of their physicians. This was the case for specialty as well as competitor hospitals. Patients, particularly elderly Medicare patients, tend to rate their physicians and the care they receive from their physicians very highly.

***Patient Perspectives on Physician Ownership:*** Beneficiaries treated in specialty hospitals knew about physician ownership before going there and most thought it was a positive thing. When asked in our specialty hospital focus groups if they knew the hospital was partially owned by physicians, most beneficiaries stated that they had known prior to hospitalization. In two of the five specialty hospital focus groups, most beneficiaries reported hearing about the physicians’ ownership of the hospital through the local media (i.e., newspaper and television), whereas one group reported hearing from family and friends. Several beneficiaries in two groups reported being asked to sign a form at admission that disclosed the ownership of the hospital. The few beneficiaries treated at a specialty hospital that did not know about ownership prior to hospitalization reported that they learned about it from the hospital staff (i.e., nurses, techs, doctors) at some point during or after their stay.

### ***Conclusion:***

Overall, we conclude that, based on our analysis of its case mix of Medicare fee-for-service patients, specialty hospitals provide a high level of quality of care. From the site visits and focus groups we found that structural measures of quality, such as staff specialization and clinical staff per patient, suggest a high quality of care in this dimension. In addition, process of care measures, such as complication rates, also suggest good performance on the part of specialty hospitals. Except for the higher readmission rates, outcome measures such as, mortality rates, discharge disposition all suggest that the patients treated at specialty hospitals experience a high quality of care.

Based on our findings from site visits and focus groups, patients have responded very favorably to specialty hospitals. Patients who have received care in specialty hospitals value very highly the amenities provided by specialty hospitals. For example, we found that patients responded positively to the following characteristics of specialty hospitals:

- private rooms
- quiet environment
- accommodations for family members
- accessibility and attentiveness of nursing staff
- specialized training of nursing staff
- specialized procedures and treatments offered

Patients clearly view these amenities as contributing to their recovery. Patients who received care in specialty hospitals also give high marks to the nursing staff, primarily because of their increased accessibility to patients and their specialization on particular conditions. Patients

do not seem to find physician ownership problematic; rather, they view this arrangement as potentially enhancing quality by increasing the physician's attentiveness to the caliber of the staff and the quality of care provided by the hospital.

Although the level of patient satisfaction that we observed was very high in specialty hospitals, competitor hospitals, in general, also experienced high levels of patient satisfaction and their patients regard these facilities as 'their hospitals' and profess high levels of loyalty to them.

Our findings regarding patient satisfaction suggest that beneficiaries respond to both the amenities and the staffing at specialty hospitals. The use of focus groups enabled us to explore issues that are of concern to patients, but did not allow us to make a direct comparison between the specialty and competitor hospitals, as we would need a more rigorous survey method to accomplish that. We can conclude that specialty hospitals see patient satisfaction as a key measure of their success; they value and monitor this information and use it to alter processes to provide a high level of service.

## Chapter 6: Uncompensated Care and Tax Benefits

Concerns have been raised that physician-owned specialty hospitals exist primarily for the purpose of generating profits for their physician owners. A related issue is whether specialty hospitals participate in any public insurance programs, such as Medicare and Medicaid, or whether they derive most of their revenues from private insurance, which may be more lucrative. Physician-owned specialty hospitals have argued that their tax payments offset their smaller share of uncompensated care costs. The fourth Congressional study task is related to this concern: “To assess the differences in uncompensated care, as defined by the Secretary, between the specialty hospital and local full-service community hospitals, and the relative value of any tax exemption available to such hospitals.”

Our assessment of these differences was based on the sum of uncompensated care costs and tax payments, which we refer to throughout this section as the “net community benefit.” Because not-for-profit (NFP) hospitals pay no taxes, the comparison of the “net community benefit” becomes the difference between uncompensated care costs plus tax payments in specialty hospitals versus uncompensated care costs in community hospitals. We did not attempt to estimate the value of the tax exemption for NFP hospitals.

To answer the Congressional study question, we define and determine how uncompensated care and tax payment data will be collected and compared. The following discusses the comparison methodology, the definitions, and data sources used to compute the “net community benefit” of each group.

### *Comparison Methodology*

For comparison purposes, uncompensated cost and tax payment components are stated as ratios to net patient revenue<sup>11</sup>, so that the costs can be compared across different size facilities. Net revenue has been used as the relative base in other studies and also avoids the tautology of having a component of cost, bad debts, as part of the relative base. Charges cannot be used for comparison purposes, as they are not standardized across institutions.

Because charity care, and to some degree, bad debts, are reported as gross charges in financial statements, they should be converted to a common unit of measure for analysis purposes. Therefore, charity care and bad debts were converted to costs by multiplying by the hospital average ratio of costs to charges reported in the hospitals’ 2003 Medicare Cost Reports.

Several competitor hospitals in the six market areas were operated by for-profit hospital companies. These hospitals pay taxes, and provide charity care. Consequently, these hospitals were dropped from the analysis as a matter of simplicity, so that the results are applicable to only non-profit hospitals.

### *Uncompensated Care*

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<sup>11</sup> Includes inpatient, outpatient, and any capitated revenue.

We define uncompensated care as charity care plus a portion of bad debts. Charity care (free care for patients as specified by hospital policies, typically based on patients' assets and income) is determined before a patient leaves a hospital and is normally recorded in financial statements at gross charges. Three physician-owned hospitals had charity care policies that looked similar to those typically used in general hospitals. One policy stated that it "provides patient care services on a charitable basis to those patients who demonstrate an inability, by income and family size, to meet their financial obligations." The three hospitals referenced a sliding income scale, a percentage of the federal poverty level. One stated that it had adopted the policy of its non-profit hospital parent.

Bad debts (services for which the patient was considered able to pay) are determined after collection is attempted. If a person has no insurance, the bad debt expense could be recorded as charges in the financial statements, or at some percentage of charges if a sliding fee scale is used. There is debate about how much bad debt involves charitable intent. A review of the literature (Epstein, Lukas, and Weissman, 1992; Buczko, 1994; Sanders, 1995) suggests that, at least in some hospitals, as much as 50% of bad debt expense should have been considered charity care based on the medical indigence and income levels of the debtor. Based on this research, we considered half of the bad debt expense as uncompensated care. Community services, such as outreach programs, subsidizing programs, a speaker's bureau, etc. are usually not considered uncompensated care, and we did not include them as such for this study.

The physician-owned specialty hospitals in the study sample provided financial data on their uncompensated care and bad debt expense. Similar data for non-profit hospitals in the six market areas was taken from the publicly available IRS form 990 submissions. Three years of the most recent data were used where possible, so that an average could be used.

Medicare and Medicaid Disproportionate Share (DSH) payments are often considered to offset uncompensated care costs. For example, MedPAC states, "These payments are largely unrelated to hospitals' costs for serving [Medicare] beneficiaries—DSH payments reflect revenue losses associated with furnishing uncompensated care..."<sup>12</sup> Hospitals qualify for the DSH add-on percentage to Medicare inpatient payments by serving a disproportionate share of low-income patients. The statute provides two alternative criteria, but hospitals usually qualify by meeting a specified "disproportionate patient percentage." The disproportionate patient percentage is the sum of two fractions: the first of which is the number of days for which patients were entitled to both Medicare and Supplemental Security Income (SSI) divided by the total number of Medicare patient days, and the second of which is the number of days for which patients were eligible for Medicaid divided by total patient days.

### ***Tax payments***

Physician-owned specialty hospitals are organized as for-profit entities; therefore, they pay sales tax, personal property tax, and real estate/ real property taxes, whereas not-for-profit hospitals do not. In addition, owners of specialty hospitals pay state and federal income tax on their share of the income. These taxes are paid at the owner's individual or corporate rate. The income share of a specialty hospitals owned by a non-profit hospital may be tax exempt

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<sup>12</sup> "Report to the Congress on Medicare Payment Policy," March 2002, p. 14

depending upon the IRS tax-exemption determination and hospital mission. The physician-owned specialty hospitals provided their real estate, personal property, and sales tax data. Income taxes were imputed using state tax schedules, IRS tax schedules, and known corporate tax rates. Capital gains taxes were excluded, because they are non-recurring and are not representative of routine tax payments.

### ***Limitations***

Payer mix determines, in part, the levels of uncompensated care. For example, Medicare pays for up to 70% of the Medicare bad debts (patient nonpayment of deductible or co-payment amounts). Managed care or HMO contracts may pay all negotiated fees except for a small co-pay. Therefore, hospitals that have high Medicare or managed care/HMO utilization may not have high levels of uncompensated care. State and local governments can, and do, make separate payments to hospitals for treating medically indigent patients (e.g., through charity care pools or contracts with specific providers to subsidize indigent care). These subsidies are not separately identified in the IRS submission. Consequently, we could not offset such subsidies against the uncompensated care percentages computed in this analysis unless they were netted against their reported charity care and bad debt expense in their IRS submissions.

Although the number of facilities in this analysis is small, the variability of the uncompensated care ratios over the three year period for each facility was relatively low for the NFP hospitals. Two of the four cardiac specialty hospitals were operational for less than two years. Consequently, the bad debt figures shown in their financial statements are unlikely to be representative of a mature hospital, because of the rapid growth period. Although the bad debt expense reported for these two hospitals is likely understated compared to revenues, no adjustment is made in this analysis. In several cases we tried to estimate conservatively the taxes paid by the specialty hospitals in this sample. Consequently, the actual tax payments, and therefore net community benefits, of the specialty hospital may be larger than suggested in this analysis.

It is possible that the real estate tax payments reported by the specialty hospitals include services that that NFP hospitals would also receive and pay through user fees or by special tax arrangements. In order to adjust for this potential, we reduced the real estate/property tax payments reported by specialty hospitals by 20% in order to more conservatively estimate the net community benefit.

### ***Computation of the Net Community Benefit: Table 6.1***

**Table 6.1** shows uncompensated costs and tax payments as percentages of the 2003 aggregate total operating revenue (TOR). The NFP competitor hospitals provided less uncompensated care as a percentage of TOR than cardiac specialty hospitals, but more than the orthopedic/surgery hospitals in the sample. NFP hospitals provided uncompensated care of .87 % of TOR compared to 1.65% for cardiac hospitals, and .32% for orthopedic / surgery hospitals. Excluding the Medicare DSH offset, the NFP hospitals in total provided more uncompensated

care, 2.48% of TOR, compared to cardiac specialty, 1.65% of TOR, and orthopedic surgery hospitals, .32% of TOR.

Under our definition of net community benefit, orthopedic specialty hospital tax payments more than offset the lower levels of uncompensated care. Including tax payments, the four cardiac hospitals in the sample had a net community benefit of 3.74% of TOR, whereas orthopedic / surgery hospitals had a net community benefit of 7.23% of TOR, compared to .87% of NFP competitor hospitals. Orthopedic/surgery hospitals had a higher net community benefit because their imputed income tax is higher, due to their higher profitability.

**Table 6.1**  
**Net Community Benefit in the Site Visit Market Areas**  
**(stated as a percentages of total operating revenue)**

	Specialty Hospitals		NFP Competitors
	Cardiac	Orthopedic & Surgical	
<b>Number of facilities</b>	4	6	21
<b>Uncompensated care costs</b>			
Charity care costs	0.27%	0.00%	1.41%
Bad debt costs @ 50%	1.38	0.32	1.07
<b>Less: DSH Offsets: Medicare</b>	0	0	- 1.61
<b>Medicaid</b>	0	0	Unknown
<b>Total Uncompensated Care Costs (before DSH offset)</b>	<b>1.65</b>	<b>.32</b>	<b>2.48</b>
<b>Total Uncompensated Care Costs (after DSH offset)</b>	<b>1.65</b>	<b>.32</b>	<b>.87</b>
<b>Tax payments</b>			
Federal income (individual and corporate)	0.60%	4.89%	...
State income (individual and corporate)	0.11	0.46	...
Sales	0.49	1.17	...
Real estate and property	0.89	0.40	...
<b>Total tax payments</b>	2.09	6.92	...
<b>Total Net Community Benefit (With DSH Offset)</b>	<b>3.74%</b>	<b>7.23%</b>	<b>.87%</b>

SOURCE: Specialty hospitals: voluntary data submissions  
NFP competitor hospitals: IRS Form 990 filings  
DSH: 2003 Medicare claims data

### **Impact of including the Medicaid payment shortfall**

The physician-owned specialty hospitals reported very little Medicaid utilization that on average ranged from 0% to 6% in the study sample hospitals. The role that Medicaid shortfalls should play in determining uncompensated care costs is debatable. MedPAC estimated that Medicaid payments to hospitals for inpatient and outpatient services were about 4.1% lower than costs.<sup>13</sup> As a percentage of total revenue, the Medicaid shortfall would be about 1.4% on average nationally.

We did not have the Medicaid revenues and costs for any hospitals in the study. Assuming the 21 competitor hospitals experienced the national average of Medicaid shortfall, 1.4%, and the specialty hospitals experienced no Medicaid shortfall because of their very small number of Medicaid patients, the resulting figures emerge:

3.74% of TOR for cardiac hospitals

7.23% of TOR for orthopedic/surgery hospitals

2.27% of TOR for competitor hospitals (0.87% net uncompensated care, + 1.40 % Medicaid shortfall)

Thus, assuming an average level of Medicaid shortfall, the specialty hospitals in the study still provided a greater net community benefit than competing community hospitals.

### ***Conclusion***

Considering only the hospitals in the six study sites, the specialty hospitals provide a greater level of net community benefits, as we defined it, than competitor hospitals. Even if costs in excess of Medicaid payments are considered as uncompensated care, both cardiac and orthopedic/surgery specialty hospitals in the study still contributed a higher level of net community benefits than competitor hospitals. Only if Medicare DSH payments are not offset against uncompensated care in the NFP hospitals, is the net community benefit of competitor hospitals similar to the cardiac hospitals, but it would still be less than the orthopedic hospitals. The cardiac hospitals in this study provided a not insubstantial level of uncompensated care that exceeded the levels provided by competitor hospitals, after offsetting DSH payments.

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<sup>13</sup> "Report to the Congress: Medicare Payment Policy," MedPAC, March 2002, Table B-11, p. 156.

## Chapter 7: Conclusions

The MMA imposed an 18 month moratorium (through June 8, 2005) on the allowability of physician referrals to physician-owned specialty hospitals, except for referrals to those specialty hospitals already in existence or under development as of November 18, 2003. Section 507 of the MMA requires MedPAC and HHS to study cardiac, surgery, and orthopedic hospitals with physician ownership, and to report the results by March 8, 2005. HHS was asked to study referral patterns of specialty hospital owners, assess the quality and patient satisfaction of patients treated in these hospitals, and compare net community benefits (differences between uncompensated care in community hospitals and tax payments in specialty hospitals).

Because the ownership data required for the study is not presently collected by CMS, the referral analysis could be done with only a sample of hospitals. Therefore, a sample of 11 physician-owned hospitals facilities was selected in six market areas (Dayton, OH; Fresno, CA; Rapid City, SD; Hot Springs, AR; Oklahoma City, OK; and Tucson, AZ). Within each market area, visits were made to each physician-owned specialty hospital(s) and several competitor hospitals. Hospital executives, clinicians, managers, physician owners, non-owner physicians, emergency department staff, and finance staff were interviewed in each physician-owned specialty hospital. Executives at several competitor hospitals in each market area were also interviewed, in order to understand their issues with the specialty hospitals. Patient focus groups composed of beneficiaries treated in physician-owned and competitor hospitals were conducted in three market areas.

Referral patterns were analyzed for the 11 facility sample using the site visit information and Medicare claims data for calendar year 2003. Claims data from the population of specialty hospitals was analyzed to assess quality of care using the inpatient hospital quality indicators developed by the Agency for Healthcare Research (AHRQ) Patient focus group information was used to assess patient satisfaction and to elucidate the quality of care findings from claims data. Data obtained from the IRS submissions from non-profit hospitals in the six market areas and financial information collected from the 11 physician-owned hospitals were used to compute and compare net community benefits.

Although the observed patterns give a reasonable picture of a range of specialty hospital types in different markets, the findings may not be representative of, or generalizable to, all specialty hospitals. For example, it is possible that the market areas where specialty hospitals are located do not have high levels of uncompensated care. Where possible, we used the entire population of physician-owned specialty hospitals to answer the study questions. The quality study and the analysis of severity levels use the entire population of physician-owned specialty hospitals. Analysis that required data beyond the Medicare claims could be done with only a sample.

Based on the analysis of Medicare claims, data provided by the hospitals visited, and patient focus groups, we found the following:

### **Referral patterns:**

***Directive: Determine the percentage of patients admitted to physician-owned specialty hospitals who are referred by physicians with an ownership interest;***

Medicare referrals to physician-owned hospitals come primarily from the physician owners. The proportion of all cardiac cases referred by owners ranged from 61% at the Tucson Heart Hospital to 82% at the Oklahoma Heart Hospital. In the five orthopedic hospitals, physician-owners referred between 48% and 98% of the cases, and in one surgery hospital, physician-owners referred 90% of the cases.

These high percentages of referrals are not surprising, because the physician-owners have an established clinical rapport and favorable working relationship with the facility in which they have an ownership interest. It is likely that physicians develop a primary relationship with a single hospital, and refer most of their patients there. For example, faculty physicians affiliated with an academic medical center likely refer most patients to that center. Therefore, the referral patterns of the owner physicians are consistent with the likely referral patterns elsewhere. The more interesting question is to the extent that they refer patients to other facilities, given the strong financial incentive to refer patients to their own facility. The second Congressional directive addresses this issue.

***Directive: Determine the referral patterns of physician owners, including the percentage of patients they referred to physician-owned specialty hospitals and the percentage of patients they referred to local full-service community hospitals for the same condition;***

From case study interviews, physicians in general are constrained in where they refer patients by several factors including patient preferences, managed care networks, specialty hospital location, and taking emergency room “call” in local competitor hospitals. We did not see clear, consistent patterns of preference for referring to specialty hospitals among physician owners relative to their peers. In some markets, owners have a clear preference to treat their Medicare patients at their specialty hospital. In other cases, physician owners preferred competitor hospitals, particularly orthopedic and surgery cases. This is not surprising, given the very small inpatient census at these hospitals.

The Medicare cardiac patients treated in competitor hospitals, which include community and academic medical centers within 20 miles of a specialty hospital, were more severely ill than those treated in physician-owned cardiac specialty hospitals in most of the study sites. Among cardiac hospitals, the difference in severity levels between competitor hospitals and physician-owned cardiac hospitals was not large and the distribution of severity levels was not uniform. One of the oldest cardiac hospitals, which we visited, had patient severity levels that were higher than its eight competitor hospitals. Although the number of cases was too small to draw definitive conclusions for the orthopedic and surgery specialty hospitals, the severity level of similar cases appears to be much lower than in the competitor hospitals.

Lower severity levels, particularly in the orthopedic/surgery hospitals, may be interpreted as “cherry picking.” However, it may also be an indicator of quality in the sense that it shows that the hospital has focused on a particular type of patient. A hospital that accepts patients that it cannot properly treat may not exhibit good quality healthcare. The U.S. healthcare delivery system is built on a tradition of not duplicating services in every treatment facility. For example trauma centers are organized into different levels and/or specialty, depending upon the needs of a

community. The orthopedic/surgery hospitals that were visited acknowledged that they cannot accept cases that require an ICU level of care, but rather focus on certain conditions that they can adequately treat.

Using population data, the percentage of patients transferred from cardiac hospitals to competitor hospitals is about the same as the percentage of patients transferred between competitor hospitals. The percentage of patients transferred from cardiac hospitals to competitor hospitals who were severely ill was similar to patients in the same DRGs who were transferred between competitor hospitals. Consequently, the notion that specialty cardiac hospitals are transferring more severely ill patients to general hospitals is not supported by our findings. Patients transferred into cardiac hospitals had slightly lower severity levels on average than patients transferred into competitor hospitals for cardiac services.

A smaller percentage of patients were admitted through the ED in specialty hospitals than in competitor hospitals, particularly for orthopedic and surgery hospitals. The percentage of severely ill patients admitted through the ED of specialty cardiac hospitals is slightly lower than the percentage of severely ill patients admitted through the ED of competitor hospitals. Within the study sample of cardiac hospitals visited, the severity of Medicare patients admitted through the ED was slightly higher than those admitted to competitor hospitals. The notion that specialty cardiac hospitals are systematically screening out more severely ill patients using the ED is not supported by our findings. Due to the small number of cases, no conclusions could be drawn about the severity levels of patients admitted from the ED in the physician-owned orthopedic/surgery hospitals.

### **Quality of Care and Patient Satisfaction:**

**Directive: Compare the quality of care furnished in physician-owned specialty hospitals and in local full-service community hospitals for similar conditions and patient satisfaction with such care;**

The Congress is concerned about the quality of care and patient satisfaction in physician-owned specialty hospitals. If poor care is delivered by a profitable hospital, the motive for physician ownership may appear to be related to financial gain.

Overall, we conclude that, based on our analysis of its case mix of Medicare fee-for-service patients, specialty hospitals provide a high level of quality of care. From the site visits and focus groups we found that structural measures of quality, such as staff specialization and clinical staff per patient, suggest a high quality of care in this dimension. In addition, process of care measures, such as complication rates, also suggest good performance on the part of specialty hospitals. Except for the higher readmission rates, outcome measures such as, mortality rates, discharge disposition all suggest that the patients treated at specialty hospitals experience a high quality of care.

Based on findings from site visits and focus groups, patients responded very favorably to specialty hospitals. Patients who have received care in specialty hospitals value very highly the amenities and services provided by specialty hospitals. For example, we found that patients responded positively to private rooms, a quiet environment, accommodations for family members, accessibility and attentiveness of nursing staff, specialized training of nursing staff,

and the specialized procedures and treatments offered. Patients who received care in specialty hospitals also give high marks to the nursing staff, primarily because of their increased accessibility to patients and their specialization on particular conditions.

Although the level of patient satisfaction that we observed was very high in specialty hospitals, competitor community hospitals, in general, also experience high levels of patient satisfaction and their patients regard these facilities as ‘their hospitals’ and profess high levels of loyalty to them.

**Uncompensated Care and Tax Benefits:**

***Directive: Assess the differences in uncompensated care, as defined by the Secretary, between the specialty hospital and local full-service community hospitals, and the relative value of any tax exemption available to such hospitals.***

Critics contend that the physician-owned hospitals have siphoned off profitable services from competitor community hospitals, and as a result, lower earnings are available to support uncompensated care. Physician-owned specialty hospitals have acknowledged that they have lower levels of uncompensated care, but contend that they pay property, sales, and income taxes in lieu of providing uncompensated care. Our analysis shows that the total proportion of net revenue that specialty hospitals devoted to uncompensated care and taxes combined exceeded the proportion of net revenues that community hospitals devoted to uncompensated care. Even expanding the definition of uncompensated care to exclude Medicare DSH payments and to include Medicaid revenue shortfalls, the physician-owned specialty hospitals in the sample still exhibited higher levels of net community benefits (as we define the term).

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# Appendix

**Table A1: Heart Specialty Hospitals and their Acute Care Community Hospital  
Competitors: AHRO Patient Safety Indicators (MDC = 5)**

<b>Patient Safety Indicators (PSIs)</b>		
	Specialty	Competitor
<b>Complications of anesthesia</b>		
Number of Cases	1	2
Population at risk	19,677	59,639
Observed Rate	0.05	0.03
Expected Rate	0.46	0.44
<i>Observed/Expected</i>	<i>0.11</i>	<i>0.07</i>
<b>Death in low mortality DRGs</b>		
Number of Deaths	3	44
Population at risk	2,336	21,000
Observed Rate	1.28	2.10
Expected Rate	1.43	1.72
<i>Observed/Expected</i>	<i>0.90</i>	<i>1.22</i>
<b>Decubitus ulcer</b>		
Number of Cases	60	1,037
Population at risk	8,258	57,040
Observed Rate	7.27	18.18
Expected Rate	11.27	19.97
<i>Observed/Expected</i>	<i>0.64</i>	<i>0.91</i>
<b>Failure to rescue</b>		
Number of Cases	61	768
Population at risk	873	7,833
Observed Rate	69.87	98.05
Expected Rate	123.51	113.71
<i>Observed/Expected</i>	<i>0.57</i>	<i>0.86</i>
<b>Foreign body left during procedure</b>		
Number of Cases	2	11
Population at risk	30,704	155,441
Observed Rate	0.07	0.07
Expected Rate	0.08	0.07
<i>Observed/Expected</i>	<i>0.88</i>	<i>0.99</i>

NOTE: Observed and Expected rates are shown per 1,000 cases.

**Table A1: Heart Specialty Hospitals and their Acute Care Community Hospital Competitors: AHRQ Patient Safety Indicators (MDC = 5) (continued)**

<b>Patient Safety Indicators (PSIs)</b>		
	Specialty	Competitor
<b>Iatrogenic pneumothorax</b>		
Number of Cases	36	246
Population at risk	24,605	136,056
Observed Rate	1.46	1.81
Expected Rate	0.80	0.76
<i>Observed/Expected Ratio</i>	<i>1.83</i>	<i>2.38</i>
<b>Selected infections due to medical care</b>		
Number of Cases	39	539
Population at risk	28,562	137,988
Observed Rate	1.37	3.91
Expected Rate	2.42	2.94
<i>Observed/Expected Ratio</i>	<i>0.56</i>	<i>1.33</i>
<b>Post-op hip fracture</b>		
Number of Cases	4	33
Population at risk	19,549	58,853
Observed Rate	0.20	0.56
Expected Rate	0.36	0.41
<i>Observed/Expected Ratio</i>	<i>0.57</i>	<i>1.37</i>
<b>Post-op hemorrhage or hematoma</b>		
Number of Cases	23	137
Population at risk	19,656	59,593
Observed Rate	1.17	2.30
Expected Rate	3.31	3.36
<i>Observed/Expected Ratio</i>	<i>0.35</i>	<i>0.68</i>
<b>Post-op physiologic and metabolic derangements</b>		
Number of Cases	13	85
Population at risk	13,291	29,785
Observed Rate	0.98	2.85
Expected Rate	0.74	1.15
<i>Observed/Expected Ratio</i>	<i>1.32</i>	<i>2.49</i>

(continued)

NOTE: Observed and Expected rates are shown per 1,000 cases.

**Table A1: Heart Specialty Hospitals and their Acute Care Community Hospital Competitors: AHRQ Patient Safety Indicators (MDC = 5)(continued)**

<b>Patient Safety Indicators (PSIs)</b>		
	Specialty	Competitor
<b>Post-op pulmonary embolism or DVT</b>		
Number of Cases	98	576
Population at risk	19,658	59,058
Observed Rate	4.99	9.75
Expected Rate	9.36	10.49
<i>Observed/Expected Ratio</i>	<b>0.53</b>	<b>0.93</b>
<b>Post-op sepsis</b>		
Number of Cases	22	165
Population at risk	3,848	11,791
Observed Rate	5.72	13.99
Expected Rate	8.53	13.62
<i>Observed/Expected Ratio</i>	<b>0.67</b>	<b>1.03</b>
<b>Post-op wound dehiscence</b>		
Number of Cases	0	10
Population at risk	446	2,289
Observed Rate	0.00	4.37
Expected Rate	3.14	2.96
<i>Observed/Expected Ratio</i>	<b>0.00</b>	<b>1.47</b>
<b>Accidental puncture or laceration</b>		
Number of Cases	174	630
Population at risk	30,704	155,441
Observed Rate	5.67	4.05
Expected Rate	4.47	3.07
<i>Observed/Expected Ratio</i>	<b>1.27</b>	<b>1.32</b>

NOTE: Observed and Expected are shown per 1,000 cases.