Effects of Physician-Owned Limited-Service Hospitals

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Oklahoma: Physician-Owned Orthopedic and Spine Hospitals
Arizona: Physician-Owned Cardiac Hospitals
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Arizona: Physician-Owned Cardiac Hospitals

Contents

AUTHOR BIOGRAPHY .................................................. 2
EXECUTIVE SUMMARY OKLAHOMA STUDY ............... 3
EXECUTIVE SUMMARY ARIZONA STUDY .................... 10
QUESTION AND ANSWER ................................. 19
GLOSSARY OF TERMS........................................ 21
Jean M. Mitchell is a PhD economist and professor of public policy at the Georgetown Public Policy Institute. Her areas of expertise are health economics, health services research and applied econometrics.

Dr. Mitchell has published more than 50 peer reviewed articles in leading economics, health services research and medical journals. Her published research includes the following topics: the effects of physician self-referral arrangements on utilization and costs of health services; the effects of managed care insurance on access to care for specific medical procedures; the effects of managed care on physicians’ practice styles, hours of work, earnings and satisfaction with medicine as a career; physicians’ responses to Medicare fee reductions; the effects of physical and mental health on labor supply and earnings; the effects of a Medicaid waiver for persons with AIDS on monthly expenditures, use of services and survival, access to care; and use of services for children with special healthcare needs enrolled in managed care versus fee-for-service. In addition, Dr. Mitchell has served as principal researcher or co-principal researcher of several research studies funded by federal grants.

In the early 1990s, Dr. Mitchell served as the principal researcher of a large scale study to evaluate the impact of physician self-referral arrangements on use of services, costs, access and quality of healthcare in Florida. This study was mandated and funded by the Florida legislature. Her findings, which were published in leading peer review journals such as the New England Journal of Medicine and the Journal of the American Medical Association, had a major impact on public policy. In response to her study, Congress passed a federal law which prohibits physicians from referring Medicare and Medicaid patients to healthcare facilities in which the physician has an ownership interest. At least 24 states enacted similar legislation that prohibits the practice of physician self-referral for both public and privately insured patients based on the results of Mitchell’s and other research on physician self-referral arrangements. Dr. Mitchell is continuing her work on physician self-referral arrangements by evaluating loopholes in the federal and state laws. Her ongoing work includes an examination of the effects of physician-owned limited service hospitals.
Effects of Physician-Owned Limited-Service Spine and Orthopedic Hospitals in Oklahoma

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BACKGROUND
In recent years, physician-owned limited-service hospitals have become commonplace in several states where certificate of need (CON) regulations do not exist. Despite the increasing prevalence of these facilities, empirical evidence documenting whether the financial incentives linked to ownership influence physician practice patterns is sparse.

OBJECTIVE
This study examines the effects of the entry of physician-owned limited-service spine and orthopedic hospitals (one type of physician self-referral arrangement) on utilization rates and healthcare costs.

OKLAHOMA HOSPITAL MARKETS
Oklahoma has many physician-owned limited-service hospitals including three that specialize in orthopedic and spine surgical procedures:

- Oklahoma Spine Hospital, Oklahoma City—opened November 1999
- Orthopedic Hospital of Oklahoma, Tulsa—opened July 2001
- Tulsa Spine Hospital, Tulsa—opened December 2002

DATA SOURCE
• Claims data from the largest workers compensation insurer in Oklahoma, that has a 40% share of the market. No estimates of the number of covered lives. Policyholders include the state of Oklahoma and smaller businesses. Medical claims for dates of service beginning 1/1/99 through 12/31/04. 1.9 million claims were reviewed with 250,000 claims analyzed for this study.

ANALYSES
• Volume comparisons of select orthopedic and spine procedures by facility type over the time period spanned by the entry of physician-owned limited-service spine and orthopedic hospitals. Comparisons are stratified by market area (Oklahoma City and Tulsa).
• Utilization comparisons of select orthopedic and spine procedures by facility type over the time period spanned by the entry of physician-owned limited-service spine and orthopedic hospitals. Comparisons are stratified by market area (Oklahoma City and Tulsa).

  • Utilization Rate: Number of procedures per 1000 workers compensation cases involving treatment during the given year in each market area.

Four facility types:
- Full-Service Community Hospitals
- Physician-Owned Limited-Service Hospitals
- Non-Physician-Owned Ambulatory Surgery Centers
- Physician-Owned Ambulatory Surgery Centers

MAJOR FINDINGS

INCIDENCE OF INJURED WORKERS DECLINED
Number of injuries per 100 workers in private industry declined by 24% from 6.6 in 1999 to 5.0 in 2003. In theory, this decline should lead to a reduction in the total volume of medical services rendered to workers compensation cases.

INPATIENT SURGICAL PROCEDURES INCREASED
Entry of the limited-service spine and orthopedic hospitals resulted in large increases in the volume and utilization rates for complex spinal fusion, the most lucrative spinal surgical procedure, in both Oklahoma City and Tulsa for the study population.

• Number of cases with complex spinal fusion surgery (DRG 496) in Oklahoma City was 4.77 times higher in 2004 relative to 1999 (43 cases versus 9 cases).

• Number of cases with complex spinal fusion surgery (DRG 496) in Tulsa was almost 21 times higher in 2004 compared to 2000 (65 cases versus 3 cases).

• Market area utilization rate for complex spinal fusion surgery (DRG 496) in Oklahoma City increased by more than 100% from 2.83 per 1000 cases in treatment, in 1999 to 5.89 per 1000 cases in treatment, in 2004. See Figure 1.

• Market area utilization rate for complex spinal fusion surgery (DRG 496) in Tulsa increased from one per 1000 cases in treatment in 2000 to 17.35 per 1000 cases in treatment in 2004, an increase of nearly 1700%. See Figure 2.

Physician-owned limited-service spine and orthopedic hospitals have increased the use of complex spinal fusion surgery in lieu of the less lucrative simple spinal surgery.

• Over this time period, the market area utilization rates for simple non-cervical spinal fusion surgery (DRGs 497 and 498) declined by 12% in Oklahoma City and by 37% in Tulsa. These declines were more than offset by the dramatic increases in the volume and utilization rates of complex spinal fusion surgery (DRG 496).

• Differences in the facility fee payments probably account for much of this substitution. Facility fee payment for complex spinal fusion surgery (DRG 496) is close to $10,000, which is more than double the average facility payment of $4,300 for simple non-cervical spinal fusion (DRG 498).

Physician owners have steered the most profitable surgical procedures to their own facilities. Physician-owned limited-service hospitals accounted for 78% to 97% of the market area utilization rates for complex spinal fusion surgery, simple non-cervical spinal fusion surgery, and back/neck surgery for the study population in both the Oklahoma City and Tulsa markets in 2004.

OUTPATIENT PAIN MANAGEMENT PROCEDURES INCREASED
Entry of the physician-owned limited-service spine and orthopedic hospitals resulted in large increases in the volume and utilization rate for epidurals for the treatment of back pain in both Oklahoma City and Tulsa for the study population.

• Volume of procedures performed in Oklahoma City was 2.63 times higher in 2004 compared to 1999 (799 versus 304).

• Number of epidural procedures performed in Tulsa increased by 73%, from 187 in 2000 to 324 in 2004.
Market area utilization rate for epidurals in Oklahoma City increased by close to 16%, from 94.6 procedures per 1000 workers in treatment in 1999 to 109.5 per 1000 workers in treatment in 2004.

Market area utilization rate for epidural procedures in Tulsa increased by 43% between 2000 and 2004, from 60.56 procedures per 1000 workers in treatment to 86.4 procedures per 1000 workers in treatment.

Physician-owned limited-service hospitals accounted for 87 to 91% of both the market area volume and market area utilization for the study population for epidural procedures to treat back pain in 2004.

**OUTPATIENT SURGICAL PROCEDURES INCREASED**

Entry of physician-owned limited-service spine and orthopedic hospitals and physician-owned ambulatory surgery centers (ASCs) resulted in large increases in the volume and utilization rates for surgery to remove internal fixation devices and outpatient knee surgery in both Oklahoma City and Tulsa for the study population.

**Removal of Internal Fixation Devices Except Hip and Femur**

- Number of cases treated in Oklahoma City was 4.7 times higher in 2004 relative to 1999 (90 cases versus 19 cases).

- Number of cases treated in Tulsa was 3.4 times higher in 2004 relative to 2000 (93 cases versus 27 cases).

- Market area utilization rate to remove internal fixation devices in Oklahoma City increased by more than 100% between 1999 and 2004. The rate was 12.33 cases per 1000 workers in treatment in 2004 compared to less than 6 cases per 1000 workers in treatment in 1999. *See Figure 3.*

- Market area utilization rate to remove internal fixation devices in Tulsa increased by 184%, from a rate of 8.75 cases per 1000 workers in treatment in 2000 to almost 25 cases per 1000 workers in treatment in 2004. *See Figure 4.*

**Knee Procedures without Diagnosis of Infection**

- In Oklahoma City, volume of cases treated was 7.5 times higher in 2003 and 4.3 times higher in 2004 relative to 1999.

- Number of outpatient knee procedures performed in Tulsa was 2.2 times higher in 2004 compared to 2000.

- Market area utilization rate for outpatient knee procedures in Oklahoma City was 232% higher in 2003 and 89% higher in 2004 relative to 1999.

- Market area utilization rate for outpatient knee procedures in Tulsa increased by 82% between 2000 and 2004. The rate was 10.7 procedures per 1000 workers in treatment in 2000 compared to 19.5 procedures in 2004.

Physician-owned limited-service hospitals and physician-owned ASCs accounted for more than two-thirds of the volume and utilization for surgical procedures to remove fixation devices and knee procedures without diagnosis of infection in 2004.

**CONCLUSIONS**

The entry of the physician-owned limited-service spine and orthopedic hospitals, one type of physician self-referral arrangement, resulted in substantial increases in market area volume and market area utilization rates for complex spinal fusion surgery and specific outpatient procedures in both Oklahoma City and Tulsa for the study population.

These findings suggest that the financial incentives linked to ownership caused physician owners to change their practice patterns. These findings corroborate prior research which found that physician self-referral arrangements result in increased utilization of medical procedures and increased costs to third party insurers.
Figure 1
Utilization Rates for DRG 496 Oklahoma City
1999 - 2004
Number of Combined Anterior/Posterior Spinal Fusion Procedures per 1000 Workers Compensation Cases in Treatment

Oklahoma Spine Hospital
Opened November 1999

Procedures Per 1000 Cases in Treatment

<table>
<thead>
<tr>
<th>Year</th>
<th>Full Service Community Hospitals</th>
<th>Physician Owned Limited Service Hospitals</th>
</tr>
</thead>
<tbody>
<tr>
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<tr>
<td>2003</td>
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<td>0.49</td>
</tr>
<tr>
<td>2004</td>
<td>0.55</td>
<td>0.96</td>
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</table>

Effects of Physician-Owned Limited-Service Hospitals | 6
Figure 2
Utilization Rates for DRG 496  Tulsa
2000 - 2004
Number of Combined Anterior/Posterior Spinal Fusion Procedures per 1000 Workers Compensation Cases in Treatment

- Full Service Community Hospitals
- Physician Owned Limited Service Hospitals
Figure 3
Utilization Rates for Removal of Internal Fixation Devices
Oklahoma City
1999 - 2004

Number of Removal of Internal Fixation Device Procedures per 1000 Workers in Treatment

Procedures Per 1000 Workers in Treatment

Oklahoma Spine Hospital
Opened November 1999

1999 2000 2001 2002 2003 2004

Full Service Community Hospitals
Non-Physician Owned ASCs
Physician Owned ASCs
Physician Owned Limited Service Hospitals
Figure 4
Utilization Rates for Removal of Internal Fixation Devices
Tulsa
2000 - 2004

Number of Removal of Internal Fixation Device Procedures per 1000 Workers in Treatment

<table>
<thead>
<tr>
<th>Year</th>
<th>Full Service Community Hospitals</th>
<th>Non-Physician Owned ASCs</th>
<th>Physician Owned ASCs</th>
<th>Physician Owned Limited Service Hospitals</th>
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<tbody>
<tr>
<td>2000</td>
<td>8.75</td>
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<td>0</td>
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<td>2001</td>
<td>8.5</td>
<td>0.38</td>
<td>0.36</td>
<td>8.5</td>
</tr>
<tr>
<td>2002</td>
<td>6.76</td>
<td>0.21</td>
<td>0.13</td>
<td>6.76</td>
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<tr>
<td>2003</td>
<td>7</td>
<td>0.56</td>
<td>0.11</td>
<td>7</td>
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<tr>
<td>2004</td>
<td>4</td>
<td>1.18</td>
<td>1.07</td>
<td>4</td>
</tr>
</tbody>
</table>

- **Tulsa Spine Hospital**
  - Opened December 2002
- **Orthopedic Hospital of Oklahoma**
  - Opened July 2001
Effects of Physician-Owned Limited-Service Hospitals: Evidence from the Market for Cardiac Inpatient Care in Arizona

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BACKGROUND
In recent years, physician-owned limited-service hospitals have become commonplace in several states where certificate of need (CON) regulations do not exist. Despite the increasing prevalence of these facilities, empirical evidence documenting whether the financial incentives linked to ownership influence physician practice patterns is sparse.

OBJECTIVE
This study compares the practice patterns of physician owners of limited-service cardiac hospitals and physician non-owners treating patients at competing full-service community hospitals that offer cardiac care services located in the same market area.

METHODS
The sample includes inpatient cases with a cardiac medical or surgical DRG code that were treated at either the Tucson Heart Hospital, the Arizona Heart Hospital, or at one of the competing full-service community hospitals during the time period 1998 through 2003. Using both physician name and state license number reported on each discharge record, data from the Arizona Medical Board physician directory file (specialty, licensure status and years of experience) were merged to each cardiac discharge record.

An analytical file was constructed using the physician-year as the unit of observation. For each physician-year observation, we calculated volume counts reflecting the number of cardiac DRG cases treated (total, surgical, and medical), case mix indicators reflecting the severity of illness, and payer mix indicators reflecting the insurance coverage of patients treated.

For each of these indicators, we compared physician owners and physician non-owners using a two-tailed test for difference between the means, with a null hypothesis of no difference (p<.01). We also employed multiple regression analysis to evaluate the effects of physician ownership after controlling for other confounding factors.
MAJOR FINDINGS

PHYSICIAN OWNERS “CHERRY-PICK” PROFITABLE CARDIAC SURGICAL DRGs
Physician owners of limited-service cardiac hospitals cherry-pick and thereby treat significantly higher volumes of the profitable cardiac surgical DRGs than physician non-owners who practice at competing full-service community hospitals. See Figure 1.

- Physician owners in Phoenix treat on average 3.8 times as many cardiac surgical DRG cases as physician non-owners (p<.01). The mean is 72 for owners versus 19 for non-owners.
- Physician owners in Tucson treat twice as many cardiac surgical DRG cases as physician non-owners (p<.01). The mean is 26 for owners compared to 12 for non-owners.

In contrast, differences by physician ownership status in the mean volumes of cardiac medical DRG cases treated are statistically significant but small in magnitude.

- Physician owners in Phoenix treat about 36% fewer medical DRG cases relative to physician non-owners (p<.01). The mean is 17 for owners and 26.5 for non-owners.
- Contrary to the Phoenix market, physician owners in Tucson treat 35 cardiac medical DRG cases per year compared to almost 30 for physician non-owners, a difference of 18.5% which is marginally significant (p<.10).

These differences in owner/non-owner practice patterns are consistent with economic incentives: Cardiac surgical procedures typically have significantly higher facility fees and profit margins than cardiac medical DRGs.

PHYSICIAN OWNERS TREAT LESS SEVERE CASES
Physician owners treat a less severe case-mix of both cardiac surgical and medical DRG cases relative to physician non-owners. The APR-DRG severity of illness classification was used to measure case mix. See Figure 2.

- In Phoenix, minor severity patients account for more than 56% of cases treated by physician owners, but less than 46% of cases treated by physician non-owners (p<.01). More than 64% of cardiac surgical cases treated by physician owners in Tucson are regarded as minor compared to only 42% of surgical cases treated by physician non-owners (p<.01).
- In Phoenix, about 40% of the surgical DRG cases treated by physician owners are classified as moderate severity compared to nearly 47% of cases treated by physician non-owners, a difference of nearly seven percentage points (p<.01). About 32% of surgical DRG cases treated by physician owners in Tucson are considered to be moderate severity compared to close to 50% of such cases treated by physician non-owners (p<.01).
- In both Phoenix and Tucson, 3.5% of the surgical DRG cases treated by physician owners are regarded as major. The corresponding percentages for physician non-owners are 6.7% and 7.5% in Phoenix and Tucson respectively (p<.01).

Severity comparisons for cardiac medical DRG cases reveal that significant differences exist by physician ownership in the percentage of cardiac medical DRG cases treated regarded as either minor or moderate. See Figure 3.

PHYSICIAN OWNERS “CHERRY-PICK” THE HEALTHIER PATIENTS
Measuring case mix in terms of the percentage of patients with comorbid conditions provides further evidence that physician owners cherry-pick and thereby treat healthier patients. Physician owners treat significantly higher percentages of surgical DRG cases with one or two comorbid conditions (p<.01). The reverse pattern exists for cardiac surgical DRG cases with four, five or six plus comorbid conditions. See Figure 4.

- Surgical DRG cases with one comorbidity account for nearly 21% of the cases treated by physician owners compared to about 10% of the similar cases treated by physician non-owners (p<.01). About 34% of surgical cases treated by physician owners have two comorbidities whereas the corresponding percentage for physician non-owners is nearly 22% (p <.01).
• Surgical DRGs with four comorbid conditions account for close to 13% of the cardiac cases treated by physician owners, yet they comprise almost 23% of surgical DRG cases treated by physician non-owners, a 10 percentage point difference (p<.01). Slightly more than 5% of the surgical DRG cases treated by physician owners have five comorbidities whereas such cases account for more than 13% of the caseloads of physician non-owners (p<.01).

It is interesting to note that the distribution of surgical cases classified by comorbidity counts is normally distributed for physician non-owners. In contrast, the distribution of surgical cases treated by physician owners is highly skewed towards low severity cases.

Analyses of the comorbidity status of cardiac medical DRG cases by physician ownership mirror the findings for cardiac surgical DRGs. See Figure 5.

**PHYSICIAN OWNERS TREAT SIGNIFICANTLY HIGHER PERCENTAGES OF PATIENTS WITH GENEROUS INSURANCE**

Comparisons of payer mix reveal that physician owners “cream-skim” because they treat significantly higher percentages of patients with generous insurance (Medicare fee-for-service and commercial indemnity/PPO), but significantly lower percentages of patients enrolled in capitation type plans (Medicare HMO, Medicaid HMO, commercial HMO and Arizona Health Care Cost Containment System). See Figure 6.

- In both markets combined, nearly 57% of the cardiac DRG cases treated by physician owners have Medicare FFS coverage, compared to 37% of the cardiac DRG cases treated by physician non-owners, a 20 percentage point difference (p<.01).

- More than 22% of the cardiac DRG cases treated by physician owners are insured under a commercial indemnity or PPO plan compared to about 11% of cardiac DRG cases treated by physician non-owners (p<.01), a difference of 11% points.

- Physician owners treat a negligible percentage of cardiac DRG cases with Medicare HMO insurance, while patients enrolled in Medicare HMOs account for 14.2% of the cardiac DRG cases treated by physician non-owners (p<.01).

- The results for those enrolled in Medicaid HMOs and commercial HMOs reveal a similar pattern. About 3.3% of the cardiac DRG patients treated by physician owners are insured through Medicaid compared to more than 10% of the cardiac DRG cases treated by physician non-owners, almost a 7 percentage point difference (p<.01). About 7.3% of the cardiac DRG cases treated by physician owners are insured through a commercial HMO plan, compared to more than 15% of the cardiac DRG cases treated by physician non-owners (p<.01).

A similar comparison of payer mix controlling for market area reveals that “cream-skimming” of patients with Medicare FFS insurance is more pronounced in Phoenix than in Tucson.

- Nearly 66% of the cardiac DRG cases treated by physician owners in Phoenix have Medicare FFS coverage compared to 48% of the cardiac DRG cases treated by physician owners in Tucson.

“Cream-skimming” of patients with commercial PPO or indemnity insurance coverage is more pronounced in Tucson.

- Close to 24% of cardiac DRG cases treated by physician owners in Tucson have commercial insurance compared to 4.5% of cardiac DRG cases treated by physician non-owners (p<.01).

**CONCLUSIONS**

These findings indicate that the financial incentives linked to ownership have significant effects on physician practice patterns. In accordance with prior research on this subject, the findings document that physician self-referral arrangements result in increased utilization of more profitable surgical procedures, “cherry-picking” of low-severity cases, and “cream-skimming” of patients with more generous insurance coverage. These findings suggest that physician ownership of “limited-service” cardiac hospitals has significant adverse effects on the provision of health care services in Arizona.
Figure 1
Comparison of Cardiac DRG Volumes by Physician Ownership:
Phoenix and Tucson 1998-2003

<table>
<thead>
<tr>
<th></th>
<th>Owners</th>
<th>Non-Owners</th>
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<tbody>
<tr>
<td><strong>Total Cardiac Cases</strong></td>
<td>89.0</td>
<td>45.7</td>
</tr>
<tr>
<td><strong>Cardiac Surgical Cases</strong></td>
<td>72.0</td>
<td>19.1</td>
</tr>
<tr>
<td><strong>Cardiac Medical Cases</strong></td>
<td>61.7</td>
<td>41.9</td>
</tr>
<tr>
<td>Phoenix</td>
<td>26.5</td>
<td>12.2</td>
</tr>
<tr>
<td>Tucson</td>
<td>17.0</td>
<td>12.2</td>
</tr>
<tr>
<td>Phoenix</td>
<td>35.2</td>
<td>26.5</td>
</tr>
<tr>
<td>Tucson</td>
<td>29.7</td>
<td>26.5</td>
</tr>
</tbody>
</table>

Owners: Yellow  Non-Owners: Blue
Figure 2
Comparison of Severity of Illness Classification by Physician Ownership for Cardiac Surgical DRGs: Phoenix and Tucson 1998-2003

[Bar chart showing the comparison of severity of illness classification by physician ownership in Phoenix and Tucson for minor, moderate, and major severity cases.]
Figure 3
Comparison of Severity of Illness Classification by Physician Ownership for Cardiac Medical DRGs: Phoenix and Tucson 1998-2003

Percent of Cases

<table>
<thead>
<tr>
<th>Minor Severity</th>
<th>Moderate Severity</th>
<th>Major Severity</th>
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</thead>
<tbody>
<tr>
<td>Phoenix</td>
<td>Tucson</td>
<td>Phoenix</td>
</tr>
<tr>
<td>61.1%</td>
<td>69.1%</td>
<td>61.1%</td>
</tr>
<tr>
<td>38.9%</td>
<td>40.2%</td>
<td>27.1%</td>
</tr>
</tbody>
</table>

Owners | Non-Owners
Figure 4
Comparison of Comorbidity Status of Cardiac Surgical DRGs by Physician Ownership Status:
Phoenix and Tucson 1998-2003

Percent of Cases

Number of Comorbid Conditions

Owners
Non-Owners

10.2%
21.8%
26.9%
12.8%
5.2%
1.4%
5.0%
Figure 5
Comparison of Comorbidity Status of Cardiac Medical DRGs by Physician Ownership Status: Phoenix and Tucson 1998-2003

Number of Comorbid Conditions

Percent of Cases

- Owners
- Non-Owners
Figure 6
Source of Payment for Cardiac DRG Cases by Physician Ownership: Phoenix and Tucson 1998-2003
How did you become involved?

I have studied physician self-referral arrangements for over a decade. The emergence of more physician-owned limited-service hospitals and a lack of empirical evidence regarding these facilities makes it a natural extension of my past studies and expertise.

Why were these studies conducted?

In recent years, physician-owned limited-service hospitals have become commonplace in states without certificate of need regulation (CON). There is growing concern that financial incentives linked to ownership may result in increased utilization of more profitable procedures.

How did you choose Oklahoma and Arizona for your studies?

Both of these states have had a proliferation of physician-owned limited-service hospitals in recent years. These facilities have been in operation for a long enough period of time to collect a significant amount of data for an empirical study.

Where was the data for the studies obtained?

In Oklahoma, the data was provided by the largest workers compensation insurer in the state. 1.9 million claims were reviewed with 250,000 of those claims analyzed for this study. In Arizona, data from the Arizona Medical Board was used including physician name, state license number recorded on each discharge record along with physician specialty, licensure status, and years of experience. The data includes inpatient cases with a cardiac medical or surgical DRG code that was provided by the state of Arizona.

Is it possible to show the nationwide effect of physician-owned limited-service hospitals based on your studies?

These studies along with a number of previous studies conducted in Florida suggest that there is enough empirical evidence to conclude that the financial incentives linked to ownership causes physician owners to change their practice patterns.

In Oklahoma, for example, did the number of physician providers in the specialties that perform these surgical and outpatient procedures increase over the time period of examination?

The number of physician specialists who perform these procedures—neurosurgeons, orthopedic surgeons, and anesthesiologists (for epidurals) remained relatively stable over the time period. This means that the same physicians were performing surgery at the community hospitals prior to becoming owners of their own facilities.

Is it possible that there wasn’t sufficient capacity at the community hospitals?

There was ample capacity at the community hospitals. In light of this there should be no unmet need in both the Oklahoma City and Tulsa communities.
Could changes in market share account for the increases in utilization?

The number of injured workers covered by the insurer did increase over the time period due to gains in market share. However, the utilization rates account for these changes in the number of injured workers in treatment.

Could one explanation for the increase in utilization be that more patients needed more surgery?

A patient does not know whether he/she needs a surgical procedure. The patient relies on the physician to act as his/her agent. Thus, physicians determine the types of treatments that patients receive and thereby control the demand for services.

Could physician efficiency account for the increase in utilization?

While there may be some small increases in efficiency in physician-owned limited-service hospitals, this alone cannot account for the large increases in both volume and utilization that occurred across the array of procedures examined. Moreover, the efficiency argument cannot account for the shift from simple spinal surgery to complex spinal surgery that has occurred in both Oklahoma City and Tulsa over the time period. This shift in practice patterns supports the contention that physicians respond to financial incentives.
Glossary of Terms

**ASC** – Ambulatory Surgery Center – Outpatient center that provides surgical procedures that do not require overnight stay.

**Case Mix** – A measure of relative severity of medical conditions of a hospital’s patients.

**Cherry-Picking** – Selecting the best or most desirable cases.

**Comorbid Condition** – Existing simultaneously with and usually independently of another medical condition.

**Cream Skimming** – Choosing to provide only the most profitable services or to insure only the healthiest patients.

**CON** – Certificate of Need – A designation that hospitals in some states must obtain from a state agency to authorize an activity such as constructing or modifying hospitals, purchasing certain medical equipment or providing new healthcare services.

**DRG** – Diagnostic Related Groupings – A classification system that groups patients by common characteristics requiring treatment. Many payers use a DRG based system to pay on a per case or per discharge basis.

**Physician-Owned Limited-Service Hospitals** – Hospitals that specialize in a particular product niche, such as cardiac, orthopedic, or surgical care. These hospitals are owned by physicians who refer their patients to the facilities they own.

**Utilization** – Patterns of use for particular healthcare services such as hospital care, physician visits, or prescription drugs.

**UR** – Utilization Rate