Commission on Health and Safety and Workers' Compensation

Inpatient Hospital Fee Schedule

and Outpatient Surgery Study

~ FINAL REPORT ~

Gerald F. Kominski, PhD
Principal Investigator
UCLA School of Public Health

Laura B. Gardner, MD, MPH, PhD,
Project Director
Axiomedics Research, Inc.

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CHSWC Inpatient Hospital Fee Schedule and Outpatient Surgery Study

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Executive Summary

The Inpatient Hospital Fee Schedule and Outpatient Surgery study was initiated by the Commission on Health and Safety and Workers' Compensation to provide information on costs and areas of improvement related to the 1999 California Workers' Compensation Inpatient Hospital Fee Schedule (IHFS) and to evaluate the appropriateness of a fee schedule for outpatient surgery facility fees.

Data sources for the study included:

- Office of Statewide Health Planning and Development (OSHPD) Public Data File
- Medical Bill Review Vendors
- Group Health Carriers and Self-Insureds
- Workers' Compensation Carriers.

Inpatient Hospital Fee Schedule Analysis

Impact of the IHFS

Inflation-adjusted, case-mix-adjusted charges for workers' compensation (WC) admissions in non-exempt DRGs rose 7.3%, from an average of $24,307 in the pre-IHFS period to an average of $26,072 in the post-IHFS period. Workers' compensation case-mix-adjusted paid amounts rose 4.0%, from an average of $9,267 in the pre-IHFS period to an average of $9,637 in the post-IHFS period. Among spine surgery DRGs (DRGs 496-500), WC charges rose 10.0%, from an average of $31, 057 in the pre-IHFS period to an average of $34,150 in the post-IHFS period, while payments were relatively unchanged ($12,255 in the pre-IHFS period; $12,459 in the post-IHFS period.

Comparison of IHFS and Group Health Reimbursement

Across all DRGs, case-mix-adjusted charges for post-IHFS period workers' compensation admissions were $26,072 compared with $25,047 for group health admissions. Paid amounts averaged $9,637 for workers' compensation admissions in the post-IHFS period compared with $7,428 for group health admissions, a difference of $2,208. Among spine surgery DRGs (DRGs 496-500), case-mix-adjusted charges were $34,150 and $32,066 for workers' compensation and group health admissions, respectively. Paid amounts averaged $12,459 for workers' compensation spine-related admissions in the post-IHFS period compared with $8,280 for group health spine-related admissions, a significant difference of $4,179.

Reimbursement as a percent of charges ("percent reimbursement") was calculated by dividing the average paid amount by the average charge across all DRGs and for each individual DRG. On average, the percent reimbursement was equal to 37.0% for workers' compensation admissions and 29.7% for group health admissions. The range of percent reimbursement across all DRGs for WC admissions was from 10.4% to 100%.

Comparison of Resource Intensity between WC and Medicare Admissions

There were 2.04 procedures per admission for Medicare compared with 1.95 procedures per admission for WC. LOS was 5.71 days on average for Medicare admissions compared with 5.04 days on average for WC admissions. These differences were statistically significant.

Impact of Possible Changes to the IHFS on Future Payments to Providers:

(1) Impact of Stop-Loss Payment Provisions for Selected Cost Outliers

When this study was first conceptualized, the IHFS had no cost outlier provision. However, regulation passed since then implemented a cost outlier provision based largely on the formula used by Medicare. The analyses performed as part of this study used the current outlier formula as well as earlier provisional language that would have exempted the admission from the fee schedule whenever charges exceeded five times the fee schedule formula.

The outlier provision that was enacted will add approximately $14 million, or 5.6% to total costs in the system. Approximately 3.7% of admissions were tagged as outliers under this provision. Had the earlier outlier language been enacted, with the admission exempted from the fee schedule whenever charges exceeded five time the fee schedule formula, over 16% of the admissions would have been tagged as "outliers" and the additional costs to the system would have been as much as $223 million, or an increase of as much as 87%.

(2) Alternative Approaches to Payment for Selected DRGs

The current allowed amount, incorporating the current outlier formula, was compared with the alternatives of paying 60%, 80% or 100% of billed charges. Compared with the current payment formula, paying for spine surgery DRGs (DRGs 496-500) at 60%, 80% or 100% of charges would add approximately $82 million, $146 million, or $210 million to the system, respectively.

(3) Exemption of high-technology hardware from the IHFS

The provision to pay separately for implantable hardware will add between $7.1 and $28.6 million in costs to the system, depending on the incidence of use of the implantable hardware within DRGs 496-500. These estimates are conservative.

Outpatient Surgery Facility Fees

The outpatient data set comprised 14,017 procedures overall. Among the entire sample, the average billed and paid amounts were $3,217 and $1,482, respectively. The 53.9% difference between billed and paid was attributable to preferred provider network discounts or contracted payment rates.

Medicare's Ambulatory Surgery Center (ASC) Fee Schedule

Repricing the 9,108 facility payments using the ASC fee schedule would result in an average payment of $515, an 88% reduction off the original billed amount of $4,228 and an additional 73% less than the observed paid amount of $1,918. Total reductions off the original billed charges total of $38.5 million would equal $33.8 million.

Medicare's Ambulatory Payment Classification (APC) System

Repricing the 14,017 facility payments to the APC fee schedule would result in an average reimbursement of $640 dollars–an 80% reduction off the original billed amount of $3,217 and an additional 57% savings compared with the average payment amount of $1,482. Total reductions off the original billed charges of $45.1 million would equal $36.1 million.

Recommendations

Inpatient Hospital Fee Schedule

Based on the results of these analyses, the authors of this report recommend the following with respect to the IHFS:

- Continue the cost outlier provision as currently enacted, with annual re-evaluation to assess the percent of cases and dollars that are qualifying as outliers
- Continue to base inpatient hospital reimbursement on the Medicare Inpatient Hospital Fee Schedule using the DWC-revised DRG weights and the 1.20 multiplier
- Eliminate the exemption for implantable hardware and/or instrumentation

- Implement revised DRG weights for the seven DRGs where the IHFS reimbursement appears not to be equitable compared with the group health sector
- Encourage the use of appropriate, nationally peer-reviewed selection criteria to reduce inappropriate utilization of implantable hardware and other medical technology
- Re-evaluate the DRG weights, the revisions suggested herein and the overall comparison between WC and GH annually, based on updated data.

Outpatient Surgery Facility Fees

The authors recommend the implementation of a fee schedule. One potential system on which the fee schedule could be based is the Ambulatory Payment Classification (APC) system, for the following reasons:

- The APC system is currently in place for Medicare patients in hospital outpatient departments; thus many facilities are already familiar with it
- The APC system covers more procedure codes than the ASC fee schedule and has existing processes to update and groom the approved procedure inventory
- APCs have a more adaptive construct than the ASC fee schedule because there are 158 groups rather than nine
- The wage index is an equitable adjuster given highly variable labor and operational costs across California.

Having a fee schedule for outpatient surgery facility fees should encourage appropriate decision-making regarding setting (inpatient vs. outpatient) for patients who need surgery. We recommend a wage index to adjust payment levels so that they are specific to each facility's location.

System Savings with Outpatient Surgery Facility Fee Schedule

The Workers' Compensation Insurance Rating Bureau (WCIRB) reports that total workers' compensation medical costs in 2000 for California were $2.9 billion. WCIRB and CWCI estimate that outpatient services typically make up 50% of all medical services and that facility fees are approximately 10% of the outpatient service sector. Applying middle and high-end reimbursement formulae to these projections creates an estimated range of savings of between $49 and $108 million in Year 1 after implementation.

CHSWC Inpatient Hospital Fee Schedule and Outpatient Surgery Study

The Inpatient Hospital Fee Schedule and Outpatient Surgery study was initiated by the Commission on Health and Safety and Workers' Compensation to provide information on costs and potential areas for improvement related to the 1999 California workers' compensation Inpatient Hospital Fee Schedule (IHFS) and to evaluate the appropriateness of a fee schedule for outpatient surgery facility fees. This report is divided into two main sections:

I. Assessment of the Inpatient Hospital Fee Schedule

II. Evaluation of a Fee Schedule for Outpatient Surgery Facility Fees.

Each section contains six main parts:

- Study Aims
- Background
- Data
- Methods
- Results
- Recommendations.

The two sections of the report are then followed by a short discussion and the references.

I. Assessment of the Inpatient Hospital Fee Schedule

Study Aims

The aims of the part of the study focusing on the California workers' compensation Inpatient Hospital Fee Schedule (IHFS) were to:

- Describe the issues stemming from the current IHFS
- Analyze the overall cost impact of the IHFS
- Identify Diagnosis-Related Groups (DRGs) wherein there are the largest differences between provider charges and IHFS reimbursement
- Identify DRGs wherein there are the largest differences between IHFS and group health sector reimbursement
- Compare resource intensity between workers' compensation admissions and Medicare admissions (because the IHFS is based on the Medicare PPS fee schedule for inpatient hospitals)
- Analyze the impact of possible changes to the IHFS on future payments to providers
- Develop recommendations for revising the IHFS.

Background

History of the Workers' Compensation Inpatient Hospital Fee Schedule

Until the current Inpatient Hospital Fee Schedule (IHFS) became effective in April of 1999, the California workers' compensation system included an Official Medical Fee Schedule (OMFS) that covered physician services, but did not cover hospital facility fees. The schedule, mandated by Labor Code Section 5307.1, is used for payment of medical services required to treat work-related injuries and illnesses.

Many employers and insurers had criticized the medical fee schedule in use since 1993 as outdated because it did not cover many common procedures and did not apply to inpatient hospital charges. The workers' compensation reforms of 1993 directed the DWC to update the fee schedule to address these concerns. The reform legislation required that the Division of Workers' Compensation issue a hospital fee schedule by January 1, 1995.

As a basis for developing the hospital fee schedule, the Administrative Director commissioned a study by the Institute of Health Policy Studies of the University of California, San Francisco. The study was completed in November 1995 and was entitled, *Diagnosis-Related Group Reimbursement Methods for Workers' Compensation Hospital Stays (Final Report).* The study recommended that the fee schedule be based on the federal

Medicare system in order to comply with the statutory mandate to consider cost and service differentials.

Medicare pays most hospitals for their inpatient hospital services at a predetermined rate for each discharge under the prospective payment system (PPS). Psychiatric and rehabilitation hospitals and units, long-term care hospitals (defined as those with an average length of stay of at least 25 days), children's hospitals, and cancer hospitals are excluded from PPS, and continue to be paid on a reasonable cost basis, subject to per discharge limits.

Because the PPS payment is based on an adjusted average payment rate, some cases will receive Medicare payment in excess of costs (rather than the billed charges) while other cases will receive payment that is less than costs. The system is designed to give hospitals the incentive to manage their operations more efficiently by evaluating those areas in which increased efficiencies can be instituted without affecting the quality of care and by treating a mix of patients to balance cost and payments. It should be noted that a hospital's payment is unaffected by the length of stay prior to discharge (unless the patient is transferred). It is expected that some patients will stay longer than others, and hospitals will offset the higher costs of a longer stay with the lower costs of a reduced stay. Medicare does not set a limit by DRG on how long a patient may stay in the hospital.

After several rounds of public comment and extensive fiscal analysis, the Division updated the Official Medical Fee Schedule by adopting changes to the schedule effective April 1,

1999 and including an Inpatient Hospital Fee Schedule (IHFS). Psychiatric DRGs 424-432; substance abuse DRGs 433-437; rehabilitation DRG 462; organ transplant DRGs 103, 302, 480, 481, 495; tracheostomy DRGs 482-483; burn DRGs 456-460 and 472; and DRG 475 are exempt from the California IHFS due to high and extremely variable costs. The specific sections pertaining to the IHFS are contained in Title 8 of the California Code of Regulations Sections 9790.1 and 9792.1.

The California workers' compensation IHFS takes into account cost and service differentials for various types of facilities based on the federal Medicare PPS fee schedule. As in Medicare, reimbursement for each hospital differs depending on a number of factors that have an impact on the hospital's costs and services. The IHFS reimbursement formula uses:

- **Hospital Composite Factor** – Initiated by the Health Care Financing Administration, hospital composite factors are a numeric expression of:
    - Unique type (teaching center, research-based, trauma center, etc.)
    - Physical location (urban, rural) of each California hospital
    - Case-mix and complexity of the inpatient admissions they see
    - Their historic and anticipated internal capital, operating and other resources required to service their patient population.

For example, San Francisco General Hospital, a large inner city hospital and trauma center has a hospital composite factor of 10776.1. University of California San Diego, one of the state's premier teaching and research hospitals has a conversion factor of 8430.0. Tahoe Forest Hospital, a rural community hospital in the Lake Tahoe basin has a composite factor of 4996.6. See Appendix A for a complete list of all California acute care hospitals and their composite factors.

- **DRG Weight** – a numerical expression for the complexity of the specific admission category. The DRG is a categorical system of classifying all patients into one of 499 different types of admissions ranging from DRG 001 to DRG 511 (12 codes have been inactivated). The weight assigned to the DRG by Medicare takes into consideration the surgical and/or medical resources required to treat the patient throughout their stay in the hospital. The spectrum of DRG weights for workers' compensation admissions for 1998 ranged from the low end of DRG 448 for Allergic Reaction with a weight of .0975 to the high end for DRG 106, Coronary Bypass with Cardiac Catheterization, with a weight of 7.5203. See Appendix B for a complete listing of all DRG weights.

- **Medicare Multiplier Factor** – in an attempt to incentivize California hospitals for accepting workers' compensation patients, the workers' compensation system increases the basic Medicare formula by an additional 20%.

Issues with the Inpatient Hospital Fee Schedule

The IHFS was implemented on April 1, 1999. Approximately a year later, the Division of Workers' Compensation began receiving complaints from providers related to IHFS reimbursement levels. Numerous problems stemming from the IHFS were reported, including:

- Certain DRGs (particularly spine surgery DRGs 496-500) in the existing IHFS were reported to have had a negative fiscal impact on hospitals.

- Providers indicated that inadequate reimbursement for DRGs in which new technology is used has caused costs to increase without a corresponding increase in reimbursement, forcing them to have to ration care to workers' compensation patients.

- Hospitals argued that workers' compensation patients were more clinically severe than patients from other payer systems and thus warranted additional compensation.

- Although many payers and providers have contracts that would provide for reimbursement at higher rates than the IHFS, providers were concerned that payers were "cherry picking" between the lower of the IHFS and the contract rate. Payers countered that the IHFS is a "maximum" fee schedule and for them to pay in excess of the scheduled amount could create a first-party bad faith situation with their policyholders.

- Employers were concerned that excluding spine-related (or other high-cost) DRGs from the IHFS (thus requiring a process of negotiation between payer and provider in order to set a payment level) would cause them to have problems with rural hospitals that don't belong to PPO networks and that won't negotiate fees. Hospitals countered that rural facilities don't have any bargaining power and the IHFS is their default in lieu of a contract.

The DWC has explored methods of adjusting the inpatient hospital fee schedule to balance the economic and access concerns of hospitals, providers and payers. Over the last twelve months, a variety of interim measures have been proposed and adopted by the DWC as temporary "stop-gap" measures including various outlier payment calculations and exclusion of surgical implants from the DRG payment rate. This study is an attempt to assess, among other issues, whether the fee schedule has established an effective and equitable payment structure for inpatient services when compared with other sectors such as group health and Medicare.

Data

The data utilized for this part of the study consisted of hospital data for inpatient hospital admissions.

Data Sources

Data sets of inpatient hospital admissions were compiled from five types of data source including the California Office of Statewide Health Planning and Development (OSHPD) 1998 and 1999 public data files. The number of admissions from each type of data source was as follows:

Admissions by Data Source Type

Source	**Number of Admissions**
WC Bill Review Vendors	8,423
GH Carriers	2,956
GH Self-Insureds	21,487
WC Carriers	1,639
OSHPD Public Files	3,827,633
Total	**3,862,138**

Timeframe

The inpatient data spanned five years, with most of the admissions occurring in 1998 or 1999. The year of admission was distributed as follows:

Admissions by Year

Year	Number of Admissions*
1996	1,733
1997	37,285
1998	1,623,404
1999	2,195,963
2000	3,753
Total	**3,862,138**

Sector

This study focused on three payer sectors: workers' compensation (WC), Medicare (MC) and group health (GH). The group health data consisted of non-workers' compensation, non-Medicare, non-MediCal, non-HMO private payers, including indemnity plans, PPOs and Blue Cross/Blue Shield. The number of admissions in the data set for each sector was as follows:

* It is important to note that these admissions were compiled from a variety of sources and not from a defined population; therefore, the counts per year overall and for spine-related DRGs do not represent incidence rates but are provided for the sole purpose of illustrating the nature of the data that were analyzed for this study.

Admissions by Sector

Sector	Number of Admissions
Workers' Compensation	69,105
Medicare	2,086,279
Group Health	1,706,754
Total	**3,862,138**

Period

As outlined above, the admissions in the data set for this study occurred in the years 1996 through 2000. Admissions before April 1, 1999 were coded as pre-IHFS period admissions; admissions on or after April 1, 1999 were coded as post-IHFS period admissions. The pre-IHFS period covered 39 months and the post-IHFS period covered 12 months. The number of admissions available in the data set for each period was as follows:

Admissions by Period

Period	Number of Admissions
Pre-IHFS	2,228,296
Post-IHFS	1,633,842
Total	**3,862,138**

Sector by Period

The distribution of admissions by sector and period was as follows:

Admissions by Sector and Period

	Number of Admissions	
Sector	**Pre-IHFS**	**Post-IHFS**
Workers' Compensation	37,598	31,507
Medicare	1,325,588	760,691
Group Health	865,110	841,644
Total	**2,228,296**	**1,633,842**

Spine Surgery DRGs (DRGs 496-500)

Back surgery DRGs make up almost 34 percent of all inpatient admissions in the workers' compensation system. These DRGs are the ones generating most of the discussion regarding the payment issues such as the spread between charges and IHFS reimbursement or the need to pay separately for high-technology hardware. Because of some of the problems described above as reportedly stemming from the IHFS, special attention in the analyses of the IHFS was given to the five DRGs that constitute inpatient spine-related surgery. The distribution of admissions by sector and period for spine surgery DRGs (DRGs 496-500) was as follows:

Admissions for Spine Surgery DRGs by Sector and Period

	Number of Admissions	
Sector	**Pre-IHFS**	**Post-IHFS**
Workers' Compensation	10,810	9,420
Medicare	12,487	7,675
Group Health	16,934	14,563
Total	**40,231**	**31,658**

Exempt DRGs

Certain DRGs (psychiatric DRGs 424-432; substance abuse DRGs 433-437; rehabilitation DRG 462; organ transplant DRGs 103, 302, 480, 481, 495; tracheostomy DRGs 482-483; burn DRGs 456-460 and 472; and DRG 475) currently are exempt from the California IHFS due to high and extremely variable costs. Because they are exempt, the formula for calculating an allowed amount does not apply to admissions in these DRGs. For this reason, we elected to remove admissions in these DRGs from the data set for the purposes of the statistical and modeling analyses. The data contained a total of 317,235 admissions in one of the exempt DRGs. Removing admissions in these DRGs resulted in a final working data set of 3,544,903 admissions.

Methods

Literature Review

Because of the emphasis on new technologies for back surgery among the issues being analyzed for this study, the literature review focused on surgical methods, outcomes and costs of back surgery. Additional literature concerning payment for new technology is cited in the Recommendations section.

Over the last 10 years, the annual number of spinal procedures performed in the United States has more than doubled (Abraham, Herkowitz and Katz, 1998). In California, the increase in the number of such procedures from 1998 to 1999 was over 30%, from 30,486 to 39,744. Spinal fusion is one of the most common spinal procedures because of the need to stabilize the spine after disk excision. In fact, spinal fusion is performed for the management of traumatic, degenerative, neoplastic, infectious, and congenital conditions (Abraham and Herkowitz, 1998; Huckell, 1998), especially in the presence of disabling low back pain (Hacker, 1997). However, studies have shown that the individual surgeon can be a more important correlate of the decision to perform spinal fusion than clinical variables such as the presence of spondylolisthesis (Katz et al., 1997).

The goal of spinal fusion is to obtain and maintain satisfactory alignment, promote fusion, and allow safe and early mobilization. Many techniques that differ in safety, ease of

application, cost, biomechanical strength, and postoperative requirements of immobilization are available (Davis, 1997). Despite the many recent improvements in technology, room exists for alternative forms of surgical treatment because of significant failures particularly related to spinal fusions (Kostuik, 1998). Sidhu and Herkowitz made some important points in their review article:

> The use of spinal instrumentation as an adjunct to fusion for the treatment of degenerative disorders of the lumbar spine is controversial. Instrumented lumbar fusions, in specific instances, may improve patient outcomes. For patients undergoing single level primary lumbar arthrodesis, the available data do not conclusively support the efficacy of spinal instrumentation. However, in the setting of previous failed lumbar surgery, iatrogenic or degenerative lumbar spondylolisthesis, spinal instrumentation may be useful as an adjunct to fusion. Possible advantages associated with the use of instrumentation include: correction of deformity in frontal and sagittal planes; decreased pseudarthrosis rates; prevention of progression of spondylolisthesis, and provision of spinal stability in the absence of intact posterior elements. Complications associated with the use of instrumentation include: increased cost; increased operative times; increased infection rate; increased reoperation rate; and a steep learning curve. Therefore, when instrumentation is to be used, the benefits must outweigh the risks. *These risks can be minimized by the judicious use of instrumentation by experienced surgeons, for specific indications as supported by the literature* (Sidhu and Herkowitz, 1997). [emphasis added]

The selection of the appropriate surgical approach for spinal fusion is predicated on the biomechanic deficiencies of the bony and ligamentous structures, the age of the patient, the level of experience of the surgeon, and the concomitant medical comorbidities (Vaccaro et al., 1998). The optimal approach ideally is the least invasive, provides the greatest benefit-to-risk ratio in terms of potential injury to nearby nerves and blood vessels, provides adequate stabilization to avoid cumbersome external immobilization and allows early rehabilitation. Techniques have changed significantly with the advent of less invasive

surgical methods for disc excision and spinal fusion; these include the development of rigid internal fixation devices using multiple points of fixation and the better knowledge of the biology of spinal fusion (Kostuik, 1998).

One of the earliest studies of the costs of spine-related surgery compared costs at one hospital between 1986 and 1993 (Parfenchuck et al., 1995). The purpose of the study was to determine areas where costs might be effectively reduced. The results showed that in inflation-adjusted 1993 dollars the actual increase in costs was 97%, and the most dramatically increased was implant cost ($300 in 1986 vs. $2,967 in 1993, a 638% increase after inflation adjustment). None of the other service centers showed such a drastic increase. The authors concluded, "Increasingly sophisticated technology has dramatically raised hospital charges. Strategies to reduce the overall cost of spinal surgery should concentrate on controlling the cost of spinal implants."

However, the cost of spinal implants has continued to increase. One of the newest and most expensive types of implantable hardware is the titanium cage device that was developed in the late 1990's. Clinical studies of various manufacturers' titanium cages showed very positive results initially (Ray, 1997; Whitecloud et al., 1998; Majd, 1999; Profeta et al., 2000). Profeta et al. (2000) reported, "Use of this device provides immediate stabilization, reduces or eliminates pain, promotes bone fusion between the vertebrae adjacent to the cage by allowing bone growth through the cage, reestablishes and maintains the intervertebral space, reduces the average hospitalization time, and allows a quicker return to work."

Early economic studies suggested that titanium cages were cost-effective, particularly in reducing operative time and the length of hospital stays (Hacker, 1997; Lopez-Oliva, 1998), although these studies were flawed in that they did not include the cost of purchasing the cages. In contrast, Kuntz et al. (2000) used a Markov model to project 10-year costs, quality-adjusted life years, and incremental cost-effectiveness ratios and reported, "Instrumented fusion was very expensive compared with the incremental gain in health outcome." As longer term studies are conducted, and late complications and other problems have begun to be reported (Mendenhall, 2000), the benefits of the titanium cages begin to pale in comparison with the costs. Furthermore, newer, more expensive technology has begun to supplant the cages, including bone dowels and other biologic-based implants.

Data Preparation

To prepare the inpatient data for the analyses, the five sets of hospital admission data were cleaned and merged, duplicate admissions were removed, each admission was coded to reflect payer sector and period, raw charges and allowed amounts were inflation-adjusted to year 2001 using the California hospital sector CPI, admission in the DRGs that are exempt from the IHFS were omitted and allowed amounts were calculated according to existing formulae. As discussed in the Background section, the reimbursement formula for workers' compensation inpatient hospital services set forth in Cal. Code Regs. Section 9792.1(a), is as follows:

> Maximum reimbursement for inpatient medical services shall be determined by multiplying 1.20 by the product of the health facility's composite factor and the applicable DRG weight or revised DRG weight if a revised weight has been adopted by the administrative director.

Revised DRG weights apply to certain DRGs where the UCSF study determined that resource utilization was different for workers' compensation admissions compared to Medicare admissions. The revised DRG weights are provided in Appendix B. The reimbursement formula for Medicare, on which the workers' compensation reimbursement formula is based, uses the original DRG weights and does not include the 1.20 multiplier.

Case Mix Adjustment

The inpatient portion of this analysis compared workers' compensation admissions with admissions from other payer systems. To assure a fair comparison, this type of analysis needs to account for differences in the study populations with respect to the distribution of cases across the DRGs, as such differences may influence the results. For instance, back injuries are much more prevalent among injured workers, representing more than one-third of all workers' compensation inpatient admissions, but less than 5 percent of group health admissions and 2 percent of the Medicare admissions. The distribution of cases across DRGs is known as "case-mix".

Failure to control for differences in case-mix gives results that are influenced by the distribution of cases in a non-explicit way. Such results are misleading and lead to incorrect

conclusions. For this reason, case mix adjustment was performed for the inpatient data in order to neutralize the differences in DRG mix and thus level the playing field among the three payer sectors.

The case mix adjustment constituted an adjustment of the relative contribution (to aggregate statistics such as means) of each DRG in the group health and Medicare admissions in both the pre-IHFS and post-IHFS periods to that among the pre-IHFS workers' compensation admissions. The adjustment was performed by first determining the frequency of each DRG (FREQ-DRG) in each of the three sectors (WC, Medicare, GH). Then, for each DRG in each sector, this number was divided into the frequency of that DRG in WC:

$$\frac{\text{FREQ-DRG-WC}}{\text{FREQ-DRG-GH}} = \text{Weight}$$

The calculation provided a weight which was then used to multiply (thus increasing or decreasing) the impact of each DRG according to the prevalence it would have had had the frequency been what is was among the WC data. Thus, DRGs that had a lower frequency in GH or Medicare than in WC had their impact increased; those that had a higher frequency had their impact decreased.

Example 1: The frequency of DRG 001 for GH in the pre-IHFS period was 0.453 percent and for WC it was 0.137 percent.

$$\frac{\text{FREQ-DRG-WC}}{\text{FREQ-DRG-GH}} = \frac{0.137}{0.453} = 0.302$$

Thus, DRG 001 had its impact reduced to .302 of what it would have been without case mix adjustment.

Example 2: The frequency of DRG 002 for GH in the pre-IHFS period was 0.046 percent and for WC it was 0.190.

$$\frac{\text{FREQ-DRG-WC}}{\text{FREQ-DRG-GH}} = \frac{0.190}{0.046} = 4.12$$

Thus, DRG 002 had its impact increased by a factor of 4.12 compared to what it would have been otherwise.

It can be seen from the formula that all of the workers' compensation DRGs in the pre-IHFS period have a calculated weight of 1.0. That is because the workers' compensation DRGs in the pre-IHFS period are serving as the reference data.

Statistical and Modeling Analyses

Pre-IHFS vs. post-IHFS data and WC vs. group health or Medicare data were analyzed with two sample *t*-tests using the inflation-adjusted and case-mix-adjusted data. The t-tests were performed using the PROC TTEST procedure within the SAS STAT software module. Charges vs. allowed amounts were analyzed by calculating the difference as an absolute and

as a percentage and using a single sample t-test to test the null hypothesis that the differences were zero. The single sample t-tests were performed using SAS software's PROC MEANS procedure with the T and PRT output options.

Results

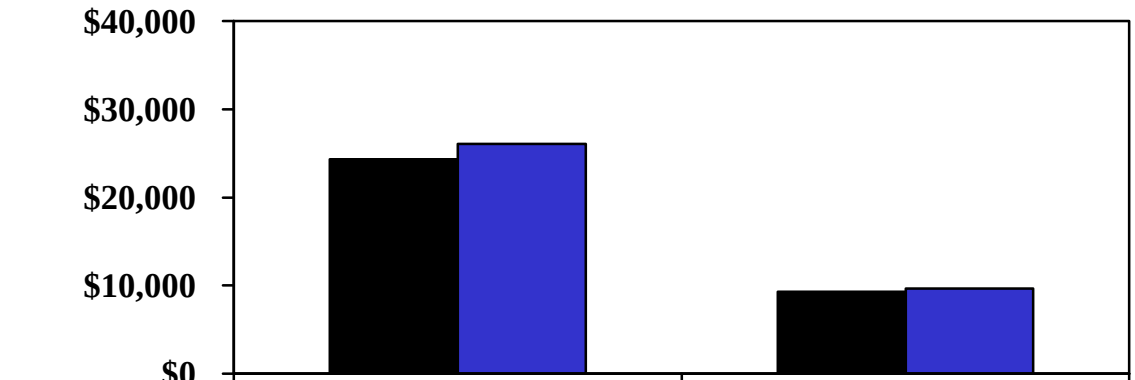
The results of the statistical analyses are presented first, followed by the results of the modeling analyses.

Statistical Analyses

Overall Cost Impact of the IHFS

The most significant findings related to the overall cost impact of the Inpatient Hospital Fee Schedule were as follows:

Case-Mix Adjusted Charges and Allowed Amounts for WC Admissions



	Charges	Payments
Pre-IHFS	$24,307	$9,267
Post-IHFS	$26,072	$9,637

- Inflation-adjusted, case-mix-adjusted charges for workers' compensation (WC) admissions in non-exempt DRGs rose 7.3%, from an average of $24,307 in the pre-IHFS period to an average of $26,072 in the post-IHFS period (p<.0001).

- Workers' compensation case-mix-adjusted allowed amounts rose 4.0%, from an average of $9,267 in the pre-IHFS period to an average of $9,637 in the post-IHFS period (p<.0001).

- The number of procedures performed per WC admission fell from an average of 2.02 in the pre-IHFS period to an average of 1.95 in the post-IHFS period (p<.0001) while length of stay (LOS) rose from an average of 4.8 days to an average of 5.0 days (p<.0001).

- Among spine surgery DRGs (DRGs 496-500), WC charges rose 10.0%, from an average of $31, 057 in the pre-IHFS period to an average of $34,150 in the post-IHFS period (p<.0001), while payments were relatively unchanged ($12,255 on average in the pre-IHFS period; $12,459 on average in the post-IHFS period, p=NS). The number of procedures per admission decreased insignificantly, from an average of 2.38 procedures per admission in the pre-IHFS period to 2.35 procedures per admission in the post-IHFS period, while length of stay increased from an average of 4.31 days in the pre-IHFS period to an average of 4.89 days in the post-IHFS period (p<.0001).

Comparison of Provider Charges and IHFS Reimbursement for Workers' Compensation Admissions

Charges and payments for workers' compensation admissions were evaluated by calculating the "charge reimbursement percent difference". The charge reimbursement percent difference was determined by subtracting the average WC charge for each DRG from the average IHFS paid amount and dividing this difference by the average WC charge. The charge reimbursement percent difference, which is thus a negative number because the average charge is always equal to or greater than the average reimbursement, represents the magnitude of the IHFS reimbursement's discount against charges. The ten DRGs with the highest charge reimbursement percent difference amounts were the following:

DRGs with Highest Charge Reimbursement Percent Differences

DRG	DRG DESCRIPTION	DRG TYPE	n	MEAN CHARGE	MEAN PAYMENT	% DIFFERENCE
177	UNCOMPLICATED PEPTIC ULCER W/CC	MED	1	$60,282	$6,980	-88.42%
146	RECTAL RESECTION W/CC	SURG	1	$105,597	$14,945	-85.85%
016	NONSPECIFIC CEREBROVASCULAR DISORDERS W/CC	MED	3	$62,643	$10,282	-83.59%
324	URINARY STONES W/O CC	MED	2	$17,381	$3,047	-82.47%
033	CONCUSSION AGE 0-17	MED	5	$11,639	$2,117	-81.81%
467	OTHER FACTORS INFLUENCING HEALTH STATUS	MED	10	$18,019	$3,399	-81.14%
119	VEIN LIGATION & STRIPPING	SURG	2	$40,500	$7,640	-81.14%
465	AFTERCARE W/HISTORY OF MALIGNANCY AS SECONDARY DIAGNOSIS	MED	1	$22,750	$4,305	-81.08%
057	T&A PROC EXCEPT TONSILLECTOMY &/OR ADENOIDECTOMY ONLY/AGE >17	SURG	2	$52,121	$10,066	-80.69%
066	EPISTAXIS	MED	2	$25,016	$4,912	-80.36%

The ten DRGs with the lowest charge reimbursement percent difference amounts were all DRGs where reimbursement was 100% of charges:

DRGs with Lowest Charge Reimbursement Percent Differences

DRG	DRG DESCRIPTION	DRG TYPE	n	MEAN CHARGE	MEAN PAYMENT	% DIFFERENCE
417	SEPTICEMIA AGE 0-17	MED	1	$8,837	$8,837	0%
276	NON-MALIGANT BREAST DISORDERS	MED	1	$4,767	$4,767	0%
071	LARYNGOTRACHEITIS	MED	1	$3,855	$3,855	0%
380	ABORTION W/O D&C	MED	1	$4,057	$4,057	0%
419	FEVER OF UNKNOWN ORIGIN AGE >17 W/CC	MED	1	$7,028	$7,028	0%
286	ADRENAL & PITUITARY PROCEDURES	SURG	2	$19,479	$19,479	0%
333	OTHER KIDNEY & URINARY TRACT DIAGNOSES AGE 0-17	MED	1	$4,261	$4,261	0%
279	CELLULITIS AGE 0-17	MED	1	$2,821	$2,821	0%
388	PREMATURITY W/O MAJOR PROBLEMS	MED	3	$7,056	$7,056	0%
190	OTHER DIGESTIVE SYSTEM DIAGNOSES AGE 0-17	MED	2	$3,173	$3,173	0%

Neither the ten DRGs with the highest charge reimbursement percent differences nor the ten DRGs with the lowest charge reimbursement percent differences represent a significant volume of workers' compensation admissions. In order to assess charge reimbursement percent differences among DRGs with a meaningful number of workers' compensation admissions the analyses were repeated among a data set limited to the top 100 DRGs by workers' compensation volume.

Among the top 100 DRGs by workers' compensation volume, the following were the DRGs with the highest charge reimbursement percent difference amounts:

Highest Charge Reimbursement Percent Differences
Among Top 100 DRGs by WC Volume

DRG	DRG DESCRIPTION	DRG TYPE	n	MEAN CHARGE	MEAN PAYMENT	% DIFFERENCE
450	POISONING & TOXIC EFFECTS OF DRUGS AGE >17 W/O CC	MED	114	$8,704	$2,048	-76.47%
032	CONCUSSION AGE >17 W/O CC	MED	149	$12,849	$3,327	-74.11%
102	OTHER RESPIRATORY SYSTEM DIAGNOSES W/O CC	MED	58	$15,704	$4,303	-72.60%
025	SEIZURE & HEADACHE AGE >17 W/O CC	MED	111	$11,176	$3,169	-71.65%
095	PNEUMOTHORAX W/O CC	MED	50	$15,554	$4,515	-70.97%
453	COMPLICATIONS OF TREATMENT W/O CC	MED	63	$11,081	$3,259	-70.59%
270	OTHER SKIN/ SUBCUT TISS & BREAST PROC W/O CC	SURG	61	$17,992	$5,397	-70.00%
466	AFTERCARE W/O HISTORY OF MALIGNANCY AS SECONDARY DIAGNOSIS	MED	71	$15,595	$4,703	-69.84%
445	TRAUMATIC INJURY AGE >17 W/O CC	MED	218	$10,401	$3,154	-69.67%
243	MEDICAL BACK PROBLEMS	MED	1196	$12,343	$3,787	-69.32%

Among the top 100 DRGs by workers' compensation volume the following were the DRGs with the lowest charge reimbursement percent difference amounts:

Lowest Charge Reimbursement Percent Differences Among Top 100 DRGs by WC Volume

DRG	DRG DESCRIPTION	DRG TYPE	n	MEAN CHARGE	MEAN PAYMENT	% DIFFERENCE
477	NON-EXTENSIVE O.R. PROCEDURE UNRELATED TO PRINCIPAL DIAGNOSIS	SURG	72	$19,249	$11,744	-38.99%
468	EXTENSIVE O.R. PROCEDURE UNRELATED TO PRINCIPAL DIAGNOSIS	SURG	76	$44,702	$22,645	-49.34%
247	SIGNS & SYMPTOMS OF MUSCULOSKELETAL SYSTEM & CONN TISSUE	MED	102	$6,661	$3,334	-49.95%
148	MAJOR SMALL & LARGE BOWEL PROCEDURES W/CC	SURG	45	$45,846	$22,175	-51.63%
182	ESOPHAGITIS/GASTROENT & MISC DIGEST DISORDERS AGE >17 W/CC	MED	52	$11,051	$5,337	-51.71%
248	TENDONITIS MYOSITIS & BURSITIS	MED	62	$12,108	$5,820	-51.94%
008	PERIPH & CRANIAL NERVE & OTHER NERV SYST PROC W/O CC	SURG	167	$16,839	$8,082	-52.00%
496	COMBINED ANTERIOR/POSTERIOR SPINAL FUSION	SURG	358	$81,741	$38,590	-52.79%
226	SOFT TISSUE PROCEDURES W/CC	SURG	54	$22,232	$10,341	-53.49%
174	G.I. HEMORRHAGE W/CC	MED	51	$14,550	$6,732	-53.73%

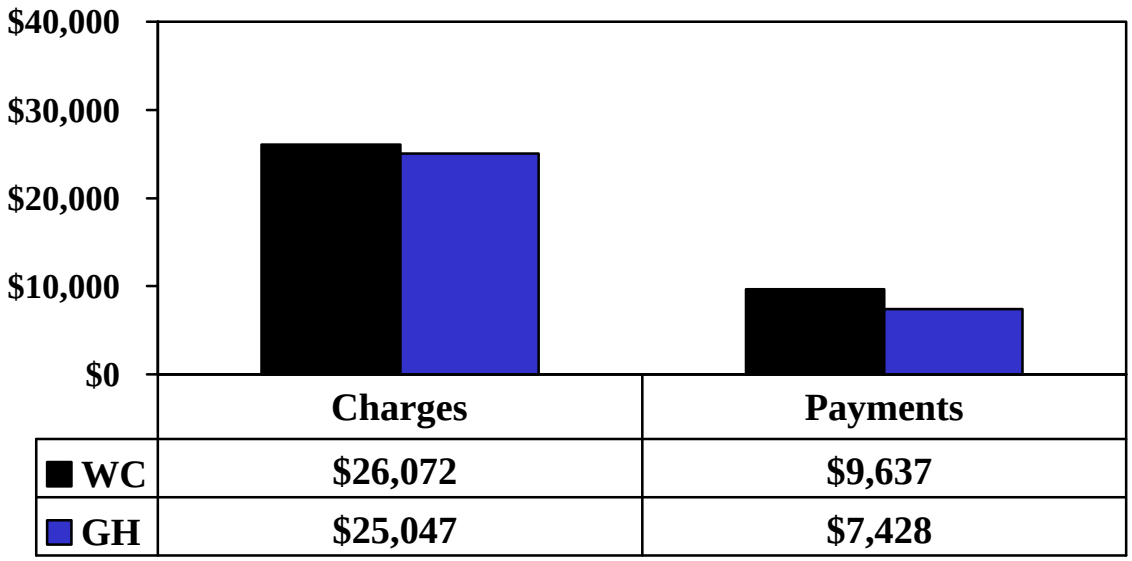
Although the charge reimbursement percent difference amounts can be seen to range as much as -76% among the highest volume DRGs, in most cases the charge reimbursement percent differences for WC admissions were similar to those for GH admissions. A detailed comparison of WC and GH reimbursement is provided in the next section.

Comparison of IHFS and Group Health Reimbursement

Across all DRGs, case-mix-adjusted charges for post-IHFS period workers' compensation admissions were $26,072 compared with $25,047 for group health admissions ($p<.0001$).

Paid amounts averaged $9,637 for workers' compensation admissions in the post-IHFS period compared with $7,428 for group health admissions, a difference of $2,208 (p<.0001). Procedures per admission were not significantly different for WC compared with group health admissions (1.95 and 1.98, respectively). Length of stay was longer for WC (5.04 days) compared with group health admissions (4.73 days) (p<.0001).

Case-Mix Adjusted Charges and Allowed Amounts for WC Compared with GH



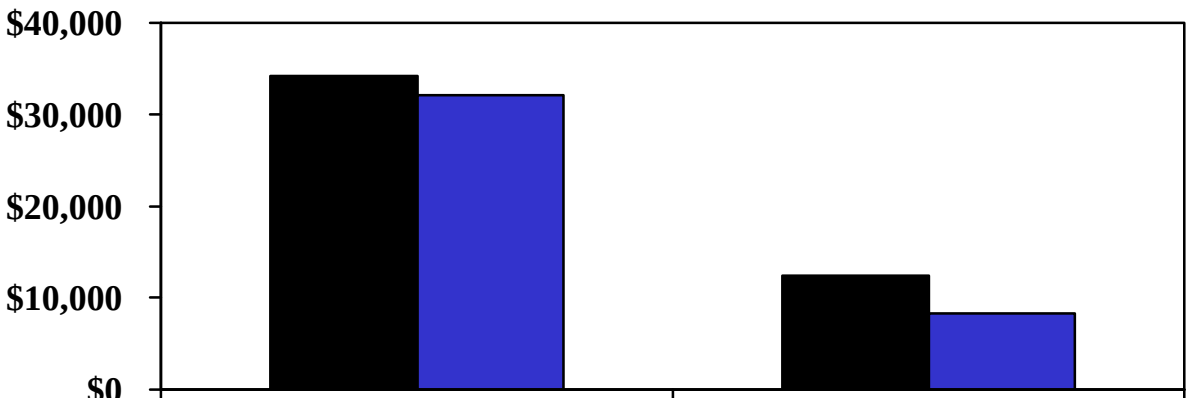
	Charges	Payments
WC	$26,072	$9,637
GH	$25,047	$7,428

Spine Surgery DRGs

Among spine surgery DRGs (DRGs 496-500), average case-mix-adjusted charges were $34,150 and $32,066 for workers' compensation and group health admissions, respectively (p<.0001). Paid amounts averaged $12,459 for WC spine surgery admissions in the post-IHFS period compared with $8,280 for group health, a difference of $4,179 (p<.0001). (See

Appendix D for a listing of average charges and paid amounts for the individual spine surgery DRGs.) WC spine-related admissions had 2.35 procedures per admission and a LOS of 4.89 days compared with 2.31 procedures per admission ($p<.01$) and a LOS of 4.28 days ($p<.0001$) for group health spine-related admissions.

Spine Surgery DRGs (DRGs 496-500): WC Compared with GH



	Charges	Payments
WC	$34,150	$12,459
GH	$32,066	$8,280

Reimbursement Percent

Reimbursement as a percent of charges ("percent reimbursement") is a measure of how much of a charge is covered by the reimbursement.* Percent reimbursement is also known as the "paid-to-charges ratio". Percent reimbursement was calculated by dividing the average paid amount by the average charge, across all DRGs and for each individual DRG. Across all DRGs, the percent reimbursement, or paid-to-charges ratio, was equal to 37.0% ($9,637÷$26,072) for workers' compensation admissions and 29.7% ($7,428÷$25,047) for group health admissions.

We compared reimbursement for WC admissions with reimbursement for GH admissions by searching for DRGs where the difference between WC percent reimbursement and GH percent reimbursement was the greatest. These tended to be DRGs where the WC charges were relatively high compared with GH charges. Among the top 100 DRGs by WC volume, the DRGs where the percent reimbursement showed the greatest difference between WC and GH admissions were the following:

* The percent reimbursement is related to the charge reimbursement percent difference—the two statistics add to 100%.

Reimbursement and Percent Reimbursement: WC Compared to GH

DRG	DRG DESCRIPTION	TYPE	n (WC)	MEAN CHARGE (WC)	MEAN CHARGE (GH)	MEAN ALLOWED (WC)	MEAN ALLOWED (GH)	% REIMB. (WC)	% REIMB. (GH)	% REIMB. DIFFER-ENCE
455	OTHER INJURY/POISONING & TOXIC EFFECT DIAG W/O CC	MED	96	$8,382	$3,228	$2,918	$3,089	34.81%	95.67%	60.86%
095	PNEUMOTHORAX W/O CC	MED	50	$15,554	$5,805	$4,515	$5,099	29.03%	87.84%	58.81%
270	OTHER SKIN/ SUBCUT TISS & BREAST PROC W/O CC	SURG	61	$17,992	$6,794	$5,397	$5,193	30.00%	76.44%	46.44%
245	BONE DISEASES & SPECIFIC ARTHROPATHIES W/O CC	MED	136	$9,332	$17,322	$3,135	$13,826	33.59%	79.82%	46.22%
450	POISONING & TOXIC EFFECTS OF DRUGS AGE >17 W/O CC	MED	114	$8,704	$5,442	$2,048	$3,718	23.53%	68.31%	44.79%
449	POISONING & TOXIC EFFECTS OF DRUGS AGE >17 W/CC	MED	54	$17,635	$7,416	$5,455	$5,601	30.94%	75.52%	44.59%
233	OTHER MUSCU-LOSKELETAL SYSTEM & CONN TISS O.R. PROC W/CC	SURG	45	$41,653	$25,014	$15,589	$20,281	37.43%	81.08%	43.65%
228	MAJOR THUMB OR JOINT PROC OR OTH HAND OR WRIST PROC W/CC	SURG	100	$17,870	$10,998	$7,008	$9,047	39.21%	82.26%	43.05%
439	SKIN GRAFTS FOR INJURIES	SURG	53	$50,298	$17,682	$17,938	$13,910	35.66%	78.67%	43.01%
131	PERIPHERAL VASCULAR DISORDERS W/O CC	MED	77	$10,911	$11,750	$3,974	$9,096	36.42%	77.41%	40.99%

DRGs where the percent reimbursement for WC admissions was significantly lower than for GH admissions are DRGs where the IHFS reimbursement may be considered potentially less than equitable. However, to be considered less than equitable we deemed it appropriate that, in addition to a lower percent reimbursement for WC compared to GH, the DRG should also show an absolute reimbursement amount that was less for WC than for GH; this was *not* the case on average. The reason for this criterion was because percent reimbursement is dependent on charges, which are quite mutable; while if the absolute reimbursement amount was also significantly less (e.g., more than $5,000 lower) it supported the determination that there was inequity in reimbursement between WC and GH.

To be considered a candidate for an adjustment in reimbursement, therefore, the following criteria were developed:

- The percent reimbursement should be at least 10% lower for the WC admissions than for the GH admissions.

- The absolute reimbursement amount should be at least $5,000 lower for the WC admissions than for the GH admissions.

- There should be at least 100 WC admissions in the sample.

- The DRG should not be exempt from the IHFS.

These criteria were met by the following DRGs:

DRG Candidates for Adjustment in Reimbursement

DRG	DRG DESCRIPTION	n (WC)	MEAN ALLOWED (WC)	MEAN ALLOWED (GH)	DIFFER-ENCE IN MEAN ALLOWED	% REIMB. (WC)	% REIMB. (GH)	% REIMB. DIFFER-ENCE
008	PERIPH & CRANIAL NERVE & OTHER NERV SYST PROC W/O CC	167	$8,082	$18,199	$-10,117	48.00%	80.86%	32.86%
029	TRAUMATIC STUPOR & COMA/COMA <1 HR AGE >17 W/O CC	110	$5,284	$18,858	$-13,574	30.70%	58.14%	27.44%
236	FRACTURES OF HIP & PELVIS	145	$5,142	$14,272	$-9,130	35.48%	74.02%	38.54%
245	BONE DISEASES & SPECIFIC ARTHROPATHIES W/O CC	136	$3,135	$13,826	$-10,691	33.59%	79.82%	46.23%
249	AFTERCARE/MUSCULO-SKELETAL SYSTEM & CONNECTIVE TISSUE	126	$4,800	$28,457	$-23,656	35.98%	68.07%	32.09%
445	TRAUMATIC INJURY AGE >17 W/O CC	218	$3,154	$27,502	$-24,347	30.33%	64.11%	33.78%
496	COMBINED ANTERIOR/POSTERIOR SPINAL FUSION	358	$38,590	$43,853	$-5,262	47.21%	60.98%	13.77%

These seven DRGs were thus determined to be candidates for a potential adjustment in the IHFS reimbursement amount based on the criteria stated above.* The suggested adjustment amount and the cost impact of the suggested adjustment for these seven DRGs are presented below in the Recommendations section.

* Setting the criteria either higher or lower for the percent or absolute reimbursement differences would result in either a lower or a higher number of DRGs, respectively, that would be candidates for an adjustment. We arbitrarily set the criteria at the stated levels to strike a balance between the need to adjust DRGs where the reimbursement was inequitable and the need not to create adjustments where the differences were relatively small.

Comparison of Resource Intensity between WC and Medicare Admissions

For the purposes of this study, relative resource intensity was assessed using two criteria: (1) length of stay (LOS); and (2) the number of procedures coded for each admission (this information was available for data from the public data file). Although charges were not significantly different for workers' compensation admissions compared with Medicare admissions ($26,072 and $25,795, respectively), the resource intensity of the Medicare admissions was statistically significantly higher than that of the WC admissions with respect to both measures of resource intensity:

- There were 2.04 procedures per admission for Medicare compared with 1.95 procedures per admission for WC ($p<.0001$)

- LOS was 5.71 days on average for Medicare admissions compared with 5.04 days on average for WC admissions ($p<.0001$).

In spite of the equivalent charges and lower resource intensity, reimbursement for WC admissions was statistically significantly *higher* (an average of $9,637) than for Medicare admissions (an average of $8,864) ($p<.0001$); not surprising given the 1.20 multiplier used to calculate WC allowed amounts relative to Medicare.

Modeling Analyses

Impact of Possible Changes to the IHFS on Future Payments to Providers

(1) Impact of Stop-Loss Payment Provisions for Selected Cost Outliers

When this study was first conceptualized, the IHFS had no cost outlier provision. However, regulation adopted since then implemented a cost outlier provision based largely on the formula used by Medicare. The analyses performed as part of this study used the current outlier formula as intended in the calculation of allowed amounts. For the purposes of evaluating the impact of this outlier formula, this analysis compared total payments under the current outlier provision in the post-IHFS period with what payments would have been under the IHFS without the cost outlier provision in place. This analysis also evaluated the potential impact of some earlier provisional language that would have exempted the bill from the fee schedule whenever charges exceeded five times the fee schedule formula. As with the other analyses in this study, the post-IHFS data consisted of approximately one year of data including hospital stays beginning April 1, 1999 through a portion of 2000, for those DRGs that were not exempt from the IHFS. The results showed the following:

Outlier Formula Compared with Baseline

	TOTAL ESTIMATED PAYMENTS	INCREASE OVER BASELINE ($)	INCREASE OVER BASELINE (%)
TOTAL ALLOWED AMOUNT USING COMPOSITE FACTORS WITHOUT OUTLIER FORMULA	$256,414,318		
TOTAL ALLOWED AMOUNT USING COMPOSITE FACTORS WITH CURRENT OUTLIER FORMULA	$270,749,369	$14,335,050	5.6%
TOTAL ALLOWED AMOUNT USING COMPOSITE FACTORS AND PAYMENT FOR OUTLIERS SET AT 50% OF CHARGES WHEN CHARGES EXCEED 5 TIMES THE FEE SCHEDULE	$354,928,519	$98,514,201	38.4%
TOTAL ALLOWED AMOUNT USING COMPOSITE FACTORS AND PAYMENT FOR OUTLIERS SET AT 100% OF CHARGES WHEN CHARGES EXCEED 5 TIMES THE FEE SCHEDULE	$478,934,930	$222,520,612	86.8%

It can be seen from the table that the cost outlier provision that was enacted added approximately $14 million, or 5.6% to total costs in the system. Approximately 3.7% of admissions were tagged as outliers under this provision. Had the earlier outlier language been enacted, with exemption from the fee schedule whenever charges exceeded five times the fee schedule formula, nearly 16% of the admissions would have been tagged as "outliers" and the additional costs to the system would have been somewhere between $98.5 million and $222.5 million, or an increase of between 38% and 87%, based on an assumption that the percent reimbursement for outliers would be between 50% and 100%.

(2) Alternative Approaches to Payment for Selected DRGs

The first modeling analysis focused on what the impact would be on total payments if there were alternative approaches to payment for the spine surgery DRGs (DRGs 496-500). The

current allowed amount, incorporating the current outlier formula, was compared with the alternatives of paying 60%, 80% or 100% of billed charges. It was assumed for the purposes of this analysis that DRGs other than the spine surgery DRGs (DRGs 496-500) would be paid according to the current allowed amount using the outlier formula. The results showed the following:

Outlier Formula Compared with Billed Charges for Spine Surgery DRGs

	TOTAL PAYMENTS	INCREASE OVER BASELINE ($)	INCREASE OVER BASELINE (%)
TOTAL ALLOWED AMOUNT USING COMPOSITE FACTORS WITH CURRENT OUTLIER FORMULA	$270,749,369		
TOTAL ALLOWED AMOUNT WITH PAYMENT FOR SPINE SURGERY DRGS (DRGS 496-500) AT 60% OF CHARGES	$352,782,853	$82,033,484	30.3%
TOTAL ALLOWED AMOUNT WITH PAYMENT FOR SPINE SURGERY DRGS (DRGS 496-500) AT 80% OF CHARGES	$416,899,616	$146,150,247	54.0%
TOTAL ALLOWED AMOUNT WITH PAYMENT FOR SPINE SURGERY DRGS (DRGS 496-500) AT 100% OF CHARGES	$481,016,379	$210,267,010	77.7%

It can be seen from the table that, compared with the current payment formula, paying for spine surgery DRGs (DRGs 496-500) at 60%, 80% or 100% of charges would add approximately $82 million, $146 million, or $210 million to the system, respectively.

(3) Exemption of High-Technology Hardware from IHFS

Before the current regulatory language regarding surgical implants, payment for surgical implant costs was included the DRG price. Hospitals were not separately reimbursed for the costs of any implantable hardware or instrumentation used in surgeries. These implants, which for back surgery include titanium cages, poly-directional surgical screws and other such hardware, are part of a new and evolving class of surgical technology that often carries significant clinical benefit when applied appropriately, albeit at significant cost. The current regulatory language allows hospitals to recover their "documented paid amount" for implantable hardware and/or instrumentation for DRGs 496-500, plus 10% (with a cap of $250) as well as any documented shipping, handling and tax payments.

The impact of exempting high-technology hardware from the IHFS was analyzed by projecting a range of usage rates (incidence) within selected DRGs and a range of estimated costs per admission for the hardware. The implant cost estimates were compiled from:

- Discussions with vendor representatives and review of vendor materials
- An informal survey of several managed care organizations that contract with hospitals for inpatient services
- Invoices and testimony submitted by hospitals to the DWC.

The incidence and cost estimates for the implantable hardware that were modeled for each DRG category were:

Figures Used for Incidence and Cost Estimates for Spine Surgery DRGs

DRG	HARDWARE COSTS	INCIDENCE	
496	$8,000-16,000	.25	.50
497	$4,000-8,000	.25	.50
498	$4,000-8,000	.25	.50
499	$2,000-4,000	.25	.50
500	$2,000-4,000	.25	.50

The figures used for hardware costs were based mainly on the prices supplied by the vendor representatives, which were far lower than the costs that appeared on the hospital invoices. We deliberately kept the hardware cost estimates conservative for the purposes of this particular analysis, although we recognize that for other types of analysis it would be reasonable to use less conservative estimates. The reason for using extremely conservative hardware cost estimates for this analysis was so that the estimates of the cost of the hardware exemption to the system and the savings related to eliminating the exemption would not be overstated. The results of the analysis were as follows:

Cost Estimates for Spine Surgery DRGs

	TOTAL ESTIMATED PAYMENTS	INCREASE OVER BASELINE ($)	INCREASE OVER BASELINE (%)
TOTAL ALLOWED AMOUNT USING COMPOSITE FACTORS AND CURRENT OUTLIER FORMULA WITH NO SUPPLEMENT FOR IMPLANTABLE HARDWARE	$270,749,369		
TOTAL ALLOWED AMOUNT USING COMPOSITE FACTORS AND CURRENT OUTLIER FORMULA WITH EXEMPTION AND SUPPLEMENTAL PAYMENT FOR IMPLANTABLE HARDWARE AT THE **LOW** END OF THE PRICE RANGE AND AN INCIDENCE RATE OF **25%** IN DRGS 496-500	$277,892,869	$7,143,500	2.6%
TOTAL ALLOWED AMOUNT USING COMPOSITE FACTORS AND CURRENT OUTLIER FORMULA WITH EXEMPTION AND SUPPLEMENTAL PAYMENT FOR IMPLANTABLE HARDWARE AT THE **HIGH** END OF THE PRICE RANGE AND AN INCIDENCE RATE OF **50%** IN DRGS 496-500	$299,323,369	$28,574,000	10.6%

It can be seen from the table that the provision to pay separately for implantable hardware will have added between $7.1 and $28.6 million in costs to the system in the first year, depending on the incidence of use and actual cost of the implantable hardware within DRGs 496-500. These estimates are conservative in that the incidence of use of the hardware is not necessarily limited to 50% of the admissions in those DRGs. If, for example, we had used incidence estimates that were twice as high as those in the table, the cost to the system of having the hardware exemption in place and the potential savings from eliminating the exemption would both have been twice as high as those stated.

Recommendations

The recommendations of the authors center on two general areas:

- Inpatient Hospital Fee Schedule
- Adoption of New Technology.

Inpatient Hospital Fee Schedule

The analyses conducted to evaluate the impact of the IHFS indicated that, with a few exceptions, the IHFS appears to be an equitable payment structure under which providers of inpatient services to workers' compensation patients are being fairly paid when compared with group health or Medicare payments for the same DRGs. Recent regulatory changes were noted to have added significantly to the costs in the system by providing for payment for cost outliers and for an exemption from the fee schedule for implantable hardware and/or instrumentation, which is thus being paid supplementally. However, the outlier payment provisions appear equitable given the number of admissions that qualify as outliers and the percent of total dollars that the additional outlier payments represent at this time. In contrast, the exemption from the fee schedule for implantable hardware is problematic, in that it:

- Adds substantial costs to the system for DRGs where there is no documented inadequacy or inequity in reimbursement, i.e., where the reimbursement for WC admissions currently exceeds that for group health or Medicare admissions (see Appendix D for a listing of average charges and paid amounts for the individual spine surgery DRGs)

- Applies to two DRGs (499 and 500) in which there are in actuality no spine fusion surgeries (all of which fall under DRGs 496-498) and thus for which it is unlikely that implantable hardware is being utilized[*]

- Requires a great deal of additional administrative effort and costs for both providers and payers to prepare, review and adjudicate the invoices for the hardware

- Eliminates any incentives hospital may have had to contain the costs of the technology (spine surgery hardware and/or instrumentation) by engaging in volume buying, "single case" purchasing or other such activities

- Is based on specific language regarding hardware that is not conducive to being applied to newer technological developments such as biologic materials that enhance fusion success but that are not technically considered "hardware" or "instrumentation".

[*] Any "hardware" that is being billed to DRGs 499 or 500 under the current exemption for implantable hardware certainly deserves further scrutiny to determine if in fact it qualifies for the exemption.

In addition, it is quite likely that the exemption eventually would represent a duplicative payment for the technology, as such costs become factored into the hospital-specific composite factor which Medicare calculates based on each hospital's reported operating and capital costs from several years past.

Therefore, based on the results of the analyses conducted as part of this study, the authors of this report recommend the following with respect to the IHFS:

- Continue the cost outlier provision as currently enacted, with annual re-evaluation to assess the percent of cases and dollars that are qualifying as outliers.

- Continue to base inpatient hospital reimbursement on the Medicare PPS fee schedule using the composite factors, the DWC-revised DRG weights (with the additional revisions noted below) and the 1.20 multiplier.

- Eliminate the exemption for implantable hardware and/or instrumentation for DRGs 496-500.

- Implement revised DRG weights for the seven DRGs where the IHFS reimbursement appears not to be equitable compared with the group health sector (see details below).

- Encourage the use of appropriate, nationally peer-reviewed selection criteria to reduce inappropriate utilization of implantable hardware and other high-cost medical technology.

- Re-evaluate the DRG weights, the revisions suggested herein and the overall comparison between WC and GH annually, based on updated data.

Methodology for Determining Suggested Revisions to DRG Weights

Seven DRGs met the criteria to be considered candidates for an adjustment in reimbursement. (See the section comparing IHFS allowed amounts with group health reimbursement for a list of the criteria). Because there is a precedent for doing so and because it is administratively relatively simple and straightforward, the authors of this report recommend that the reimbursement for these seven DRGs be adjusted by revising their DWC DRG weights.

The seven DRGs that were determined to be candidates for a potential adjustment in the IHFS reimbursement amount, the current (2001) DRG weights and the suggested revised weights for 2002 are as follows:

DRG Candidates for Revised Weights

DRG	DRG DESCRIPTION	YEAR 2001 DWC WEIGHTS	SUGGESTED YEAR 2002 WEIGHTS
008	PERIPH & CRANIAL NERVE & OTHER NERV SYST PROC W/O CC	1.1273	1.8397
029	TRAUMATIC STUPOR & COMA/COMA <1 HR AGE >17 W/O CC	0.7033	1.3787
236	FRACTURES OF HIP & PELVIS	0.7066	1.4540
245	BONE DISEASES & SPECIFIC ARTHROPATHIES W/O CC	0.4832	1.2570
249	AFTERCARE/MUSCULOSKELETAL SYSTEM & CONNECTIVE TISSUE	0.6913	1.4583
445	TRAUMATIC INJURY AGE >17 W/O CC	0.4118	1.0784
496	COMBINED ANTERIOR/POSTERIOR SPINAL FUSION	5.5532	6.2999

The intent of the revised DRG weights is to increase average reimbursement for each of the seven DRGs by a minimum of $5,000. Therefore, to determine the suggested weights we first started with the formula for the allowed amount:

$$\text{ALLOWED AMT} = (\text{DRG WEIGHT} \times \text{COMPOSITE FACTOR} \times 1.2) + \text{OUTLIER PAYMENT}$$

For each of the seven DRGs we then used the average allowed amount, average composite factor and average outlier payment; added $5,000 to the average allowed amount; and solved for the new DRG weight by subtracting the average outlier payment and dividing by the composite factor times the 1.20 multiplier:

$$\text{NEW DRG WEIGHT} = \frac{(\text{MEAN ALLOWED AMT} + 5000 - \text{MEAN OUTLIER PAYMENT})}{\text{COMPOSITE FACTOR} \times 1.2}$$

System Costs with Revised DRG Weights

The following table indicates how much would be added to the system as a result of revising the DRG weights for these seven DRGs and compares the system cost to that which was estimated for the exemption from the fee schedule for implantable hardware and/or instrumentation:

System Costs with Revised Weights for 7 DRGs

	TOTAL ESTIMATED PAYMENTS	INCREASE OVER BASELINE ($)	INCREASE OVER BASELINE (%)
TOTAL ALLOWED AMOUNT USING COMPOSITE FACTORS AND CURRENT OUTLIER FORMULA WITH NO SUPPLEMENT FOR IMPLANTABLE HARDWARE	$270,749,369		
TOTAL ALLOWED AMOUNT USING COMPOSITE FACTORS AND CURRENT OUTLIER FORMULA **WITH EXEMPTION AND SUPPLEMENTAL PAYMENT FOR IMPLANTABLE HARDWARE** AND AN INCIDENCE RATE OF 50% IN DRGS 496-500	$285,036,369	$14,287,000	5.3%
TOTAL ALLOWED AMOUNT USING COMPOSITE FACTORS AND CURRENT OUTLIER FORMULA **WITH THE REVISED DRG WEIGHTS** AND WITHOUT THE EXEMPTION AND SUPPLEMENTAL PAYMENT FOR IMPLANTABLE HARDWARE	$277,085,957	$6,336,588	2.3%

These results show that, implementing the revised DRG weights and concomitantly eliminating the exemption for the high-technology hardware and/or instrumentation for spine surgery DRGs would results in a savings of almost $16 million, based on an assumed incidence rate of 50% for the use of implantable hardware in DRGs 496-500. One of the advantages of the revised DRG weights is that the $6 million in increased costs (compared

with baseline) that would result would be targeted specifically at admissions where there is a documented discrepancy in WC reimbursement compared with group health. The actual impact of the revised weights should be evaluated at the next annual assessment of the IHFS in order to determine if average reimbursement has been increased effectively, and to what extent.

Adoption of New Technology

New technology is adopted in enthusiastic waves, only to be replaced by newer technology just as problems begin to be reported and prices begin to become subjected to market forces (Mendenhall, 2000). Is it the state's responsibility to craft a payment system that responds to each new wave of technology by increasing reimbursement without further ado? The literature suggests not. In fact, providers have long acknowledged that the responsibility for determining the cost-effectiveness and value of the new technology rests with themselves in order to establish a basis for reimbursement:

> To ensure that proper reimbursement is obtained for utilization of a new technology, providers should demonstrate to payers the long-term cost-effectiveness of the new technology. Providers need to determine the incremental costs incurred in using the technology and various payers' payment rates for such use. If preliminary analysis shows that reimbursement for the technology may be insufficient, providers then should conduct a detailed analysis of the new technology. This analysis should assemble comparative data of internal and external performance benchmarks from various sources, including state, regional, and national databases. In addition, providers should assess the long-term savings achieved by using the new technology, such as reductions in hospital readmissions and repeated procedures. Managed care payers are likely to find such data persuasive in determining whether to increase payment rates for a new device or therapy (Kaden, 1998).

Providers have also acknowledged that they have the ability and the mandate to work towards reducing the costs of technology such as implants, because without the buy-in and commitment of providers to achieve cost-effectiveness, the market will have the incentive to push prices upwards, leading to higher costs amid great variability in pricing. For example, Cheung et al. (1998) reported on a study of hip and knee replacement implants that showed that the prices being paid were highly variable across patients and vendors, and that great savings could have been realized had the lowest prices been paid for the implants. "Although it may be neither desirable nor possible to use the least expensive model and price in every hospital, the potential for cost reductions in the purchase of implants is substantial" (Cheung et al., 1998).

Providers do not lack for examples as to how such savings should be wrought from the system. Walczak et al. (1993) reported that a "cooperative effort between physicians and facility administrators with respect to purchase of materials and services can reduce costs dramatically and provide clinical benefits, as well." With the proper incentives, providers can utilize appropriate selection criteria to reduce inappropriate utilization, standardize equipment purchases to reduce variability (Ferdinand, 1994; Breivis et al., 1993), enter into value-added contracts with selected vendors, and reduce costs dramatically. Ferdinand (1994) noted, "The keys have been physician input from the start, teamwork and continuous training." Breivis et al. (1993) noted that through consensus development among their

surgeons who worked together to select a single vendor, "The savings realized from volume purchasing allows us to help in the management of health care costs."

One of the most innovative cost-saving programs initiated by physicians was described by Healy et al. (2000):

> In an attempt to reduce the hospital cost of orthopaedic operations by reducing the cost of operating-room supplies, we developed a Single Price/Case Price Purchasing Program for implants… The Lahey Clinic asked orthopaedic vendors to supply all instruments, implants, and disposable items related to these selected products for one single price per unit or case. The hospital implemented the Single Price/ Case Price Purchasing Program with a competitive-bid request for proposal. Surgeons evaluated the responses to the bidding process, and they made final decisions on product selection. The Single Price/Case Price Purchasing Program at the Lahey Clinic allowed the hospital to reduce its cost of orthopaedic operations by lowering the cost of operating-room supplies. This cost reduction is important in a health-care economy in which hospital revenues per unit of service or care are decreasing.

Through their innovative purchasing program the Lahey Clinic physicians were able to reduce costs by 23-45%.

II. Evaluation of a Fee Schedule for Outpatient Surgery Facility Fees

Study Aims

The aims of the part of the study focusing on the California workers' compensation Inpatient Hospital Fee Schedule (IHFS) were to:

- Identify and measure the costs of outpatient surgery facility fees and the range of estimated savings related to implementing a fee schedule for outpatient surgery facility fees

- Develop recommendations for establishing a fee schedule for outpatient surgery facilities.

Background

Medicare Outpatient Payment Systems

Generally, there are two primary elements in the total cost of performing a surgical procedure: The cost of the physician's professional services for performing the procedure, and the cost of services furnished by the facility where the procedure is performed (for example, surgical supplies and equipment and nursing services). There are currently two payment structures in use for reimbursement of the services of the facility. The Ambulatory Surgery Center (ASC) fee schedule is the system currently used by Medicare to reimburse

freestanding surgery facilities. Ambulatory Payment Classifications (APCs) are another system that is currently in use by Medicare for payment of hospital outpatient services. Because full payment group information is available for both of these fee schedule systems we focus on these two systems for the modeling portion of the outpatient analyses.

Ambulatory Surgery Center (ASC) Fee Schedule

Section 1832(a)(2)(F)(i) of the Social Security Act (the Act) provided that benefits under the Medicare Supplementary Medical Insurance program (Part B) include payment for facility services furnished in connection with surgical procedures specified by the Secretary in accordance with section 1833(i)(1)(A) of the Act. Section 1833(i)(2)(A) of the Act addresses what the ASC facility fee is intended to represent and how the amount of the Medicare payment for ASC facility services is to be determined. It requires Medicare to review and update ASC payment amounts annually.

The ASC payment rate is to be a standard overhead amount established on the basis of Medicare's estimate of a fair fee that takes into account the costs incurred by ASCs generally in providing facility services in connection with performing a specific procedure. The Report of the Conference Committee accompanying section 934 of the Omnibus Budget Reconciliation Act of 1980 (P.L. 96-499), which enacted the ASC benefit in December 1980, stated, "This overhead factor is expected to be calculated on a prospective basis * * * utilizing sample survey and similar techniques to establish reasonable estimated overhead

allowances for each of the listed procedures which take account of volume (within reasonable limits)." (See H.R. Rep. No 1479, 96th Cong., 2nd Sess. 134 (1980).)

In order to estimate the amount of those reasonable allowances, Medicare is required by Section 1833(i)(2)(A)(i) of the Act to survey the actual audited costs incurred by a representative sample of facilities in connection with a representative sample of procedures. This survey is to be conducted every five years, beginning no later than January 1, 1995. Currently approximately 2,250 surgical codes have been assigned to 8 prospective payment categories for facility fee reimbursement. A ninth category was proposed in the original legislation but not enacted. Reimbursement levels for the surgical centers currently are as follows:

ASC Group Payment Rates

GROUP	PAYMENT RATE
1	$320
2	$429
3	$491
4	$606
5	$690
6	$800
7	$957
8	$942

Because payment for ASC facility services is subject to the usual Medicare Part B deductible and coinsurance requirements, Medicare pays participating ASCs 80 percent of the prospectively determined rate, adjusted for regional wage variations.

Section 1833(i)(2)(A)(ii) requires that the ASC payment rates result in substantially lower Medicare expenditures than would have been paid if the same procedure had been performed on an inpatient basis in a hospital.

Regulations pertaining to Medicare payments for ASC facility services are contained in Part 416 of the Code of Federal Regulations (42 CFR 416).

Ambulatory Payment Classifications or APCs

Ambulatory Payment Classifications (APCs) are another system available for classification and payment of outpatient services. Section 4523 of the Balanced Budget Act of 1997 (BBA) provided authority for HCFA to implement a prospective payment system (PPS) under Medicare for hospital outpatient services, certain Part B services furnished to hospital inpatients who have no Part A coverage, and partial hospitalization services furnished by community mental health centers. The provisions of this section were further modified by sections 201 and 202 of the Balanced Budget Refinement Act of 1999 (BBRA).

The system functions by assigning each of 3,200 unique surgical procedures to one of 158 distinct groups or APCs. Services in each APC are similar clinically and in terms of the resources they require. A payment rate is established for each APC. Depending on the services provided, hospitals may be paid for more than one APC for an encounter. Both the total APC payment and the portion paid as coinsurance amounts are adjusted to reflect geographic wage variations using the hospital wage index and assuming that the portion of the payment/coinsurance that is attributable to labor is 60 percent.

HCFA's final rule for the new system was published in the Federal Register on April 7, 2000 (65 FR 18434). The new system went into effect on August 1, 2000.

Data

The data utilized for this part of the study consisted of outpatient surgical facility fee data from hospitals and freestanding surgery facilities.

Data Sources

Data for the outpatient surgery study included workers' compensation outpatient facility fee payment records compiled from a variety of sources including:

- Managed care vendors
- Private outpatient facilities
- The California Workers' Compensation Institute (CWCI) Industry Claim Information System (ICIS).

The payer types for the surgery facility data included both self-insured employers and traditional workers' compensation insurance carriers.

Time Frame

The final data set included outpatient surgery facility fees and reimbursement records for dates of service between January 1, 1999 and March 30, 2001.

Descriptive Analyses

- There were 14,017 outpatient surgery facility fee records that mapped to either (or both) an Ambulatory Surgery Center (ASC) or Ambulatory Payment Classification (APC) payment group. (See Appendix C for a list of the top 100 facility fee procedure codes.)

- These facility fee records reflected 347 distinct surgical procedure codes.

- Total billings for outpatient surgery facility fees for the 14,017 surgical events equaled $45.1 million with payments of $20.8 million.

- The average billed amount for outpatient surgical facilities was $3,217; the average paid was $1,482.

- Reductions, attributable to negotiated fees and/or PPO discounts, totaled 53.9% off billed charges across the entire sample.

Methods

Literature Review

Because of the emphasis on new technologies for back surgery among the issues being analyzed for this study, the literature review focused on surgical methods, outcomes and costs of back surgery. Additional literature concerning payment for new technology is cited in the Recommendations section.

Data Preparation

A separate data call was issued in the January 2001 to gather as much outpatient surgery facility data as possible to support the stated goal of the study with respect to the outpatient sector: measure the range of financial costs related to outpatient surgery facility fees and compare the reimbursement levels of the fees against other payment systems. To prepare the outpatient data for the analyses, data received in hard copy were keyed in to an Excel spreadsheet and merged with data received electronically, and the combined data set was cleaned to remove non-facility fee data.

Results

Costs Related to Outpatient Surgery Facility Fees

The outpatient data set comprised 14,017 procedures overall. Among the entire sample, the average billed and paid amounts were $3,217 and $1,482, respectively. The 53.9% difference between billed and paid amounts was attributable to preferred provider network discounts or contracted payment rates.

The top 100 outpatient surgical codes made up 11,868 or 82% of the entire sample. Total facility charges for the top 100 codes equaled $36.8 million with payments of $17.0 million. The average billed amount for the top 100 was $3,104 with an average paid amount of $1,434. The percent difference between billed and paid across the top 100 procedure codes was thus 53.8%, although it ranged as low as zero for those procedure codes where average reimbursement equaled the average billed amount. The top 10 outpatient surgery facility fee procedure codes by volume are listed below:

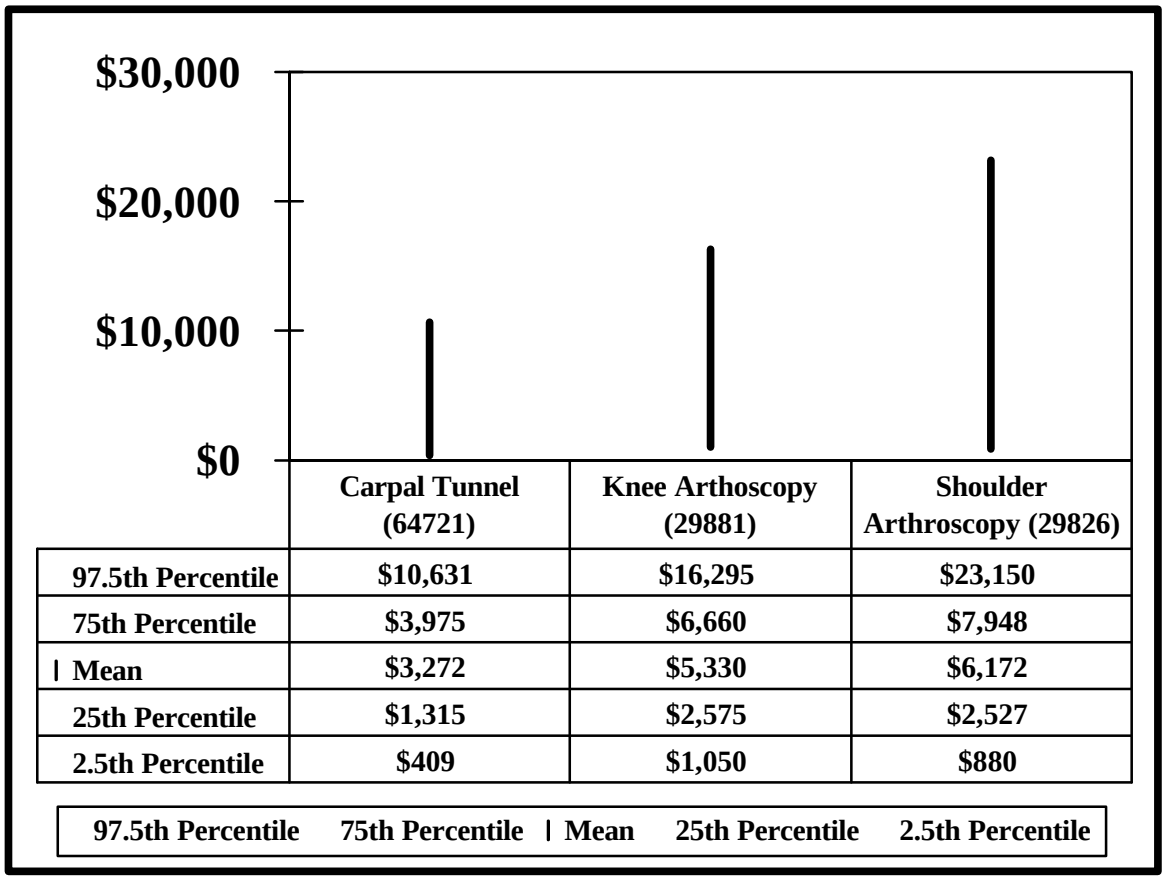
Top 10 Outpatient Surgery Facility Fee Procedure Codes

CPT-4	CPT-4 DESCRIPTION	n	TOTAL BILLED	TOTAL PAID	AVERAGE BILLED	AVERAGE PAID	% DIFFERENCE
64721	Neuroplasty/transpos median at carpal tunnel	898	$2,938,677	$1,342,348	$3,272	$1,495	-54.3%
12001	Simple wound REP scalp,neck,ax,trunk	870	$317,434	$219,078	$365	$252	-31.0%
29881	Surg knee arthroscopy w MED or lat meniscectomy	741	$3,949,803	$1,880,637	$5,330	$2,538	-52.4%
12002	Simple WND REP scalp,neck,ax,trunk,	587	$249,834	$162,890	$426	$277	-34.8%
29826	Surg should arthroscopy w decomp & acromioplasty	518	$3,196,934	$1,331,901	$6,172	$2,571	-58.3%
20550	Inject tendon sheath/LIG/trigger	444	$368,287	$129,773	$829	$292	-64.8%
20610	Arthrocentesis/asp/ inject major joint	428	$329,515	$168,024	$770	$393	-49.0%
49505	Repair initial reducible IH, age 5 yrs or over	347	$1,557,253	$736,828	$4,488	$2,123	-52.7%
20680	Removal of implant; deep	317	$1,058,782	$525,569	$3,340	$1,658	-50.4%
29880	Surg knee arthroscopy w MED & lat meniscectomy	277	$1,722,729	$720,761	$6,219	$2,602	-58.2%

Charges and payment amounts were highly variable across the facilities in the sample. In order to limit the distortion of high and low outlier payments, we analyzed charges and payment amounts at various levels from the 2.5th to the 97.5th percentiles. The ratio of the 97.5th percentile to the 2.5th percentile provides an indication of how variable the fees are for a given procedure.

For example, the 97.5th percentile charge for CPT-4 64721 (Neuroplasty median at carpal tunnel) was $10,631–26 times the 2.5th percentile charge of $409. The graph below demonstrates the range of payment values for three procedures:

Range of Charges for Outpatient Surgical Facility Fees



	Carpal Tunnel (64721)	Knee Arthoscopy (29881)	Shoulder Arthroscopy (29826)
97.5th Percentile	$10,631	$16,295	$23,150
75th Percentile	$3,975	$6,660	$7,948
Mean	$3,272	$5,330	$6,172
25th Percentile	$1,315	$2,575	$2,527
2.5th Percentile	$409	$1,050	$880

The graph shows a clear picture of the wide range of charges for the outpatient facility fees for three common ambulatory surgical procedures. The top of the black line represents the 97.5th percentile charge, the bottom of the line represents the 2.5th percentile charge and the diamond marks the mean charge.

Impact of a Fee Schedule for Outpatient Surgery Facility Fees

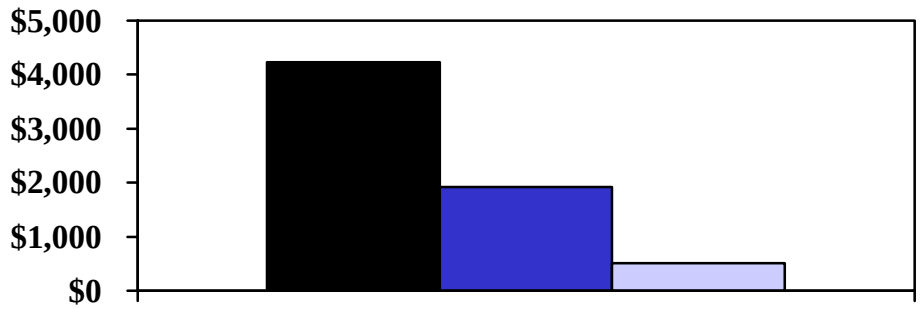
As discussed above, the two leading prospective payment methodologies for ambulatory surgery facilities are Medicare's Ambulatory Surgery Center (ASC) fee schedule and Medicare's Ambulatory Payment Classification (APC) system. A series of analyses were conducted (1) to determine anticipated payment amounts for the procedure codes in our outpatient data set using each of the two fee schedules and (2) to compare reimbursement levels among the ASC and APC methods and the "current state" of managed care reductions. Additional analyses applying modified versions of the two fee schedules are also presented.

Medicare's Ambulatory Surgery Center (ASC) Fee Schedule

Out of the original sample of 14,017 surgical facility fee records in the data set, 9,108 codes (65%) could be cross-walked into one of the eight ASC payment groups. Charges for the 9,108 records averaged $4,228. ASC reimbursement for the 9,108 fees ranged from a low of $302 for Group 1 procedures (example 64722: Decompression nerve NOS) to a high of $957 for Group 7 procedures (example 28120: Partial bone excision). Total and average anticipated payments using the ASC payment rates were determined and compared to total and average charges and observed payments.

The results showed that repricing the 9,108 facility payments using the ASC fee schedule would result in total reimbursement of $4,688,069. The total reduction off the original billed charges of $38.5 million would equal $33.8 million or -88%. The average reimbursement

would equal $515, which is an additional 73% less than the average observed paid amount of $1,918. The graph below summarizes the impact of applying ASC rates to the 9,108 facility fee records:



Charges	**$4,228**
Payments	**$1,918**
ASC Reimbursement	**$515**

The top ten procedures by volume subject to ASC reimbursement are as follows:

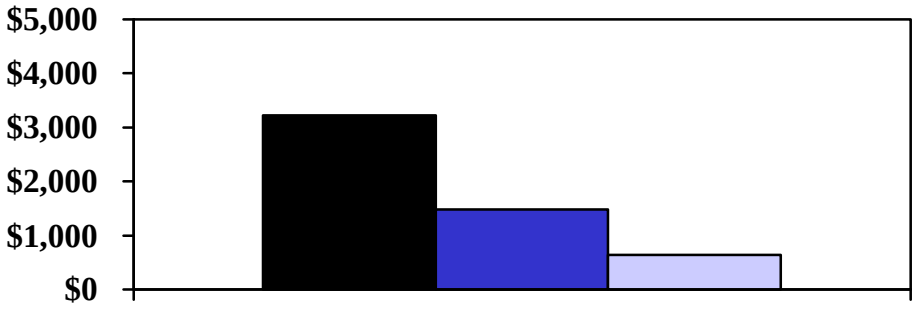
ASC Payment Rates for Top Ten High Volume Procedures

CPT-4	CPT-4 DESCRIPTION	AVG BILLED	AVG PAID	ASC GROUP	ASC PAYMENT RATE	% DIFFERENCE COMPARED WITH BILLED	% DIFFERENCE COMPARED WITH PAID
64721	Neuroplasty/transpos median at carpal tunnel	$3,272	$1,495	02	$429	-87%	-71%
29881	Surg knee arthroscopy w MED or lat meniscectomy	$5,330	$2,538	04	$606	-89%	-76%
29826	Surg should arthroscopy w decomp & acromioplasty	$6,172	$2,571	03	$491	-92%	-81%
49505	Repair initial reducible IH, age 5 yrs or over	$4,488	$2,123	04	$606	-86%	-71%
20680	Removal of implant; deep	$3,340	$1,658	03	$491	-85%	-70%
29880	Surg knee arthroscopy w MED & lat meniscectomy	$6,219	$2,602	04	$606	-90%	-77%
64510	Injection anesthesia stellate ganglion	$1,632	$630	01	$320	-80%	-49%
29877	Surg knee arthroscopy w debride/shave cartilage	$4,530	$2,191	04	$606	-87%	-72%
62350	Impl/rev IT/epidural cath for reservoir/pump	$4,390	$1,608	02	$429	-90%	-73%
29888	Arthroscopically aided ACL REP/augment/reconst	$6,522	$3,086	03	$491	-92%	-84%

Medicare's Ambulatory Payment Classification (APC) System

The original sample of 14,017 facility fee records was also cross-walked into the 158 distinct APC categories. There were 347 unique procedure codes among the facility fee data, all of which had a corresponding APC category. Charges averaged $3,217. APC reimbursement levels ranged from a low of $22.61 for Category #102 (example 62368: Analysis implanted IT/epidural infusion pump) to a high of $6,251 for Category #222 (example 63685: Incision & subcutaneous placement of neuroreceiver). Repricing the facility payments for the 14,017 procedures using the APC fee schedule would result in total reimbursement of $8,975,831. The total reduction off the original billed charges of $45.1 million would equal $36.1 million or -80%. Average reimbursement would equal $640, which is an additional 57% less than the average observed paid amount of $1,482. The graph below summarizes the impact of the application of APC rates to the 14,017 facility fee records:

Comparison of Ambulatory Payment Classification (APC) Reimbursement with Charges and Observed Payments



Charges	$3,217
Payments	$1,482
APC Reimbursement	$640

The top ten procedures by volume and their corresponding APC groups are detailed as follows:

APC Payment Rates for Top Ten High Volume Procedures

CPT-4	CPT-4 DESCRIPTION	AVG BILLED	AVG PAID	APC GROUP	APC PAYMENT RATE	% DIFFERENCE COMPARED WITH BILLED	% DIFFERENCE COMPARED WITH PAID
64721	Neuroplasty/transpos median at carpal tunnel	$3,272	$1,495	0220	$701	-79%	-53%
12001	Simple wound REP scalp,neck,ax,trunk	$365	$252	0024	$122	-67%	-52%
29881	Surg knee arthroscopy w MED or lat meniscectomy	$5,330	$2,538	0041	$1,234	-77%	-51%
12002	Simple WND REP scalp,neck,ax,trunk,	$426	$277	0024	$122	-71%	-56%
29826	Surg shoulder arthroscopy w decomp & acromioplasty	$6,172	$2,571	0041	$1,234	-80%	-52%
20550	Inject tendon sheath/LIG/trigger	$829	$292	0040	$106	-87%	-64%
20610	Arthrocentesis/asp/ inject major joint	$770	$393	0040	$106	-86%	-73%
49505	Repair initial reducible IH, age 5 yrs or over	$4,488	$2,123	0154	$1,127	-75%	-47%
20680	Removal of implant; deep	$3,340	$1,658	0022	$628	-81%	-62%
29880	Surg knee arthroscopy w MED & lat meniscectomy	$6,219	$2,602	0041	$1,234	-80%	-53%

Additional Modeling Analyses Using Variations of the ASC and APC Fee Schedules

For years, the lack of a fee schedule for ambulatory surgery has resulted in payers and providers attempting to negotiate a "fair and reasonable" price to cover outpatient surgical costs. Recent testimony and other anecdotal evidence of the financial crisis experienced by hospitals and other medical providers coupled with the data presented above create a picture of a system without a fair reimbursement mechanism for outpatient surgery facility fees. Providers have asserted that the Medicare ASC fee schedule would not provide adequate reimbursement. However, the not insubstantial costs of liens and litigation are a compelling argument for some sort of stable fee structure. The best approach would be to strike a compromise between the current unregulated environment and the relatively low reimbursement levels set by the ASC and APC fee schedules. The California workers' compensation system has experience in the area of compromise.

As noted above, one example of compromise occurred when the Division of Workers' Compensation adopted the Medicare Prospective Payment System (PPS) fee schedule for inpatient admissions, but adjusted the base Medicare formula by using a multiplier of 1.20. This multiplier was implemented as a way to soften the discount against charges inherent in the Medicare PPS fee schedule and to encourage hospitals to accept workers' compensation patients.

Another venue for compromise has been demonstrated by the decisions of the Workers' Compensation Appeals Board concerning payment levels for ambulatory surgery facility fees in the absence of a fee schedule.

For example, in June 2001, a case* was presented between a Southern California Surgery Center and the California State Compensation Insurance Fund. The surgery center had billed the carrier facility fees of $7,212 and $7,504 to provide epidural injections to an injured worker. Fees for similar procedures performed as part of overnight stays at nearby inpatient hospitals were documented to be less than 50% of the surgery center's charges. In addition, surgery center's charges were over seven times that of another outpatient surgery center. The surgery center argued that because there was no specific payment standard (fee schedule), reimbursement should cover the original billed amount. The State Fund argued that the principles of "reasonableness" still applied and that the legislative intent of promoting outpatient surgery was not to increase costs for comparable services beyond an inpatient stay. The WCAB ruled that the State Fund's reimbursement methodology, calculated at 175% of the ASC fee schedule (unadjusted by the wage index), was "reasonable" and within the spirit of legislative intent of the California system.

The goal of this part of the analysis was to create a range of cost and savings estimates attributable to the use of a fee schedule under different reimbursement scenarios. Using the

* Derek Riche v. Alpha Construction Company, Inc. and State Compensation Insurance Fund. State of California Workers' Compensation Appeals Board, Case No. VNO384899.

two precedents just cited (the 1.20 multiplier incorporated into the California workers' compensation IHFS and the 1.75 multiplier deemed reasonable by the WCAB) we created a low, a medium and a high scenario for each of the two fee schedules (ASC and APC):

- The "low" scenario reimbursement calculations consisted of the unadjusted reimbursement levels for each group of procedures as stated in the current rules and regulations for each of the fee schedules.

- The "medium" scenario reimbursement calculations used a 1.20 multiplier in addition to the reimbursement stipulated for each group of procedures.

- The "high" scenario reimbursement calculations utilized two methods: In addition to the reimbursement stipulated for each group of procedures, the calculations based on the ASC fee schedule used the 1.75 multiplier deemed to be "reasonable" in the WCAB decision noted above. The calculations based on the APC fee schedule combined the 1.20 overall multiplier with the addition of a wage index adjustment set at the highest rate in California (1.4983). The wage index is a multiplier applied to the labor component of the APC, which is 60% of the total. The actual formula is:

$$[\ (\text{APC} \times 0.6 \times \text{High Wage Index}) + (\text{APC} \times 0.4)\ ] \times 1.20$$

The following table summarizes the adjusters used in each of the three scenarios:

Adjusters Used in Three Scenarios

	Low	Medium	High
ASC	Fee schedule alone	Fee schedule x 1.20	Fee schedule x 1.75
APC	Fee schedule alone	Fee schedule x 1.20	[(APC x 0.6 x High Wage Index) + (APC x 0.4)] x 1.20

The results of the three scenarios for the two fee schedules are as follows:

	ASC	APC
Number of Procedures:	9,108	14,017
Average Billed:	$4,228	$3,217
Average Paid:	$1,918	$1,482
Average Fee Schedule-Based Reimbursement (Three Scenarios)		
Low:	$515	$640
Medium:	$618	$768
High:	$901	$998
Percent Reductions off Observed Reimbursement		
Low:	-73%	-57%
Medium:	-68%	-48%
High:	-53%	-33%

It can been seen that average reimbursement offered by the three scenarios based on the two fee schedules would range from a low of $515 for the “low” ASC scenario to a high of $998 for the “high” APC scenario.

Recommendations

Innovation in medical technology should not only raise the quality of care, but also make the delivery of care more effective and efficient. The intent of ambulatory surgery centers was to leverage advances in medical technology and clinical technique as an alternative to a time-consuming, high cost inpatient stay. The combined results of the outpatient surgical facility fee analysis show a system that has not realized the financial and administrative gains possible due to the lack of a stable method of paying for facility fees. The inefficiency of the system shows itself in the excessive variation of billed and paid amounts across the spectrum of services. In addition, the lack of a fee schedule has created the unintended consequence of increased administrative costs as a result of case-by-case negotiations for each procedure and a new class of liens and Appeals Board rulings. Finally, the current system results in an uneven playing field that penalizes small employers and payers who lack the buying power to negotiate for the competitive rates achieved by larger groups.

Therefore, the authors of this report recommend that payment of outpatient surgery facility fees be stabilized by the introduction of a fee schedule. We further recommend that, in selecting a basis for the fee schedule, consideration be given to Medicare's Ambulatory Payment Classification system, potentially with the addition of a multiplier (like the 1.20 multiplier used in the IHFS) and a wage index, for the following reasons:

- The APC system is currently in place for Medicare patients in hospital outpatient departments; thus many facilities are already familiar with it

- The APC system covers more procedure codes than the ASC fee schedule and has existing processes to update and groom the approved procedure inventory

- APCs have a more adaptive construct than the ASC fee schedule because there are 158 groups rather than nine

- The wage index is an equitable adjuster given highly variable labor and operational costs across California.

However, the APC system is so new that we recommend additional analysis be done to determine whether it is indeed the best choice. The DWC might want to consider having additional analyses performed after there is additional experiential data with the APC system under Medicare.

Having a fee schedule for outpatient surgery facility fees should encourage appropriate decision-making regarding setting (inpatient vs. outpatient) for patients who need surgery and prevent patients from being channeled to outpatient surgery merely to circumvent the inpatient fee schedule.

System Savings with Outpatient Surgery Facility Fee Schedule

What would the California workers' compensation system save through implementation of a outpatient surgery facility prospective payment system? Aside from the reduction of administrative costs and less reliance on expensive managed care negotiations and utilization management controls, the following table illustrates one possible scenario of statewide savings in Year 1 of implementation. The assumptions that underlie this table derive from the following information:

- The Workers' Compensation Insurance Rating Bureau (WCIRB) reports that total medical costs in 2000 for California were $2.95 billion for national and domestic worker's compensation insurance carriers. With the addition of self-insured employers, medical costs have been estimated by the WCIRB to be 1.38 times the carrier value; therefore total medical payments in 2000 for all workers compensation related injuries is estimated at $4.07 billion..

- The WCIRB and the California Workers' Compensation Institute (CWCI) estimate that outpatient services typically make up 50% of all medical services

- Facility fees are estimated at 10% of the outpatient service sector.

Total Medical Costs	$ 4,071,000,000
Outpatient Costs	$2,035,500,000
Projected Facility Fees	$ 203,550,000
High APC Scenario Savings	$67,171,500
Low ASC Scenario Savings	$148,591,500

Applying the lowest and highest fee schedule scenarios to these projections resulted in a range of estimated savings between $67 and $149 million in Year 1 of implementation.

Overall Conclusions

It is the state's responsibility to adopt fair and reasonable payment systems and to work to reduce variability and inequity in those payment systems. Upon completion of both the inpatient and outpatient analyses and after careful consideration of all of the issues, the authors of this report concur that the decision to conduct this study is evidence of the state's commitment to a thorough and impartial review of its inpatient and outpatient payment systems. Providers, for their part, can help to ensure the availability and affordability of essential medical care services by working to reduce unnecessary costs and utilization and by critically assessing the cost-effectiveness of new technologies.

Cost-effectiveness analysis is useful in evaluating new technologies as it helps to make explicit the additional benefits, if any, the technology is providing in exchange for the additional costs. Such benefits might include higher rates of successful fusion or shorter disability duration; these benefits might then justify the higher costs of the technology. Without such benefits it is difficult to justify the use of expensive new technology just because it is available. In conclusion, we believe that the responsibility for assessing the clinical effectiveness and cost-effectiveness of any new technology, in order to justify higher costs, rests with providers. A partnership approach between providers and the state will facilitate the optimal functioning of the system for all involved.

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