

July 2005

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What Can Workers Compensation Learn From Group Medical Insurance?

Dramatic cost increases in workers compensation medical benefits have resulted in workers compensation medical benefits exceeding the compensation for lost work time. Over the last few years, compensation for lost work time in NCCI states has grown 5% to 7% per year, while medical benefits have grown 9% to 12% per year.

Many workers compensation experts are concerned that the open-ended nature of workers compensation medical liability is such that, to stay viable, the workers compensation system must find new ways to control medical costs. Accordingly, it makes sense for workers compensation to look toward group health as a source of ideas for improving the workers compensation system.

NCCI has completed a study that compares medical costs between the workers compensation and the group health insurance benefit delivery systems. The study separately considers the prices paid for specific medical services and the aggregate costs for treating certain injuries.

Executive Summary

Our findings on the prices paid by workers compensation and group health insurance for individual medical services include:

- Prices paid per service for workers compensation are of similar magnitude to those paid for group health
- For each state reviewed in this study, average prices paid in workers compensation are either persistently above or persistently below those paid for group health
- States with a workers compensation medical fee schedule showed a workers compensation price level from 8% to 31% below that of group health and, conversely, states with no applicable fee schedule showed a workers compensation price level 16% to 19% above that of group health¹

Our findings on the aggregate cost of treating an injury include:

- Workers compensation costs more than group health to treat injuries within the same diagnostic group
- Workers compensation has more intense and costly treatment early on as compared with group health; the cumulative difference declines slightly over the time periods reviewed, which go up to two years
- Group health has a greater proportion of low-cost treatments than does workers compensation
- Cost differences between workers compensation and group health are smaller than average for acute injuries and trauma-related conditions like fractures or sprains. Cost differences are greater for injuries subject to surgery and for chronic or pain-related injuries

Background

This study considers five states (FL, GA, IL, KY, and TN) over the period 1997 to 2001. While limited in scope, the study was carefully designed to enable meaningful comparisons between the workers compensation and group health insurance systems. The states were selected to encompass some variety in approach to workers compensation medical cost containment. It is important to appreciate that medical cost containment is an ongoing concern. In Illinois, for example, legislation is under consideration that would introduce limits on medical reimbursements and would eliminate the practice, unique to that state's workers compensation system, of "balance billing." Subsequent to the time frame of this study, Florida has undergone significant reform in its workers compensation statute, with some changes expected to reduce medical costs.

Comparisons are based on workers compensation and group health data for Florida, Georgia, Illinois, Kentucky, and Tennessee. These states were selected to represent some variety of physician cost controls in the workers compensation system. Price-per-service comparisons are based on market baskets of professional services for five injuries that are of particular importance to workers compensation. Comparisons of the overall cost of treating injuries, incorporating prices per service, number of services, and mix of services, are based on 12 diagnostic groups of injury.

Group health and medical transaction data for this study were obtained from Medstat, a company that specializes in the collection and analysis of medical experience from employer-sponsored health benefit plans. The workers compensation data is a sample provided to NCCI by property and casualty insurance companies.²

Exhibit 1 compares the applicable controls among states for the time frame used in the study.

State	Basis of physician fee schedule	Fees relative to Medicare	Initial choice of physician	Choice from provider list?	Basis of prescription drug fee schedule ³	Basis of hospital fee schedule⁴	Authorized use of managed care? ⁵
Illinois	None	N/A	Employee	No	N/A	N/A	No
Tennessee	None	N/A	Employee	Yes	N/A	N/A	No
Florida	RBRVS	83%	Employer	No	AWP X 1.2 + \$4.18	Per procedure	Yes
Georgia	UCR	146%	Employee	Yes	AWP X 1.2 + \$4.00	Per DRG	Yes
Kentucky	RBRVS	128%	Employee	No	When DAW <i>AWP</i> + \$5.00	Cost based	Yes

Exhibit 1. Comparison of State Cost Controls

Please note that "initial choice of physician" is based on the language of the workers compensation statute, whether or not the employer actually exercises that choice in employer choice states (similarly for employees in employee choice states). As it is impossible to reflect the complexity of these issues in such a simple table, please refer to the cited sources for additional details and explanations. Also, acronyms abound in medical billing terminology—like RBRVS to reference a schedule of relative values (used in Medicare) and UCR to refer to usual and customary charges; a glossary is included at the end of the paper.

Price and Cost Comparisons

We focus first on comparing the prices of medical procedures in the workers compensation and group health insurance systems. This price comparison looks at the amounts reimbursed for well-defined medical procedures, largely performed by physicians. The perspective is then broadened to compare the costs of treating injuries in workers compensation and group health. The cost study considers the aggregate amount paid for all services to a patient for a specific injury and uses time windows to refine the comparison. While utilization is not studied directly, inferences are drawn with regard to utilization of services in the two systems.

Price Comparison

As noted at the outset, the main findings of the price comparison between workers compensation and group health are:

- Prices paid per service for workers compensation are of similar magnitude
- For each state reviewed in this study, average prices paid in workers compensation are either persistently above or persistently below those paid for group health

 States with a workers compensation medical fee schedule showed a workers compensation price level from 8% to 31% below that of group health; conversely, states with no applicable fee schedule showed a workers compensation price level 16% to 19% above that of group health

Exhibit 2 summarizes the relativity between median payments for services in workers compensation (WC) and group health (GH) for the five states studied. The medical service, the state, and the year of service are accounted for when comparing prices.

Illinois and Tennessee, with no applicable physician fee schedule during the period studied, have median workers compensation prices above those for group health. Florida has a lower median price-per-procedure for workers compensation than for group health. The workers compensation and group health median prices in Georgia and Kentucky are quite similar.

- ³ NCCI Prescription Drug Study 2004.
- ⁴ Workers Compensation Research Institute Managed Care & Medical Cost Containment Inventory 2001–2002, Table 3.8.
- ⁵ NCCI study on managed care in workers compensation.

² The terms "cost," "price," and "utilization" are used in a precise manner in this study. "Costs" signify the total amounts paid for the various services to treat an injury. "Prices" are the amounts paid for individual services. "Utilization" represents the quantity (number of services) and mix of services provided (e.g., X-ray versus MRI). Costs are a function of prices and utilization: *Cost = price x utilization*.



Exhibit 2. Relativity Between Workers Compensation and Group Health for Five States

One important finding is that percentage differences between prices paid in workers compensation and group health within a state are quite consistent over a variety of medical services and over time. Also, the difference in overall price levels varies among states. For the five states examined here, the three states with medical fee schedules (Florida, Georgia, and Kentucky) are also those for which workers compensation prices are below group health prices in the respective state and are below both workers compensation and group health prices for the two states without workers compensation medical fee schedules.

The price comparison exploits the fact that both the group health and the workers compensation data captures charges for medical treatments by a common data-coding scheme, the Current Procedural Terminology (CPT).⁶

Mean and median prices were determined by state, year, and CPT code groupings for the workers compensation and the group health data. Five important work-related injuries were selected to include both hard and soft tissue injuries, as well as cumulative and traumatic injuries:

- Carpal tunnel syndrome [ICD 354⁷]
- Inguinal hernia [ICD 550]
- Back strain or sprain [ICD 847]
- Open wound of finger(s) [ICD 883]
- Contusion of lower limb [ICD 924]

While the above list is short and does not purport to represent all possible workers compensation injuries, it does encompass a variety of workers compensation injuries and associated types of care.

An analysis of the workers compensation data produces a market basket of medical services for each injury on the list, within which services are identified by the CPT code. For example, the market basket of services to treat carpal tunnel syndrome consists largely of office visits (9920, 9921), physical therapy treatments and modalities (9700– 9775), and motor nerve conduction tests (9590), with lower arm surgery as the big-ticket item (0181, 6472). The CPT codes (which range from five to seven digits and have new codes added and others discontinued each year) were truncated to four digits in order to make the selection consistent, to collect together similar procedures, and to assure that the 20 most frequent code groupings would provide a statistically meaningful basket. Sensitivity tests were done to assure that the price comparisons were not distorted by aggregating up to four digits.

Exhibits 3 and 4 depict the market basket of services for carpal tunnel cases in the workers compensation system.

CPT code truncated to 4 digits	Description of procedure
0181	Anesthesia for lower arm surgery
6472	Carpal tunnel surgery
7311	Radiologic exam (X-ray) of the wrist
9586	Needle electromyography
9590	Motor nerve conduction test
9700	Physical or occupational therapy evaluation
9701	Supervised physical therapy such as hot or cold packs, mechanical traction, and electrical stimulation
9702	Supervised physical therapy such as microwave, whirlpool, and ultraviolet therapy
9703	Physical therapy treatment requiring constant attendance
9711	Therapeutic exercises
9712	Electrical current, manual traction, massage, and ultrasound therapy
9714	Extended physiotherapy
9725	Manual therapy
9726	Regional manipulation therapy
9753	Kinetic therapy
9775	Muscle testing with exercise
9907	Special supplies
9920	Office visit, new patient
9921	Office visit, established patient
9924	Office consultation

Exhibit 3. Treatments Associated With Carpal Tunnel Cases

⁶ The Current Procedure Terminology (CPT) is a detailed coding system for medical procedures. It is the standard used by physicians to report medical billing data and is proprietary material of the American Medical Association. CPT codes apply to professional services that are typically included in workers compensation physician fee schedules.

⁷ International Congress of Diagnosticians (ICD) codes are the standard numeric system identifying diagnoses for an injury.



Exhibit 4. Market Basket of Services for Carpal Tunnel Cases

The price analysis compares the amounts needed to purchase the same market basket of services in the workers compensation and group health systems. Exhibit 5 shows median prices in Florida for the services in the carpal tunnel market basket.

The pattern for Florida carpal tunnel cases typifies the strong correlation between workers compensation and group health prices for individual treatments that holds generally among the states and baskets. In particular, it illustrates consistently lower price levels for workers compensation than for group health in the state, reinforcing what was observed above for the overall workers compensation group health price relativity for Florida.



Exhibit 5. Comparison of Prices of Services in the Market Basket for Carpal Tunnel in Florida

The price comparison also looks at whether the treatment was provided within a provider network and whether in an urban or rural setting. Findings include:

 Workers compensation and group health exhibit consistently lower prices within provider networks

- Workers compensation and group health exhibit no clear difference in price for urban versus rural
- Illinois and Tennessee, the two states without workers compensation medical fee schedules during the period covered by the study, have higher workers compensation price levels than group health price levels
- Illinois and Tennessee also show the biggest price differences between workers compensation services performed in and out of a provider network

Exhibits 6 and 7 compare workers compensation and group health median prices over the five states, first by type of provider network and then by urban versus rural.









Prices, especially those under medical fee schedules discussed above, are the most regulated aspect of medical reimbursement for both workers compensation and group health. This makes comparing prices easier than comparing costs because costs reflect the utilization of medical services and utilization poses a greater challenge to medical cost containment.

Cost Comparison

The main findings of the cost comparison⁸ are:

- Workers compensation costs more than group health to treat injuries within the same diagnostic group
- Workers compensation has more intense and costly treatment early on; the cumulative difference declines slightly over the time periods reviewed, which go up to two years
- Group health has a greater proportion of low-cost treatments than does workers compensation
- Cost differences between workers compensation and group health are smaller than average for acute injuries and trauma-related conditions like fractures or sprains. Cost differences are greater for injuries subject to surgery and for chronic or pain-related injuries

Exhibit 8 summarizes the overall cost comparison by state, based on amounts paid within three months of the date of the injury.



Exhibit 8. Cost Comparisons for Services Provided Within Three Months.

Comparisons in Exhibit 8 are expressed as percentages in which 100% represents the group health cost. For example, Florida has the lowest difference, with workers compensation at 120% of the group health cost. The fact that all states are above 100% indicates that workers compensation costs are consistently greater than group health costs.

The cost comparison looks individually at 12 injuries. Unlike the price comparison, in which five injury-specific market baskets sufficed to reveal common patterns of price relativities, the cost comparison looks at more medical conditions to probe differences in utilization patterns for different types of treatments.

Abbreviation	Injury description			
InH	Inguinal hernia			
Brs	Bursitis			
FSA	Fracture or sprain: ankle			
FDS	Fracture, dislocation, or sprain: shoulder			
FDH	Fracture, dislocation, or sprain: wrist or hand or fingers			
HID	Herniated intervertebral disc			
IKL	Injury, knee, ligamentous			
ILE	Injury, open wound, or blunt trauma: lower extremity			
IUE	Injury, open wound, or blunt trauma: upper extremity			
OSD	Other spinal and back disorders			
CTS	Carpal tunnel syndrome			
SSC	Injury: spine and spinal cord			

Exhibit 9. Medical Conditions Included in Cost Analysis

Because group health coverage is typically not limited by any specific injury, group health medical data does not identify injuries. This complicates making cost comparisons between the two systems. To perform cost comparisons, it is necessary to devise rules to collect group health medical charges for treating the 12 conditions listed in Exhibit 9 into cases akin to the medical experience of a workers compensation claim.⁹ The conditions are chosen primarily for their importance in workers compensation but also to encompass a variety of injury types, from hidden pain-based conditions like bursitis (Brs) to acute conditions such as lacerated fingers and toes (ILE, IUE).

Age and Gender Demographics

Unlike the price comparison, it is reasonable to believe that differences in age and gender can influence the cost of treating a particular medical condition.

³ To control for the timing of care, the cost analysis focuses primarily on the cost of service performed within the first three months from injury, although longer time windows were also looked at. Cost differences due to differences in age, gender, and date of injury between workers compensation and group health are removed from the differentials.

⁹ To be fair, those same rules are applied to both the workers compensation and the group health medical payments to obtain comparable cases. The determination of these rules is the most technically demanding aspect of the study, and not all of the medical transaction experience could be handled in this way. For example, if a workers compensation claim involved injury to both knees and one shoulder, it was not practical to seek a comparable set of group health cases. The rules for collecting medical payments into cases focused on the care directly related to the injury. Consequently, the injuries included in the comparison are of the more straightforward variety.

Both workers compensation and group health data is restricted to the 12 injuries listed in Exhibit 9 and to ages 20 to 70 at the time of injury.¹⁰ Even a simple comparison of age and gender reveals some interesting facts: Workers compensation claimants are younger (mean age 37 years) and more likely to be male (64%) than are the group health patients (44 years, 44%) in the study. Exhibits 10 and 11 display these comparisons graphically.



Exhibit 10. Workers Compensation Claimants Are Younger on Average Than Are Group Health Patients





Exhibit 12 summarizes the overall dependence on age of the patient who is accounted for in the cost comparison. While the relationship varies by the medical condition, there is a general pattern of increasing cost with age, all else being equal.



Exhibit 12. Costs Generally Increase With Age

The dependence on gender is less straightforward and more dependent on the medical condition. Exhibit 13 charts the cost for treating a female patient as a percentage of the cost for a male patient (= 100%), after controlling for other factors.

For the five states studied, females are consistently less costly than males to treat for inguinal hernias (InH) and hand traumas (FDH, IUE). On the other hand, females consistently cost more to treat for bursitis (Brs) and for back or spinal injuries (OSD, SSC). For the other medical conditions considered, the data did not suggest any strong correlation of cost with the gender of the patient.



Exhibit 13. In Five States Studied, Relative Costs by Gender Vary According to Medical Condition

Least Costly Cases

Group health consistently has a higher proportion of lowcost episodes of treatment than does workers compensation.

Exhibit 14 presents a histogram for carpal tunnel cases in Florida, which is typical of the picture for most injuries and states. Nearly half of the group health cases are below \$500 in cost, while only about one fourth of workers compensation cases are below this threshold.





Exhibit 14. Nearly Half of the Group Health Cases for Carpal Tunnel Are Below \$500, Compared With Only About One Fourth of Workers Compensation Cases

In addition to showing a greater proportion of group health cases at the lowest dollar amounts, the group health cost data showed smaller minimum treatment costs for group health than for workers compensation. This contributes to the finding that workers compensation costs are higher than group health costs.

This also suggests a possible selection bias between the workers compensation and group health medical insurance systems. For example, patients may be more amenable to taking minor complaints to their regular doctors than to file for workers compensation. An alternative explanation for the greater proportion of minor cost group health treatments is that they emerge from the regular screening visits in the group health system that are absent from workers compensation.

An inspection of the transaction data revealed group health cases in which nearly all the physical therapy charges were rejected (reimbursed at \$0). This suggests that failure to obtain proper precertification may also contribute to the higher concentration of group health cases among the least costly cases. This observation raises the question of what happens to the picture without the concentration at the smallest cases.

The cost analysis shows that workers compensation still has higher costs for treating the injuries even after removing the least costly cases. This is illustrated in Exhibit 15, which shows the Florida carpal tunnel cost distribution when the cases under \$500 are removed. Here, workers compensation cases remain more costly than group health, as evidenced by the markedly higher proportion of workers compensation for cases above \$3,500.



Exhibit 15. Florida Carpal Tunnel Cost Distribution With Cases Under \$500 Removed

Impact of Demographics on Workers Compensation Versus Group Health Cost Comparison

Our study confirms that (1) for both workers compensation and group health, older patients are generally the most expensive to care for, and (2) for some injuries it is important to take gender into account when comparing costs of treating medical conditions.

Medical inflation was also accounted for by controlling for the time of the injury within the time interval being studied. However, when compared with the overall workers compensation versus group health cost difference, time, age, and gender play only minor roles.

As a fairly typical example, consider the cost difference for Illinois lacerations to upper extremities (IUE), for which workers compensation has a markedly higher average cost.

Analyzing that cost difference into its components reveals how the workers compensation versus group health system difference dominates the patient demographics components. In Exhibit 16, the workers compensation/group health system component is the cost difference shown in other charts, after controlling for age, gender, and time of injury. The entire pie is the entire cost difference.



Exhibit 16. Illinois Cost Differences Attributable to the WC/GH System Difference, Age, Gender, and Time

This chart shows how system differences dominate the demographic differences. While the analysis controls for those differences, the study's focus is on system differences between workers compensation and group health.

Workers Compensation Versus Group Health Cost Comparison

Cost differences vary by state but show a similar pattern when itemized among the 12 medical conditions. Exhibits 17 and 18 present the primary findings of the cost analysis.

These exhibits refine the cost comparisons shown above. They again compare costs for a three-month time window (workers compensation cost expressed as a percentage of the group health cost, adjusted for differences in age and gender) but also show how comparative costs vary by medical condition.

With only a few exceptions in Florida and Kentucky, costs are much higher for workers compensation than for group health—the difference is much greater than could be accounted for by age and gender differences.



Exhibit 17. Three-Month Cost Comparison (Workers Compensation Cost Expressed as a Percentage of The Group Health Cost, Adjusted for Differences in Age and Gender)

From Exhibit 17 we observe that:

- All the states show a similar pattern of relative costs across the 12 medical conditions
- Illinois and Tennessee, the two states without workers compensation medical fee schedules, have the largest relative differences
- With the exception of inguinal hernia (InH), Florida has the lowest workers compensation cost among the five states, which generally puts the Florida workers compensation cost closest to that for group health (= 100%)
- In Florida, fractures and cuts (FSA, FDS, FDH, ILR, and IUE) show cost levels for workers compensation that are the same as or lower than group health, while for Kentucky the costs were about the same (similarly for knee injury (IKL))
- Georgia and Kentucky lie in between and have very similar workers compensation versus group health cost relativities





Exhibit 18. Three-Month Cost Comparison by State

From this perspective, we further observe that:

- All 12 medical conditions show a similar pattern of relative costs across the five states
- Of the 12 conditions studied, inguinal hernia (InH), degenerative disk disease (HID), and carpal tunnel syndrome (CTS) have cost differences that are both the largest and the most variable by state
- Fractures, cuts, and knee injuries (FSA, FDS, FDH, ILR, IUE, and IKL) exhibit the lowest and the least variable cost differences by state

While these comparisons are for services provided in the first three months after injury, the study found similar patterns for successively wider time windows ranging from three months up to two years, although the differences consistently declined slightly as the time window became longer.

This suggests that workers compensation cases receive more intense and costly treatment early on due to returnto-work objectives associated with workers compensation systems.

This might also be related to one of the important differences between the two insurance systems, namely that for workers compensation, the compensation for lost work time generally increases directly with the duration of medical treatment. Exhibit 19 focuses on the state differences and illustrates the small decline in the difference as the time window is increased.



Exhibit 19. State and Time Window Cost Comparison

The consistent pattern of workers compensation/group health cost relativities by state suggests clustering them according to three general kinds of medical conditions:

- "Surgery Option"—those potentially requiring surgery
- "Chronic and Pain-Related"—pain is a key factor in determining the course of treatment
- "Acute and Trauma-Related"—pain is not a key factor in determining appropriate treatment

Again, focusing on the first three months of care, Exhibit 20 organizes the cost comparison into these three groups. The greatest difference is found for the cases in which the treatment may involve surgical intervention. The next highest are those injuries that are pain-based, with the smallest differences found for the most straightforward cases.



Exhibit 20. Cost Comparison Organized by Medical Condition Grouping

For each injury, the average workers compensation cost is greater than the group health cost. The difference is smallest for "Acute and Trauma-Related" injuries such as cuts and fractures. It is higher for "Chronic and Pain-Related" injuries such as low back pain and bursitis. Those injuries that might involve surgical intervention (e.g., carpal tunnel syndrome, inguinal hernia, and degenerative disc disease) show the greatest cost difference. For these injuries, a more in-depth analysis is indicated, and protocols may be needed to bring workers compensation medical costs into better alignment with the costs of treating those conditions seen in group health.

Conclusion: Implications for Utilization

The cost to treat an injury is the product of prices paid per service and the utilization of medical services. While this study identifies some differences in prices between workers compensation and group health, it found prices to be generally comparable. However, for a selected group of injuries, this study found costs in workers compensation to be significantly greater than costs for the same group of injuries in group health.

It is tempting to ascribe the difference in these findings to utilization, but that conclusion needs to be drawn with a full understanding of the specific analyses performed in this study. The price comparison was done for procedures included in physician fee schedules. Prices for prescription drugs and hospital care *were not* included in the price comparison portion of the study.

The cost comparison portion of the study was restricted to comparatively straightforward-to-treat injuries. So both the price and cost comparisons entailed specific and different restrictions on the reimbursements included in the analysis. Any inferences on the relationship between cost, price, and utilization should be drawn with these constraints in mind.

Nevertheless, the study does find cost differences between workers compensation and group health that are markedly greater than for the difference in prices.

Indeed, as recalled in Exhibit 21, the price comparison suggests that higher prices would be likely to contribute to the higher workers compensation cost differential only in Illinois and Tennessee. This implies that, for the injuries studied, the Florida workers compensation cost at about 120% of group health is dominated by greater utilization of medical services for workers compensation than for group health. Similarly, the study finds that the Georgia and Kentucky costs at about 150% of group health are utilization driven. Illinois and Tennessee have cost levels near 200% of group health, while the price comparison suggests price-per-procedure levels at 15% to 20% higher than group health.



Exhibit 21. Price Comparison Suggests That Higher Prices Would Likely Contribute to the Higher Workers Compensation Costs Only in Illinois and Tennessee

The markedly greater cost levels for workers compensation versus group health cannot be accounted for by price differences alone, supporting the conclusion that utilization drives the cost difference. Exhibit 21 shows a similar proportion of cost over price for all five states. This pattern, in turn, suggests that higher utilization in workers compensation over group health is due in part to differences in the incentives inherent to workers compensation and group health insurance—differences that span jurisdictions.

Moving forward, NCCI will continue to examine areas of market interest such as workers compensation versus group health and to report our findings to the industry. For a complete review of ongoing NCCI research projects, please visit **ncci.com**.

Glossary of Acronyms

- AMA: American Medical Association
- AWP: Average wholesale price for a prescription drug
- CPT: Current procedural terminology—coding scheme for medical procedures
- DAW: Dispense as written
- DRG: Diagnostically related group—a classification for hospital stays
- ICD: International Congress of Diagnosticians refers to the standard numeric coding scheme for identifying the diagnoses of an injury
- RBRVS: Resource-based relative value scale—used to assign a fair relative cost between charges for medical services; most common is that in use by Medicare
- UCR: Usual, customary, and reasonable—refers to reimbursement levels geared toward what is commonly paid

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