RESEARCH UPDATE

Surgical Instrumentation Pass-Through Payments for Back Surgeries in the California Workers' Compensation System

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EXECUTIVE SUMMARY

The California workers' compensation system uses a unique and controversial pass-through payment mechanism to provide a second reimbursement to hospitals for devices and instrumentation implanted during back surgery, even though several prior studies have questioned the need for such additional payment. In October 2009, the Department of Industrial Relations issued a 12-point plan to build on the reforms of 2003 and 2004. Included in the list of ideas to consider was the elimination of the spinal hardware pass-through. At subsequent stakeholder meetings to vet this particular idea, various arguments were put forth both in support of and against continuation of the pass-through. This analysis is intended to provide data that can help advance the debate over this regulatory proposal.

BACKGROUND

In 1993, the California Legislature mandated the development of an Inpatient Hospital Fee Schedule as a means to control the rapidly increasing cost of inpatient care in the California workers' compensation system. Regulations (CCR §9792.1) were developed over the next five years, and on April 1, 1999 the fee schedule took effect. The new schedule was based on Diagnostically-Related Groups (DRGs – a standardized classification developed by the federal Health Care Financing Administration for hospitals and payers), and introduced a new formula for reimbursing hospitals for inpatient admissions. Each DRG was assigned a relative weight and each hospital was assigned a specific composite factor that reflected its cost and service differentials. The cost of performing a procedure could vary significantly, even within the same community, depending on which hospital was used. In addition, the new schedule exempted a number of DRGs, hospitals and services.

Under the schedule, maximum reasonable inpatient fees payable to hospitals were calculated using a modified Medicare methodology that paid hospitals close to 120 percent of the amounts allowed under the Medicare system according to the following basic formula:

DRG weight x facility composite factor x 1.20

This payment was considered a global fee covering all associated costs, including implants, unless specifically exempted.

In the years following its implementation in 1999, the state adopted a series of changes and updates to the inpatient hospital fee schedule. In 2001, separate additional fees for surgical implants were allowed for certain back and neck DRGs, and a modified Medicare methodology was adopted to calculate outlier payments for charges that exceeded the base fee by more than a hospital-specific outlier factor. The Institute testified at the public hearing in 2000 that the back and neck DRGs proposed to qualify for additional implant reimbursement were present in one-third of all California workers' compensation inpatient discharges, and estimated that additional payments to hospitals would range from $25 million to $72 million in the first year alone.

In 2004, SB 228 took effect, requiring the administrative director of the DWC to update Medicare values used in the fee schedule calculations; and to limit any separate reimbursement for implants to complex spinal surgeries, when adopting an inpatient hospital regulation.

In 2008, the DWC administrative director incorporated Medicare's DRG change (from CMS-DRG based coding to MS-DRG[1] based coding). According to CMS actuaries, this change results in a 4.8 percent increase in Medicare hospital costs, and effectively increases the number of billings subject to the pass-through.

Ever since its inception, concerns have been raised regarding the surgical implant pass-through. In 2001, Kominski and Gardner studied data on costs and potential improvements to the inpatient hospital fee schedule and evaluated the appropriateness of a fee schedule for outpatient surgery facility fees.[2] One section of the report was devoted to estimating the cost of implantable hardware reimbursements for eligible DRGs. The authors' estimated that allowing separate payments for implantable hardware on back surgeries would generate between $7.1 and $28.6 million in additional costs to the California workers' compensation system and recommended the elimination of the exemption for implantable hardware and or instrumentation.

In 2003, RAND[3] examined OMFS allowances for spinal surgeries from acute care hospitals and concluded that the pass-though allowance was resulting in double payment for the associated hardware and instrumentation, and that the separate pass-through allowance was unnecessary. A subsequent 2005 report[4] concluded that workers' compensation spinal surgeries were less costly than those of Medicare patients and had a shorter length of stay. This report also found substantial variation in utilization rates for spinal implants among participating hospitals, indicating occasional overuse of implants, and supporting the notion that increased reimbursement would encourage overutilization. In 2009[5] RAND found that the average payment-to-cost ratio for inpatient stays affected by the pass-through provision are higher than average even before the pass-through payments are factored in.

DATA AND METHODS:

For this analysis, the authors reviewed all 2008 California workers' compensation admissions from the Public Patient Discharge Database of hospital discharges reported by health care facilities to the state's Office of Statewide Health Planning and Development (http://www.oshpd.ca.gov/). The OSHPD database also contains detailed information on patient characteristics (age, sex, type of health plan coverage, etc.), type of hospital, all major diagnosis and procedure codes, length of stay and charge data.

There were 24,093 workers' compensation discharges among the total of 4,017,345 discharges in the database for 2008. Out of the 35,539 hospital admissions that involved one of the 14 MS-DRGs eligible for the spinal surgery implantable device, hardware or instrumentation pass-through, the authors identified 5,070 workers' compensation cases. The authors then used the ICD9-CM hospital procedure codes listed in the Public Patient Discharge Data (containing one primary procedure and up to 20 additional procedures assigned to each discharge in the database) to identify those surgeries that were associated with an implantable device, hardware or instrumentation.[6] (See Appendix A for the ICD9-CM procedure code description list.)

The authors also collected sample data on 1,173 hospital admissions from several consenting workers' compensation insurers and managed care companies listing payments made for surgical implants for the 2007 and 2008 calendar year on California hospital admissions eligible for the spinal surgery implantable device pass-through. Table 1 shows the distribution of the 1,173 hospital admissions that included surgical implant payments by specific CMS-DRG code.

1 In 2008, Medicare transitioned from the CMS-DRG classification system to the MS-DRG classification system. The DRGs specified in Labor Code section 9789.22(f) as eligible for the implantable medical devices, hardware and instrumentation pass-through were mapped from CMS-DRGs 496, 497, 498, 519, 520, 531, 532 and 546 to MS-DRGs 453, 454, 455, 459, 460, 471, 472, 473, 028, 029, 030, 456, 457 and 458.

2 Kominski, GF, Gardner, LB, Inpatient Hospital Fee Schedule and Outpatient Surgery Study, FINAL REPORT, Commission on Health a0d Safety and Workers' Compensation, December 2001

3 Wynn, Barbara O., Adopting Medicare Fee Schedules: Considerations for the California Workers' Compensation Program, Prepared for the California Commission on Health and Safety and Workers' Compensation, 2003

4 Wynn, Barbara O., Bergamo, Giacomo, Payment for Hardware Used in Complex Spinal Procedures under California's Official Medical Fee Schedule for Injured Workers, Working Paper, Prepared for the Commission on Health and Safety and Workers' Compensation and the Division of Workers' Compensation, California Department of Industrial Relations, September, 2005

5 Wynn, Barbara O., Inpatient Hospital Services: An Update on Services Provided Under California's Workers' Compensation Program, Prepared for the Commission on Health, Safety and Workers' Compensation, January 2009

6 The ICD9-CM procedure codes used to identify implantable devices, hardware or instrumentation associated with spinal surgeries were 78.59, 78.99, 84.51, 84.52, 84.55, 84.56, 84.59, 84.60, 84.61, 84.62, 84.64, 84.65, 84.66, 84.68 and 84.69.

Table 1. Distribution: Sample of Surgical Hardware by CMS-DRG						
CMS-DRG Code	496	497	498	519	520	**Total**
Count of Sample Payments	275	30	378	12	478	**1,173**

The collected hardware payment information pre-dated the MS-DRG coding categories (effective in January 2008) and is organized by CMS-DRG code. These CMS-DRG codes were cross-walked to the new MS-DRGs to match with data reported in the 2008 OSHPD Patient Discharge Data. (See Appendix B for the CMS-DRG to MS-DRG Cross-walk.)

RESULTS:

Summary data presented in Exhibit 1 show the distribution of 2008 California discharges across 9 payer categories; the distribution of the eligible spinal hardware pass-through DRGs by payer category; and the distribution of eligible pass-through DRGs that involved a procedure consistent with the use of spinal hardware by payer category.

Although injured workers account for a very small proportion of all hospital discharges in California, they represent a much larger proportion of the discharges associated with spinal surgery and the spinal hardware pass-through. Private coverage (private, non-profit or commercial health plans, whether insurance or other coverage, or organizations) paid for 34.8 percent of all 2008 hospital discharges, followed by Medicare, which paid for 31.1 percent. Workers' compensation paid for 0.6 percent of the hospital discharges; 24,093 of the total 4,017,345 throughout the year.

However, among the 2008 hospitalizations involving DRGs that were eligible for the spinal hardware pass-through, the mix of payers was quite different. Private coverage paid for 45.3 percent of the pass-through eligible DRG discharges, followed by Medicare, which paid for 30.2 percent of the pass-through eligible discharges, while workers' compensation paid for 14.3 percent.

Finally, when spinal surgery discharges are further identified by those that had a procedure code indicating that spinal

Exhibit 1. Hospital Discharges, Spinal Hardware Pass-Through DRGs and Eligible DRGs With Implants by Payer

Payer	# of Total Discharges	% of All Discharges	Eligible Pass-Through DRGs	% of All Eligible DRGs	# of Eligible DRGs w/ Implant Procedures	% of All Eligible DRGs w/ Implants
Workers' Compensation	24,093	0.6%	5,070	14.3%	3,599	17.2%
Medicare	1,250,549	31.1%	10,749	30.2%	6,432	30.7%
Medi-Cal	1,027,877	25.6%	2,108	5.9%	836	4.0%
Private Coverage	1,397,452	34.8%	16,106	45.3%	9,381	44.7%
County Indigent	70,370	1.8%	338	1.0%	153	0.7%
Other Government	78,054	1.9%	662	1.9%	344	1.6%
Other Indigent	14,629	0.4%	51	0.1%	19	0.1%
Self Pay	136,876	3.4%	296	0.8%	127	0.6%
Other Payer	17,445	0.4%	159	0.4%	80	0.4%
Total	**4,017,345**	**100.0%**	**35,539**	**100.0%**	**20,971**	**100%**

Exhibit 2. Volume-Adjusted Outcomes for Pass-Through Eligible DRGs

Payer Category	Average Length of Stay	Average Age	Average Total Charges	Average # of Procedures	Average # of Implant Procedures	% of Back Surgeries w Implants
Workers' Compensation	3.8	50.8	$125,886	5.50	1.03	71.0%
Medicare	4.4	70.0	$122,658	5.26	0.88	62.5%
Medi-Cal	6.1	46.6	$140,931	5.27	0.75	57.7%
Private Coverage	3.8	51.9	$113,557	5.18	0.97	66.8%
County Indigent	6.8	45.9	$136,114	5.39	0.69	52.7%
Other Government	5.2	47.7	$147,528	5.10	0.93	66.9%
Other Indigent	7.3	23.3	$160,995	5.09	0.61	44.3%
Self Pay	7.0	47.5	$142,985	5.51	0.73	54.6%
Other Payer	5.1	42.1	$148,503	5.56	0.76	57.6%
Total	**4.2**	**58.4**	**$120,646**	**5.27**	**0.93**	**65.3%**

hardware was used during surgery, the percentage paid by workers' compensation increased to 17.2 percent.

To explore the differences in the acuity of discharges by payer, different indicators of acuity were summarized by payer. These indicators included average length of stay (LOS); average age of the patient at discharge; average total charges per discharge (not to be confused with payment); the average number of procedures as counted by the number of ICD-9 procedure codes listed in the OSHPD database; and the average number of those procedure codes associated with a procedure involving an implant device.

Interesting differences surface when characteristics of back surgeries for injured workers are compared to the characteristics of back surgeries in other payer populations. Exhibit 2 shows the average length of hospital stays, average age of the patient, average total charges, average number of procedures, and average number of procedures specifically associated with the implant of spinal hardware and the percent of back surgeries using spinal hardware for all payer categories in the OSHPD database. Averages for all of the payer categories are adjusted to the workers' compensation mix of back surgery DRGs. Not surprisingly, the average age of Medicare patients (70.0 years) is older than for other populations, including workers' compensation (50.8 years), and the average length of stay for Medicare patients is longer than for workers' compensation patients (4.4 vs. 3.8 days). For both metrics, the workers' compensation population is very similar to the private coverage population.

In terms of hospital charges, injured workers appear to use more resources compared to the Medicare population as the average amount charged for a workers' compensation hospital stay is 2.6 percent higher ($125,886 vs. $122,658), and the average number of procedures per discharge is 4.6 percent higher (5.50 vs. 5.26). In addition, the average number of implantation-related procedures per discharge is 17.1 percent higher (1.03 vs. 0.88) and the relative difference in the rate of back surgeries that include a spinal hardware device is 13.6 percent higher (71.0 percent vs. 62.5 percent).

Exhibit 3 shows the distribution of the 5,070 California workers compensation surgeries in calendar year 2008 that were eligible for the implantable device, hardware or instrumentation pass-through and the percent of those surgeries that had one or more ICD9-CM procedure code associated with the use of an implant device.

Of the 5,070 workers' compensation spinal surgery discharges that were eligible for the spinal implant pass-through, 3,599 (71 percent) contained at least one ICD9-CM hospital procedure code indicating that hardware or instrumentation

Exhibit 3. 2008 California Workers' Compensation Discharges Eligible for the Spinal Implant Pass-Through

		Number of Hospital Discharges			
MS-DRG	MS-DRG Description	No Hardware	Hardware	Total	Pcnt w/ Hardware
028	Spinal Procedures with Major Complications	13	4	17	23.5%
029	Spinal Procedures with Complications or Spinal Neurostimulator	88	4	92	4.3%
030	Spinal Procedures without Complications or Major Complications	125	7	132	5.3%
453	Combined Anterior/Posterior Spinal Fusion with Major Complications	2	44	46	95.7%
454	Combined Anterior/Posterior Spinal Fusion with Complications	27	294	321	91.6%
455	Combined Anterior/Posterior Spinal Fusion without Complications or Major Complications	32	421	453	92.9%
456	Spinal Fusion Except Cervical with Spinal Curvature/Malignancy/Infection or 9+ Fusion with Major Complications	1	2	3	66.7%
457	Spinal Fusion Except Cervical with Spinal Curvature/Malignancy/Infection or 9+ Fusion with Complications	10	14	24	58.3%
458	Spinal Fusion Except Cervical with Spinal Curvature/Malignancy/Infection or 9+ Fusion without Complications or Major Complications	8	11	19	57.9%
459	Spinal Fusion Except Cervical with Major Complications	22	60	82	73.2%
460	Spinal Fusion Except Cervical without Major Complications	497	1,770	2,267	78.1%
471	Cervical Spinal Fusion with Major Complications	8	12	20	60.0%
472	Cervical Spinal Fusion with Complications	81	135	216	62.5%
473	Cervical Spinal Fusion without Complications or Major Complications	557	821	1,378	59.6%
Grand Total		**1,471**	**3,599**	**5,070**	**71%**

was used. The most frequently performed surgery eligible for the pass-through was MS-DRG 460, spinal fusion except cervical without major complications, accounting for 44.7 percent of all spinal surgeries in the study. The three anterior/posterior spinal fusion surgery types (MS-DRGs 453 - 455) were the most likely surgeries to use implantable hardware or instrumentation, reflecting the relatively high severity of these particular surgeries. The overall count of back surgeries in 2008 shows a continued decline in back surgery admissions in the California workers' compensation system. Ireland[7] reported that the number of inpatient hospitalizations for back injuries fell from 11,237 discharges in 2002 to 8,385 discharges in 2006, a 25.4 percent decrease. In contrast, the number of hospitalizations for back injuries covered under systems other than workers' compensation increased by 4.2 percent over the same time period.

Exhibit 4 shows the average amounts paid in 2007 and 2008 for implantable devices, hardware or instrumentation by type of surgery (DRG).

Exhibit 4. Average Pass-thru Payment for 2007 and 2008 California Workers' Compensation Discharges Eligible for the Spinal Implant Pass-Through

	DRG 496 Combined Anterior/ Posterior Fusion	DRG 497 Spinal Fusion Except Cervical w cc	DRG 498 Spinal Fusion Except Cervical w/o cc	DRG 519 Cervical Spinal Fusion w cc	DRG 520 Cervical Spinal Fusion w/o cc	Total
Low (10th Percentile)	$8,821	$4,450	$1,431	$3,185	$2,643	**$6,137**
Mean	$25,478	$13,092	$16,416	$14,239	$10,870	**$15,409**
High (90th Percentile)	$63,890	$44,436	$55,716	$34,387	$42,266	**$49,304**

Although the authors were able to collect detailed surgical implant payment data, it pre-dated the new MS-DRG categories. These DRG categories are comparable back surgery admission categories that were eligible for the implant pass-through prior to the adoption of the MS-DRG categories.

The back surgery payment data, compiled from a special data call conducted in February 2009, show a wide range in average payments both within and across DRG categories for a broad array of implant devices and material, and includes negotiated payments.

Exhibit 5 shows the range and distribution of estimated average spinal hardware payments and system-wide costs for the implant pass-through for those discharges associated with the use of an implantable device during spinal surgery.

As shown in Exhibit 4, the pass-through cost of implantable devices, hardware or instrumentation ranges from a low-end estimate of $1,431 on hardware used for spinal fusions except cervical without complications to a high-end estimate of $63,890 for the hardware used in combined anterior/posterior fusions.

To estimate the cost impact of the spinal implant pass-through on California workers' compensation, the Institute multiplied the average payment for hardware in 2007 and 2008 ($15,408) by the 3,599 workers' compensation back surgeries in which the use of implantable hardware was indicated. That calculation showed that the spinal implant pass-through added an estimated $55 million to the basic inpatient hospital facility fee payments for workers' compensation back surgeries.

DISCUSSION

Spinal fusions are a controversial form of treatment. In a meta-analysis of randomized trials comparing lumbar fusion surgery to non-operative care for treatment of chronic back pain, Mirza[8] found four trials indicating that the benefit of spinal fusion is limited when treating degenerative discs with back pain alone. Although there are clear clinical indicators for spinal surgery (fractures and deformities), it is also clear that the rate of spinal surgeries increased significantly after 1996 when the surgical cage, a new type of spinal implant, was approved.[9] However, in a large study of injured workers in the state of Washington, Maghout-Juratli, et al,[10] found that the rapid increase in the use of spinal fusion cages was associated with increased complications but not with improved disability outcomes. In this context, it is bad public policy to devise a reimbursement scheme that encourages the use of spinal surgery for work injuries unrelated to fractures or deformities.

7 Ireland, J., Swedlow, A. Post-Reform Changes in Inpatient Hospital Use and Back Surgery in the California Workers' Compensation System. Research Note, CWCI. December 2008

8 Mirza, SK, Deyo,. RA, Systematic review of randomized trials comparing lumbar fusion surgery to non-operative care for treatment of chronic back pain., Spine, 2007:32:816-23

9 Deyo, RA, Mirza, SK, Turner, JA, Martin, BI, Overtreating Chronic Back Pain: Time to Back Off?, JABFM, January – Februaruy 2009, Vol. 22 No 1

10 Maghout-Juratli, S, Franklin GM, Mirza SK, Wickized TM, Fulton-Kehoe D, Lumbar fusion outcomes in Washington State workers' compensation, Spine, 2006;;31:2715 - 23

Exhibit 5. Estimated System-wide Pass-Through Payments by MS-DRGs with an Associated Implant Device, Hardware or Instrumentation

		Average Spinal Hardware Payment[11]			System - Wide Cost of Pass – Through		
MS-DRG	Count[12]	Low Estimate (10th Percentile)	Average	High Estimate (90 Percentile)	Low Estimate (10th Percentile)	Average	High Estimate (90 Percentile)
28	4	$6,137	$15,409	$49,304	$24,548	$61,636	$197,216
29	4	$6,137	$15,409	$49,304	$24,548	$61,636	$197,216
30	7	$6,137	$15,409	$49,304	$42,959	$107,863	$345,128
453	44	$8,821	$25,478	$63,890	$388,124	$1,121,032	$2,811,160
454	294	$8,821	$25,478	$63,890	$2,593,374	$7,490,532	$18,783,660
455	421	$8,821	$25,478	$63,890	$3,713,641	$10,726,238	$26,897,690
456	2	$6,137	$15,409	$49,304	$12,274	$30,818	$98,608
457	14	$6,137	$15,409	$49,304	$85,918	$215,726	$690,256
458	11	$6,137	$15,409	$49,304	$67,507	$169,499	$542,344
459	60	$4,450	$13,092	$44,436	$267,000	$785,520	$2,666,160
460	1,770	$1,431	$16,416	$55,716	$2,532,870	$29,056,320	$98,617,320
471	12	$3,185	$14,239	$34,387	$38,220	$170,868	$412,644
472	135	$2,643	$10,870	$42,266	$356,805	$1,467,450	$5,705,910
473	821	$2,643	$10,870	$42,266	$2,169,903	$8,924,270	$34,700,386
Total	3,599	$6,137	$15,409	$49,304	$22,087,063	$55,456,991	$177,445,096

When the California Division of Workers' Compensation set reimbursement levels for spinal fusions at a level to include 120 percent of the base Medicare rate plus a pass-through allowance for implantable hardware, it was at least partially based on the assumption that injured workers require more resources than patients covered by Medicare when spinal surgery is required. It has also been argued by hospitals and manufacturers of spinal implants that, even though the Medicare reimbursement rate was set at a level to include implantable hardware used in surgery, that the reimbursement level is insufficient to cover cost. This report provides data that will help to explore the relative severity and associated cost of treatment for patients under different payer programs. The report further seeks to explore the cost to the workers' compensation system of the hardware pass-through and, as a corollary, the potential savings to the system of eliminating or modifying the pass-through provision.

However, left out of the debate of sufficient reimbursement for spinal implants has been the debate over efficacy of the use of spinal implants in the first place. When setting reimbursement levels for controversial treatments, stakeholders should consider the possibility of unintended consequences. In an effort to fully compensate for expensive and potentially ineffective procedures, incentives may be created to over treat and compromise quality of care.

11 Specific implant cost data was not captured for DRGs 028, 029, 030, 456, 457 and 458. Average implant costs were used from the accumulated data to apply to these specific DRGs.

12 System-wide estimates used admission counts from all eligible OSHPD patient discharges including 312 admissions with implant codes that could not be linked to a specific hospital composite factor. The authors assume that 312 admissions (8 percent of the total 2008 eligible admissions) would not have a material difference to the estimated cost ranges. The Average OMFS basic fee amounts used in the calculation were taken from in Exhibit 3 and were based on all admissions with surgical implants as well as complete hospital composite information.

Exhibit A. ICD9-CM Hospital Procedure Codes Associated with Implantable Spinal Devices, Hardware or Instrumentation:

Procedure Code	Procedure Description
78.59	Internal fixation of vertebrae without fracture reduction: reinsertion of internal fixation device, revision of displaced or broken fixation device
78.99	Insertion of bone growth stimulator – vertebrae
84.51	Insertion of interbody spinal fusion device: insertion of cages
84.52	Insertion of recombinant bone morphogenetic protein
84.55	Insertion of bone void filler
84.56	Insertion of joint spacer
84.59	Insertion of other spinal devices (non-fusion spinal stabilization device)
84.60	Insertion of spinal disc prosthesis, NOS
84.61	Insertion of partial spinal disc prosthesis, cervical
84.62	Insertion of total spinal disc prosthesis, cervical
84.64	Insertion of partial spinal disc prosthesis, lumbosacral
84.65	Insertion of total spinal disc prosthesis, lumbosacral
84.66	Revision or replacement of artificial spinal disc prosthesis, cervical
84.68	Revision or replacement of artificial spinal disc prosthesis, lumbosacral
84.69	Revision or replacement of artificial spinal disc prosthesis, NOS

Exhibit B. CMS-DRG to MS-DRG Cross-walk Table

CMS-DRG		MS-DRG	
Code	Description	Code	Description
496	Combined anterior/posterior spinal fusion	453	Combined anterior/posterior spinal fusion with major complications
		454	Combined anterior/posterior spinal fusion with complications
		455	Combined anterior/posterior spinal fusion without complications or major complications
497	Spinal fusion except cervical with complications	459	Spinal fusion except cervical with major complications
498	Spinal fusion except cervical without complications	460	Spinal fusion except cervical without major complications
519	Cervical spinal fusion with complications	471	Cervical spinal fusion with major complications
520	Cervical spinal fusion without complications	472	Cervical spinal fusion with complications
		473	Cervical spinal fusion without complications or major complications
531	Spinal procedures with complications	028	Spinal procedures with major complications
532	Spinal procedures without complications	029	Spinal procedures with complications or spinal neurostimulators
		030	Spinal procedures without complications or major complications
546	Spinal fusion except cervical with curvature of the spine or malignancy	456	Spinal fusion except cervical with spinal curvature/malignancy/infection or 9+ fusions with major complications
		457	Spinal fusion except cervical with spinal curvature/malignancy/infection or 9+ fusion with complications
		458	Spinal fusion except cervical with spinal curvature/malignancy/infection or 9+ fusion without complications or major complications

ABOUT CWCI

The California Workers' Compensation Institute, incorporated in 1964, is a private, non-profit organization of insurers and self-insured employers conducting and communicating research and analyses to improve the California workers' compensation system. Institute members include insurers that collectively write more than 87 percent of California workers' compensation direct written premium, as well as many of the largest public and private self-insured employers in the state.

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