



Research Update

California Workers' Compensation Inpatient Hospitalization Trends, 2010-2018

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Executive Summary

Key Findings

- The volume of workers' compensation inpatient hospitalizations declined 30.7 percent between 2010 and 2018.
- Diseases and disorders of the musculoskeletal system and connective tissue accounted for 62.8 percent to 66 percent of all workers' compensation hospitalizations during the study period (2010 – 2018).
- Hospital admissions for surgery accounted for 69.8 percent of all inpatient stays for workers' compensation payers, compared to 26.1 percent for Medicare, 22.2 percent for Medi-Cal, and 36.5 percent for private coverage payers.
- Five of the top ten workers' compensation discharge groups in 2018 were for back and neck issues, with three representing spinal fusions.
- The number of workers' compensation spinal fusion hospitalizations continued to decline, dropping 4.4 percent from 2017 to 2018, for a total decline of 45.9 percent between 2010 and 2018. However, spinal fusion surgeries together remained the top workers' compensation inpatient service in 2018, accounting for 17.4 percent of all injured worker stays.
- The top nonsurgical workers' compensation inpatient service in 2018 was for the treatment of medical back problems, which represented 2.3 percent of all injured worker inpatient stays and 7.5 percent of those that did not involve surgery.
- Workers' compensation continues to represent less than 1 percent of total inpatient discharges in California, but of the 10 hospitals with the highest concentration of injured workers in their patient populations there were two in which workers' compensation accounted for more than 25 percent of their 2018 inpatient discharges.

Background/Objective

Historically, inpatient hospitalizations have accounted for a small share of California workers' compensation medical services, but they also signify more complex injuries or diseases associated with the workplace.

This report continues the Institute's research on inpatient hospitalizations in California using data from service years 2010 through 2018 to identify:

- The volume and distribution of inpatient hospital discharges across payer groups.
- The top 10 Medicare Severity Diagnosis Related Group (MS-DRG) codes used to describe workers' compensation inpatient discharges.
- The top five medical diagnostic categories describing workers' compensation inpatient discharges.
- The volume of discharges for spinal fusion and joint replacement surgery.
- The top 10 hospitals with the highest proportion of workers' compensation in their payer mix.

Data and Methods

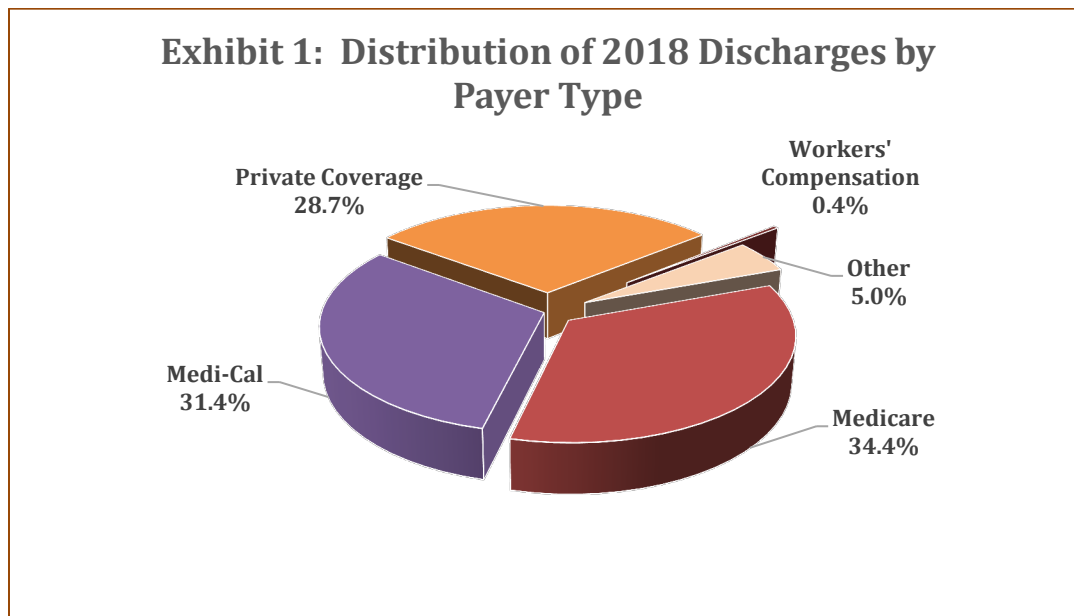
For this study the author used discharge data obtained from the Office of Statewide Health Planning and Development (OSHPD) for calendar years 2010 through 2018 inpatient discharges. The public-use database compiled by OSHPD includes detailed information submitted under the Health Data and Advisory Council Consolidation Act by health care facilities providing inpatient services in California. The data is grouped by service year and includes the type of payer billed, MS-DRG, length of stay and charges. Hospital information includes each facility's name, identification number, and location by county.

This study compares discharge data associated with four payer types (Medicare, Medi-Cal, private coverage, and workers' compensation). The Medical Diagnostic Category (MDC) and Surgery/Medical indicator associated with each MS-DRG as defined by CMS¹ were appended to the OSHPD records, enabling analysis for each type of hospital discharge event.

¹ Center for Medicare and Medicaid Services. List of MS-DRGs Version 36.0.
https://www.cms.gov/ICD10Manual/version36-fullcode-cms/fullcode_cms/P0002.html

Results

Exhibit 1 shows the distribution of all discharges occurring in calendar year 2018 based on the payer type: Medicare, Medi-Cal, private coverage, workers' compensation, and other.² The extremely small proportion represented by workers' compensation payers is not surprising considering the historically low proportion of overall healthcare costs falling under workers' compensation (ranging between 1.4 percent and 1.6 percent of national healthcare expenditures from 2010 to 2017).³



As noted in previous CWCI studies,^{4,5,6} the relatively small number of inpatient discharges associated with workers' compensation injuries and diseases has been proportionally consistent against the other payer groups over time. The latest data, displayed in Exhibit 2, show that from 2010 to 2018, the number of workers' compensation and private healthcare discharges declined by 30.7 percent and 14.7 percent respectively, while Medicare and Medi-Cal discharges increased by 2.1 percent and 16.0 percent respectively. The increase in Medi-Cal discharges coincides with the Medi-Cal program expansion under the Affordable Care Act in 2014.⁷

² "Other" combines the following: County Indigent Programs, Other Government, Other Indigent, Self-Pay, Other Payer, and Unknown.

³ Center for Medicare and Medicaid Services. National Health Expenditures by Type of Service and Source of Funds. CY 1960-2017. <https://www.cms.gov/Research-Statistics-Data-and-Systems/Statistics-Trends-and-Reports/NationalHealthExpendData/NationalHealthAccountsHistorical.html>

⁴ Jones, S.L. California Workers' Compensation Inpatient Hospital Trends. CWCI Research Update, May 2018.
⁵ Jones, S.L. Inpatient Hospital Utilization in California Workers' Compensation: 2008 – 2014. CWCI Spotlight Report, March 2016

⁶ Jones, S.L. and David, R. Inpatient Utilization in the California Workers' Compensation System. CWCI Research Update, December 2014.

⁷ Medi-Cal enrollment increased by about 50 percent from 2013 to 2018, as coverage expanded to more than 12 million Californians. Public Policy Institute of California. <https://www.ppic.org/publication/the-medi-cal-program/>

Exhibit 2: MS-DRG Count by Discharge Year and Payer Type					
Discharge Year	Workers' Comp	Medicare	Medi-Cal	Private	Grand Total
2010	22,410 (0.6%)	1,285,879	1,033,221	1,286,444	3,627,954
2011	22,159 (0.6%)	1,285,127	1,019,927	1,255,205	3,582,418
2012	21,528 (0.6%)	1,267,438	1,010,989	1,220,113	3,520,068
2013	20,336 (0.6%)	1,257,607	997,994	1,161,439	3,437,376
2014	18,592 (0.5%)	1,227,683	1,165,677	1,146,266	3,558,218
2015	17,557 (0.5%)	1,270,350	1,199,965	1,141,215	3,629,087
2016	16,574 (0.5%)	1,280,718	1,227,738	1,121,137	3,646,167
2017	15,831 (0.4%)	1,313,298	1,221,418	1,110,021	3,660,568
2018	15,529 (0.4%)	1,313,004	1,198,834	1,095,771	3,623,138
2010 - 2018 Change	-30.7%	2.1%	16.0%	-14.8%	-0.1%

Each inpatient hospitalization is related to a principal diagnosis for admitted patients, and all principal diagnoses are divided into 25 mutually exclusive Major Diagnostic Categories (MDCs). Exhibit 3 shows the top five MDCs for CY 2018 workers' compensation discharges and compares the relative proportions for each of the previous eight years. Considering the nature of workers' compensation injuries,^{8,9} it is not surprising that MDC 08 (Diseases & Disorders of the Musculoskeletal System and Connective Tissue) was the top diagnostic category for each discharge year, accounting for nearly two-thirds of inpatient discharges.

Exhibit 3: Top Five Major Diagnostic Categories for 2018 Workers' Compensation Discharges (As a Percentage of Inpatient Hospitalizations, 2010 - 2018)									
	2010	2011	2012	2013	2014	2015	2016	2017	2018
MDC 08	63.8%	62.8%	64.1%	64.1%	64.0%	64.8%	66.0%	64.4%	62.8%
MDC 01	5.3%	5.1%	5.3%	4.9%	4.7%	4.9%	5.3%	5.4%	5.8%
MDC 05	5.4%	5.5%	4.7%	4.7%	4.6%	4.7%	4.6%	4.5%	4.9%
MDC 21	3.5%	3.5%	3.6%	3.8%	3.9%	3.8%	3.7%	3.8%	4.0%
MDC 18	2.3%	2.3%	2.2%	2.4%	2.6%	2.7%	2.7%	2.9%	3.4%
Total	80.2%	79.1%	80.0%	79.8%	79.7%	80.8%	82.3%	81.0%	80.9%
08 – Diseases & Disorders of the Musculoskeletal System & Connective Tissue 01 – Diseases & Disorders of the Nervous System 05 – Diseases & Disorders of the Circulatory System 21 – Injuries, Poisonings & Toxic Effects of Drugs 18 - Infectious & Parasitic Diseases, Systemic or Unspecified Sites									

⁸ United States Department of Labor, Bureau of Labor Statistics. 2017 Survey of Occupational Injuries & Illnesses Charts Package. November 8, 2018. <https://stats.bls.gov/iif/osh0062.pdf>

⁹ National Safety Council. Top Work-Related Injury Causes. <https://injuryfacts.nsc.org/work/work-overview/top-work-related-injury-causes/>

Past studies showed MDC 09 (Diseases & Disorders of the Skin, Subcutaneous Tissue & Breast) was the fifth most common workers' compensation MDC, but the latest data show that in 2018 it was displaced by MDC 18 (Infectious & Parasitic Diseases, Systemic, or Unspecified Sites). MDC 18 includes Septicemia and Postoperative or Post-traumatic infections. The 2018 discharge data for workers' compensation shows that the MS-DRGs for Septicemia or Severe Sepsis accounted for 45.4 percent of the inpatient diagnosis-related group within the MDC 18 diagnostic category (see Appendix 1 for a comparative distribution of the MS-DRGs within MDC 18 across the different payer categories).

The prevalence of musculoskeletal and connective tissue diagnoses underlying treatment rendered during inpatient hospitalizations for injured workers differentiates this patient population. The primary difference between workers' compensation inpatient discharges and those covered by other systems is the preponderance of surgical versus non-surgical medical stays in workers' compensation. Inpatient hospitalizations associated with surgical events accounted for 69.8 percent of all workers' compensation inpatient discharges compared to 26.1 percent, 22.2 percent and 36.5 percent for Medicare, Medi-Cal and private coverage respectively (Exhibit 4). In 2018, all four payer groups experienced a slight increase in the proportion of "medical" hospitalizations compared to previous years, and a concurrent decrease in the proportion of "surgery" hospitalizations.¹⁰ As the Centers for Medicare and Medicaid Services (CMS) continues to evaluate the list of inpatient-only services¹¹ each year, additional surgical procedures are removed from the list, which allows them to be performed in hospital outpatient settings. More surgical services are also being performed in ambulatory surgery centers (ASCs), with further increases projected for this healthcare sector.¹²

Exhibit 4: 2018 Inpatient Utilization, Medical Issue vs Surgical Procedure by Payer Type*					
	Workers' Comp	Medicare	Medi-Cal	Private	Total
Medical	30.2%	73.9%	77.8%	63.5%	72.3%
Surgery	69.8%	26.1%	22.2%	36.5%	27.7%

*Excludes pregnancy, childbirth, and newborns

To gain a better understanding of the types of conditions represented in "Medical" hospitalization for injured workers, the author identified the top five MS-DRGs for this category. Exhibit 5 shows the top five "Medical" MS-DRGs with the percentage of "Medical" discharges and the percentage of total discharges they represent.

¹⁰ Jones, S.L. California Workers' Compensation Inpatient Hospital Trends. CWCi Research Update, May 2018.

¹¹ Inpatient-only services are defined by CMS as services that are not appropriate to be furnished in hospital outpatient settings. Section 1833(t)(1)(B)(i) of the Social Security Act. U. S. Social Security Administration. https://www.ssa.gov/OP_Home/ssact/title18/1833.htm

¹² MarketWatch. 2018 Ambulatory Surgery Center (ASC) Market: Projected to Increase from \$36 Billion in 2018, to \$40 Billion by 2020. ResearchAndMarkets.com. October 11, 2018. <https://www.marketwatch.com/press-release/2018-ambulatory-surgery-center-asc-market-projected-to-increase-from-36-billion-in-2018-to-40-billion-by-2020---researchandmarketscom-2018-10-11>

Exhibit 5: Top Five MS-DRGs for Workers' Compensation Medical Hospitalizations (Discharge Year 2018)			
MS-DRG	% Medical	% Total	MS-DRG Description
552	7.5%	2.3%	medical back problems without MCC
560	5.8%	1.8%	aftercare musculoskeletal system and connective tissue with CC
603	4.5%	1.4%	cellulitis without MCC
561	3.8%	1.2%	aftercare musculoskeletal system and connective tissue without CC/MCC
871	3.2%	1.0%	septicemia or severe sepsis without mv >96 hours with MCC
Subtotal	24.9%	7.5%	

MS-DRG 552 (medical back problems without MCC¹³) includes non-specific diagnoses like “low back pain,” as well as more specific diagnoses for vertebral fractures. Using bill payment data from CWCI’s IRIS database,¹⁴ the author was able to analyze diagnosis codes included on hospital bills with MS-DRG 552 and found that 42.3 percent included diagnosis codes for complications or comorbidities that did not place them in the MCC category (including obesity, diabetes, hypertension, and substance abuse).

The data show four of the top five surgery hospitalizations for injured workers were related to spinal fusions or other back and neck procedures (Exhibit 6). Hip and knee replacements accounted for 21 percent of all surgery hospitalizations and 14.7 percent of all discharges for workers’ compensation, though that proportion was down slightly from 15.1 percent in 2016, as reported in CWCI’s 2018 study.

Exhibit 6: Top Five MS-DRGs for Workers' Compensation Surgery Hospitalizations (Discharge Year 2018)			
MS-DRG	% Surgery	% Total	MS-DRG Description
470	21.0%	14.7%	major hip and knee joint replacement or reattachment of lower extremity without MCC
460	8.0%	5.6%	spinal fusion except cervical without MCC
473	5.0%	3.5%	cervical spinal fusion without CC/MCC
455	4.7%	3.3%	combined anterior/posterior spinal fusion without CC/MCC
520	4.1%	2.8%	back and neck procedures except spinal fusion without CC/MCC
Total	42.8%	29.8%	

¹³ “MCC” denotes Major Complication or Comorbidity and is used in the MS-DRG classification system to identify the presence of major complications or comorbid condition(s). Similarly, “CC” indicates the presence of complications or comorbidities which are less complex and resource intensive than those in the major category.

¹⁴ IRIS is CWCI’s proprietary transactional level database derived from California workers’ compensation claims contributed by insurers representing approximately 65 percent of the insured market as well as self-insured entities.

Calculating the top ten discharges by volume, the author combined all severity levels associated with the same diagnostic related group (*e.g.*, MS-DRGs 453, 454, and 455 are for combined anterior/posterior spinal fusion with MCC, with CC and without CC/MCC). Exhibit 7 shows the top 10 workers' compensation discharges by volume for 2018.

Exhibit 7: Top 10 Workers' Compensation Discharges by Volume Severity Levels Combined (Discharge Year 2018)				
MS-DRG	Workers' Comp	Medicare	Medi-Cal	Private Coverage
469, 470	14.9%	4.2%	0.6%	2.4%
459, 460	5.9%	0.5%	0.1%	0.4%
453, 454, 455	5.7%	0.4%	0.1%	0.3%
471, 472, 473	5.5%	0.3%	0.1%	0.4%
518, 519, 520	4.4%	0.2%	0.1%	0.3%
492, 493, 494	3.6%	0.4%	0.4%	0.5%
559, 560, 561	3.3%	0.9%	0.2%	0.3%
483	2.5%	0.5%	0.0%	0.2%
551, 552	2.4%	0.7%	0.3%	0.3%
515, 516, 517	2.4%	0.4%	0.1%	0.3%
Total	50.4%	8.5%	2.0%	5.4%
469, 470 – Major hip and knee joint replacement or reattachment of lower extremity (or ankle replacement) 459, 460 – Spinal fusion except cervical 453, 454, 455 – Combined anterior/posterior spinal fusion 471, 472, 473 – Cervical spinal fusion 518, 519, 520 – Back & neck procedures except spinal fusion or disc device/neurostimulator 492, 493, 494 – Lower extremity & humerus procedures except hip, foot, femur 559, 560, 561 – Aftercare, musculoskeletal system & connective tissue 483 – Major joint/limb reattachment procedure of upper extremities 551, 552 – Medical back problems 515, 516, 517 – Other musculoskeletal system & connective tissue operating room procedures				

Spinal fusion surgery continues to rank among the top five inpatient hospitalizations for workers' compensation patients. Exhibit 8 shows the number of spinal fusions that have been paid under each of the four payer groups and the proportion of total discharges represented by spinal fusions¹⁵ for each group from 2010 through 2018. Since 2010, there has been a steady decline in the number of spinal fusion discharges paid under private coverage and workers' compensation. Although workers' compensation is a much smaller system than the group health, workers' compensation has experienced a greater decline both in the number of spinal fusions, and in spinal fusions as a percent of all discharges.

¹⁵ MS-DRGs 028, 029 and 030 may also involve spinal fusion, but they have been excluded since they also include other types of spinal surgery addressing nervous system disorders, such as neurostimulator implantation.

The steady decline in workers' compensation spinal fusions coincided with implementation of two reforms included in the 2012 workers' compensation reform legislation (SB 863):

- elimination of duplicate payments allowed for spinal implant hardware; and
- the adoption of Independent Medical Review (IMR) as an integral part of the process for determining whether medical services requested for injured workers meet evidence-based medicine standards as appropriate and medically necessary.

Exhibit 8: Volume of Discharges for Implant-Eligible Spinal Surgeries and Percent of Implant-Eligible Spinal Surgeries to All Discharges by Payer Group (Excludes 028, 029, 030)				
Discharge Year	Workers' Comp	Medicare	Medi-Cal	Private Coverage
2010	4,980 (22.2%)	11,707 (0.9%)	1,836 (0.2%)	15,026 (1.2%)
2011	4,809 (21.7%)	12,327 (1.0%)	1,901 (0.2%)	14,627 (1.2%)
2012	4,784 (22.2%)	13,187 (1.0%)	2,002 (0.2%)	14,740 (1.2%)
2013	4,357 (21.4%)	13,835 (1.1%)	2,122 (0.2%)	14,484 (1.2%)
2014	3,771 (20.3%)	14,767 (1.2%)	3,263 (0.3%)	14,226 (1.2%)
2015	3,476 (19.8%)	15,120 (1.2%)	3,752 (0.3%)	14,071 (1.2%)
2016	3,138 (18.9%)	16,080 (1.3%)	4,379 (0.4%)	13,683 (1.2%)
2017	2,819 (17.8%)	16,051 (1.2%)	4,679 (0.4%)	12,692 (1.1%)
2018	2,696 (17.4%)	16,102 (1.2%)	4,439 (0.4%)	11,975 (1.1%)
'10 - '18 Net Change	-45.9%	37.5%	141.8%	-20.3%

Top 10 Hospitals Based on Injured Workers as a Percent of Inpatient Discharges

Although workers' compensation continues to represent less than 1 percent of total inpatient hospitalizations, injured workers account for a significantly higher share of the inpatient discharges in some hospitals. Exhibit 9 shows data for the top 10 hospitals based on the concentration of injured workers in their inpatient population.

Exhibit 9: Proportion of Discharges Represented by Workers' Compensation All MS-DRGs versus MDC 08 Only						
Hospital	WC as % of Hospital's Discharges			Musculoskeletal (MDC 08) Only		
	2016	2017	2018	2016	2017	2018
Docs Surgical Hospital	52.7%	54.3%	41.4%	53.2%	54.1%	41.0%
Monrovia Memorial Hospital	24.4%	23.8%	28.3%	73.4%	75.4%	76.3%
Kindred Hospital - Rancho	9.3%	9.7%	12.9%	68.4%	68.2%	73.9%
Patients' Hospital of Redding	14.3%	9.4%	11.0%	23.9%	13.9%	14.3%
Fresno Surgical Hospital	10.4%	8.7%	9.1%	11.1%	9.2%	9.4%
Chapman Global Medical Center	7.2%	8.5%	7.1%	38.9%	39.3%	32.9%
Stanislaus Surgical Hospital	4.4%	4.5%	6.7%	5.0%	4.4%	7.4%
Encompass Health Rehabilitation Hospital of Tustin	2.6%	7.2%	5.7%	4.8%	15.1%	12.0%
Cedars-Sinai Marina Del Rey Hospital	5.9%	6.3%	5.6%	20.0%	19.9%	18.2%
Alvarado Hospital Medical Center	3.2%	3.2%	3.6%	17.5%	18.4%	22.1%

Docs Surgical Hospital¹⁶ had the highest percentage of workers' compensation inpatients for each of the three discharge years when including discharges for all diagnostic categories. Limiting discharges to those in the musculoskeletal diagnostic category shows a marked change in the proportion of workers' compensation inpatients for both Monrovia Memorial Hospital and Kindred Hospital – Rancho, with injured workers representing approximately three-quarters of the musculoskeletal inpatient discharges at these two hospitals.

Although the top 10 hospitals listed in Exhibit 9 have the highest proportion of their inpatient hospitalizations covered by workers' compensation, together they account for less than 10 percent of all workers' compensation discharges. Exhibit 10 shows the proportion of all 2018 California workers' compensation discharges, by admission type (medical or surgery), for each of these hospitals.

¹⁶ Docs Surgical Hospital was previously known as Miracle Mile Medical Center while under the ownership of Gil Tepper, MD. The hospital changed ownership in 2018 following the 2017 arrest of Dr. Tepper for workers' compensation insurance fraud.

Exhibit 10: Proportion of Total Workers' Compensation Discharges - by Admission Type			
Hospital	Medical	Surgery	All
Docs Surgical Hospital	0.06%	0.64%	0.46%
Monrovia Memorial Hospital	0.04%	1.25%	0.88%
Kindred Hospital - Rancho	0.08%	0.70%	0.52%
Patients' Hospital of Redding	0.00%	0.14%	0.10%
Fresno Surgical Hospital	0.00%	1.49%	1.04%
Chapman Global Medical Center	0.08%	1.28%	0.92%
Stanislaus Surgical Hospital	0.00%	0.28%	0.19%
Encompass Health Rehabilitation Hospital of Tustin	1.42%	0.00%	0.43%
Cedars-Sinai Marina Del Rey Hospital	0.25%	2.14%	1.57%
Alvarado Hospital Medical Center	0.25%	1.26%	0.95%
Total	2.21%	9.18%	7.06%

Exhibit 11 shows the type of ownership for each of the top ten hospitals that have the highest proportion of their inpatient discharges covered by workers' compensation. Nine out of these ten hospitals are investor owned, while one (Cedars-Sinai Marina Del Rey Hospital) is part of a non-profit corporation. Three of the hospitals (Docs Surgical Hospital, Patients' Hospital of Redding and Fresno Surgical Hospital) are physician owned.

Exhibit 11: Type of Ownership for Top Ten Hospitals Based on Proportion of Inpatient Services Covered by Workers' Compensation	
Hospital	Type of Ownership
Docs Surgical Hospital	Investor - Limited Liability Company
Monrovia Memorial Hospital	Investor - Limited Liability Company
Kindred Hospital - Rancho	Investor - Limited Liability Company
Patients' Hospital of Redding	Investor – Partnership
Fresno Surgical Hospital	Investor – Individual
Chapman Global Medical Center	Investor – Corporation
Stanislaus Surgical Hospital	Investor - Limited Liability Company
Encompass Health Rehabilitation Hospital of Tustin	Investor – Partnership
Cedars-Sinai Marina Del Rey Hospital	Non-profit Corporation
Alvarado Hospital Medical Center	Investor – Corporation

Discussion

The latest statewide inpatient hospital data from OSHPD show a continuing decline in the number of workers' compensation hospitalizations in 2018, resulting in a net decline of 30.7 percent between 2010 and 2018 -- more than twice the 14.8 percent decline noted for private health care hospitalizations over the same period (Exhibit 2). Meanwhile, the number of inpatient discharges covered by government programs rose, with hospitalizations paid under Medicare increasing 2.1 percent and those paid under Medi-Cal increasing 16.0 percent). A key factor fueling the decline in workers' compensation hospitalizations has been a sharp drop in the number of discharges related to musculoskeletal disorders, which in 2018 accounted for 62.8 percent of the injured worker hospitalizations – the lowest level since 2011 (Exhibit 3).

Medical back problems ranked ninth among all workers' compensation MS-DRGs by volume, with 2.3 percent of the total, but accounted for the highest share (7.5 percent) of the nonsurgical injured worker hospitalizations. Using detailed diagnosis data from CWCI's IRIS database, the author was able to identify diagnoses associated with MS-DRGs that were present in the OSHPD data. Though direct matches between the two data sets were not made for individual hospitalization records, the author was able to draw some conclusions regarding the impact of comorbid conditions and complications in the injured worker population, noting that 42.3 percent of hospital bills with MS-DRG 552 (medical back problems without MCC) included diagnosis codes for comorbidities such as obesity, diabetes, hypertension, and substance abuse.

Given that most workers' compensation injuries are musculoskeletal in nature, it is not surprising that inpatient admissions for surgery are much higher for workers' compensation (69.8 percent in 2018) compared to other payer groups (Exhibit 4). Excluding pregnancy and childbirth from the calculations, private coverage and Medi-Cal still had a lower percentage of surgery admissions (36.5 percent and 22.2 percent respectively) than workers' compensation. Surgery for total hip or knee replacement continued to be the number one surgery admission for workers' compensation in 2018, with spinal fusion surgeries ranking 2nd, 3rd and 4th in the top five ranking. Back and neck procedures that did not include spinal fusion rounded out the top five surgery hospitalizations for workers' compensation.

The number of spinal fusions in workers' compensation continues to decline, with these procedures accounting for 17.4 percent of all workers' compensation hospitalizations in 2018, down from 22.2 percent in 2012 (Exhibit 8). A combination of factors, including removal of add-on payments for spinal fusion hardware, fraud convictions related to billing of spinal fusion hardware and kickbacks paid to surgeons, and implementation of Independent Medical Review for UR denial decisions, have influenced this year-over-year decrease.

Workers' compensation represents a very small share of all inpatient discharges in California (0.4 percent in 2018), but the hospital data reveal significant variability among the facilities that render inpatient care to injured workers. Among the 10 hospitals with the highest concentration of workers' compensation admissions in 2018, the proportion of

workers' compensation discharges ranged from 3.6 percent to 41.4 percent of their total inpatient discharges (Exhibit 9). The workers' compensation patient population for Miracle Mile Medical Center (*i.e.*, Docs Surgical Hospital under new ownership) accounted for more than 50 percent of the facility's discharges in 2016 and 2017, and that proportion declined to 41.4 percent in 2018 after the previous owner was charged with fraud related to billing for spinal fusion hardware in 2017 (the owner subsequently pleaded guilty to workers' compensation insurance fraud in February 2019).

A review of hospital ownership data shows out of the 10 hospitals that have the highest proportion of their inpatient hospitalizations covered by workers' compensation, nine are owned by investors (three of which are physician owned and focus on surgery), while one is owned by a non-profit corporation. Together, these 10 hospitals accounted for 7.1 percent of all workers' compensation inpatient hospitalizations in 2018, and 9.2 percent of the surgical discharges.

The Institute will continue to monitor the volume of inpatient hospitalizations, as well as the types of medical conditions underlying admissions for injured workers. Future research will delve more deeply into the impact of comorbidities and complications on the need for inpatient care.

Appendix

MS-DRG Distribution for MDC 18 by Payer Type					
MS-DRG	Workers' Comp	Medicare	Medi-Cal	Private	Description
871	28.3%	64.1%	43.2%	41.8%	Septicemia or severe sepsis without mv >96 hours with MCC
872	17.1%	17.3%	27.9%	27.6%	Septicemia or severe sepsis without mv >96 hours without MCC
857	11.3%	0.5%	0.8%	1.4%	Postoperative or post-traumatic infections with O.R. Procedure with CC
853	9.9%	8.4%	9.8%	10.0%	Infectious and parasitic diseases with O.R. Procedure with MCC
854	9.4%	2.0%	5.7%	5.1%	Infectious and parasitic diseases with O.R. Procedure with CC
863	9.0%	0.8%	1.6%	2.5%	Postoperative and post-traumatic infections without MCC
856	4.9%	0.6%	0.7%	1.0%	Postoperative or post-traumatic infections with O.R. Procedure with MCC
858	3.8%	0.1%	0.1%	0.3%	Postoperative or post-traumatic infections with O.R. Procedure without CC/MCC
862	3.2%	1.0%	1.4%	2.3%	Postoperative and post-traumatic infections with MCC
870	1.5%	3.7%	3.8%	2.3%	Septicemia or severe sepsis with mv >96 hours or peripheral extracorporeal membrane oxygenation (ecmo)
864	0.6%	0.5%	1.4%	2.0%	Fever and inflammatory conditions
868	0.4%	0.1%	0.3%	0.4%	Other infectious and parasitic diseases diagnoses with CC
855	0.2%	0.0%	0.1%	0.1%	Infectious and parasitic diseases with O.R. Procedure without cc/MCC
866	0.2%	0.4%	2.2%	2.4%	Viral illness without MCC
867	0.2%	0.2%	0.3%	0.3%	Other infectious and parasitic diseases diagnoses with MCC
869	0.2%	0.0%	0.3%	0.2%	Other infectious and parasitic diseases diagnoses without CC/MCC
865	0.0%	0.3%	0.4%	0.4%	Viral illness with MCC
Total	100%	100%	100%	100%	

About the Author

Stacy L. Jones is a Senior Research Associate with the California Workers' Compensation Institute.

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- **Alex Swedlow**, President.

California Workers' Compensation Institute

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