



## California Workers' Compensation Institute

1111 Broadway Suite 2350, Oakland, CA 94607 • Tel: (510) 251-9470 • Fax: (510) 251-9485

### *Obesity as a Medical Disease: Potential Implications for Workers' Compensation*

*Bob Young  
Alex Swedlow  
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#### *Executive Summary*

In June 2013 the American Medical Association (AMA) House of Delegates approved a resolution reclassifying obesity as “a disease state,” effectively declaring that one out of every three Americans suffers from a medical condition that requires treatment.

Historically, obesity in workers' compensation has largely been a co-morbidity issue, and even on that level, it has gone largely unreported as it has not often been deemed a condition that must be addressed in order to treat most work-related injuries and illnesses, and medical providers typically only document medical diagnosis codes for injuries and conditions they intend to treat and wish to be reimbursed for. That may change, however, now that obesity has been reclassified as a disease, if medical providers feel a greater responsibility to counsel obese patients about their weight – especially if there is a greater likelihood that they will be reimbursed for doing so – or if treatment for a compensable injury causes significant weight gain. The result could be an increasing number of claims that include obesity as a co-morbidity, as well as an increase in cases in which obesity is claimed as a compensable consequence of injury in the same way that sleep disorders, sexual dysfunction and psychological disorders became commonplace prior to the passage of SB 863.

To measure differences in claim characteristics and outcomes for work injury and illness cases with and without obesity as a co-morbidity, and to establish a baseline for measuring the effects of the recent reclassification on California workers' compensation, this analysis examines data from a sample of 1.2 million claims from accident years 2005 to 2010. The findings show that claims with obesity as a co-morbidity have had significantly higher rates of lost-time from work, permanent disability, and attorney involvement, and have been much more likely to involve additional co-morbidities and prescriptions for opioid painkillers and psychotropic drugs. Furthermore, after case-mix adjustment, the study found that average benefit payments on indemnity claims with the obesity co-morbidity were \$116,437, or 81.4 percent more than those without; and that these claims averaged nearly 35 weeks of lost time, or 80% more than the average of 19 weeks for claims without the obesity co-morbidity.

To the extent that the reclassification of obesity as a treatable disease leads to more identification and treatment of obesity among injured workers, the results of this study suggest that the potential cost implications could be significant for California workers' compensation.

## Background

Both the World Health Organization (WHO) and the Centers for Disease Control (CDC) use four categories to classify individuals by their weight. All four categories (underweight, normal, overweight and obese) are based on a person's Body Mass Index (BMI), which is calculated by dividing their weight in kilograms by their height in meters squared ( $\text{kg}/\text{m}^2$ ). The CDC considers a person with a BMI of 18.5 to 24.9 to be in the normal range, while a person with a BMI below 18.5 is considered underweight, someone with a BMI of 25 to 29.9 is classified as overweight, and individuals with a BMI above 30 fall into the obese category. In addition, anyone with a BMI of 40 or above is deemed extremely obese. Using these criteria, a six-foot-tall man would be considered underweight at 135 pounds, overweight at 184 pounds, obese at 221 pounds, and extremely obese at 295 pounds.

While the Body Mass Index is an imperfect means of assessing an individual's health or gauging their percentage of body fat – for example, a BMI reading can render misleading results for athletes or others with relatively high muscle mass – it does, nevertheless, provide an important weight classification tool that can help medical providers flag potential health risks. According to the CDC, the BMI calculation is a reliable way of indicating whether a person's body fat may lead to problems such as heart disease, diabetes, cancer and hypertension.<sup>1</sup>

Over the past several decades, Americans' waistbands have expanded as consumers have become more reliant on convenience foods associated with high levels of sodium, sugar and fat. The United Health Care Foundation's Annual Report on America's Health Rankings notes that "the causes of obesity are complex and include lifestyle, the social and physical environment, as well as genes and medical history. Poor diet and decreased physical activity are major lifestyle contributors to obesity. Since the 1980s, energy intake has steadily climbed and energy expenditure has declined, leading to a growing energy imbalance which closely mirrors the obesity rates."<sup>2</sup> This has led to what the Centers for Disease Control has labeled an "obesity epidemic." To underscore the point, earlier this year, the CDC used BMI data compiled from 1985 to 2010 to produce an animated map of the U.S. showing the dramatic growth in obesity rates across America, with results calculated by state across that 25-year span.<sup>3</sup>

The "epidemic" is further evidenced by U.S. National Health and Nutrition Examination Survey (NHANES) data from 2009-10, published recently in the *Journal of the American Medical Association*.<sup>4</sup> According to that data, more than 1/3 of all adult Americans now fall into the obese category, though notably, the results vary significantly by race, region, age and gender.

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<sup>1</sup> Centers for Disease Control, What Causes Overweight and Obesity, <http://www.cdc.gov/obesity/adult/causes/index.html>, updated April 2012.

<sup>2</sup> United Health Care Foundation, America's Health Rankings, 2012 Annual Report. (<http://www.americashealthrankings.org/all/obesity>) 2012.

<sup>3</sup> Brady, Heather "Watch the Country Get Fatter in One Animated Map: How the obesity epidemic spread across the U.S." [http://www.slate.com/articles/news\\_and\\_politics/map\\_of\\_the\\_week/2013/04/obesity\\_in\\_america\\_cdc\\_releases\\_gif\\_of\\_epidemic\\_over\\_time.html](http://www.slate.com/articles/news_and_politics/map_of_the_week/2013/04/obesity_in_america_cdc_releases_gif_of_epidemic_over_time.html) Slate.com, April 17, 2013.

<sup>4</sup> Flegal, K. M., Carroll, M. D., Kit, B.K., & Ogden, C. L. (2012). Prevalence of obesity and trends in the distribution of body mass index among U.S. adults, 1999-2010. *Journal of the American Medical Association*, 307(5), 491-497.

Exhibit 1 summarizes select NHANES data on the prevalence of obesity among adult Americans.

**Exhibit 1. Prevalence of Obesity and Extreme Obesity in U.S. Adults, Age 20 & Above (NHANES 09-10)**

	Obesity BMI $\geq$ 30 kg/m <sup>2</sup>	Extreme Obesity BMI $\geq$ 40 kg/m <sup>2</sup>
<b>All Adults</b>	35.7%	6.3%
<b>All Females</b>	35.8%	8.1%
White (non-Hispanic)	32.2%	7.1%
Black (non-Hispanic)	58.5%	17.8%
Hispanic	41.4%	6.0%
<b>All Males</b>	35.5%	4.4%
White (non-Hispanic)	36.2%	4.2%
Black (non-Hispanic)	38.8%	7.4%
Hispanic	37.0%	4.1%

Source: (Flegel, et al, 2012)

In California, the obesity rate for adults is below the national average. Self-reported data compiled from the CDC’s annual telephone surveys (Exhibit 2) show that nearly 1 out of 4 adult Californians report that they are obese, and that rate has more than doubled since 1990, suggesting that Californians are no more immune than other Americans to the dietary and lifestyle factors that have fueled the obesity epidemic.

## Exhibit 2.



Source: CDC Behavioral Risk Factor Surveillance System Telephone Surveys.

\* The 2012 Survey included cellular phone users for the first time, so the 2012 result cannot be compared to results from prior years when only landline users were surveyed.

While at least one study suggests that the self-reported obesity rate tends to “suffer from serious measurement error problems,”<sup>5</sup> given the sensitivity of the issue and the potential social stigma that may attach to the obesity label, it is possible that the actual obesity rate is higher than the self-reported rate. In any event, the growing obesity rates noted in the self-reported surveys should not be taken as a sign that Americans are apathetic about their weight. To the contrary, Forbes reports that the diet and weight loss industry in the U.S. now generates more than \$60 billion a year,<sup>6</sup> suggesting that millions of Americans do care, even if they have been unsuccessful at adjusting their diets and controlling the behaviors that lead to weight gain. For many people, the issue is never too far removed from their minds, and weight loss consistently tops the list of Americans’ New Year’s resolutions, as noted by the most recent Marist poll which found that 17 percent of those who planned to make a resolution in 2013 said they were resolving to lose weight.<sup>7</sup>

### Redefining Obesity As A Disease

In June 2013, the issue of obesity in America took center stage when the American Medical Association (AMA) House of Delegates approved a resolution reclassifying obesity as “a disease state with multiple pathophysiological aspects requiring a range of interventions.” In so doing, the AMA delegates effectively declared that one out of every three Americans (78 million adults and 12 million children) suffer from a medical condition that requires treatment. The delegates’

<sup>5</sup> O’Neill, D. and Sweetman, O. Estimating Obesity in the Presence of Measurement Error, <http://ftp.iza.org/dp7288.pdf>, Institute for the Study of Labor. Bonn, March 2013.

<sup>6</sup> Axtell, Brooke. How to Be a Shameless Woman, Making Peace With Our Bodies, Ourselves. Forbes, Sept. 26, 2012.

<sup>7</sup> Marist Poll. Making a Change in 2013? Marist College Institute for Public Opinion. December 27, 2012.

vote followed the endorsement of a reference committee, chaired by occupational medicine specialist Dr. Douglas Martin, which had debated the issue and determined that inasmuch as redefining obesity as a disease may help patients get useful treatment, the potential benefits outweigh the potential harm from increased stigmatization. The reference committee report concluded that “the ramifications of obesity warrant a paradigm shift in the way the medical community tackles this complicated issue.”

That vote did not come without controversy, as the reference committee report noted that the committee had heard mixed testimony regarding the impact of the reclassification. Although declarations by the AMA have no legal standing, the organization’s positions often influence state and national lawmakers and regulators, so the recent vote on obesity will likely affect diverse areas such as employment (including the Americans with Disability Act and Equal Employment Opportunity Commission implications<sup>8</sup>); life, disability, and workers' compensation insurance; weight bias; insurer and provider responsibility; physician reimbursement; and diagnostic and procedure coding. The operational and economic consequences could be significant for medical providers and health care delivery systems that now have to reconcile implementation of the new disease category, an evolving standard of care for obese patients, managed care issues concerning medical efficacy and cost/benefit considerations, as well as coordination of care challenges between workers’ compensation, group health and federal programs and requirements such as Medicare Section 111 reporting.

Pressure on health care payers to cover obesity-related expenses is already building. Immediately following the AMA’s vote to reclassify obesity as a disease, bipartisan bills were introduced in both the U.S. House and Senate<sup>9</sup> to require Medicare to cover more obesity treatment costs, including prescription drugs and intensive behavioral weight-loss counseling. The Congressional Budget Office did not estimate the cost of expanding Medicare to include this type of coverage, but the Medicare system currently covers nearly 50 million Americans, so the scope of such a program, and the associated costs, would be substantial.

Within workers’ compensation, the issue of obesity is not new, but until now, obesity has almost exclusively been treated as a co-morbidity – a condition that occurs at the same time, but usually independent of the work-related compensable injury or illness. For example, obesity as a co-morbidity within a workers’ compensation claim can complicate the treatment of a compensable back or joint injury. Now that obesity has been designated as a medical disease, however, it may become more common as a compensable consequence of injury in the same way that prior to the passage of SB 863 in 2012, sleep disorders, sexual dysfunction, and psychological disorders

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<sup>8</sup> For example, while the EEOC currently considers the “morbidly obese” (those weighing twice their normal body weight) to be physically impaired and generally disabled under the Americans with Disability Act, those who are simply overweight or obese without exacerbating medical conditions are not usually deemed to be substantially limited in some major life activity, so are not necessarily considered disabled. The AMA’s reclassification of obesity as a disease, however, will put pressure on policymakers to reclassify obesity as an ADA-defined disability, which could place additional requirements on employers in cases where an injured worker is treated for obesity.

<sup>9</sup> The Treat and Reduce Obesity Act, submitted for consideration by Sens. Tom Carper (D-DE) and Lisa Murkowski (R-AK) and Reps. Bill Cassidy, M.D. (R-LA) and Ron Kind (D-WI) on June 19, 2013.

became common “add-ons.” This could be especially true in cases where the injured worker remains off work and is inactive for extended periods, or where they are given a medication such as prednisone, where the side effects can include rapid weight gain.

Beyond the potential for the increased incidence of obesity as a compensable consequence, there also is some concern that obesity may become a primary workers’ compensation diagnosis, especially in sedentary jobs such as long-haul trucking or many types of office work, where the job demands that the worker remain seated for extended periods, making them prone to weight gain.<sup>10</sup> In such scenarios the viability of the claim would likely hinge on proving that the work actually caused the obesity, which would be an issue ripe for dispute and which could lead to additional litigation. In light of the increasing evidence of genetic pre-disposition for various medical conditions, defining causation and relative causation will be critical in claims involving obesity, and also may arise in other employment areas such as pre-employment screening.

### **Assessing Obesity In Workers’ Compensation**

As noted earlier, until now obesity in workers’ compensation has largely been a co-morbidity issue, but even on that level, it appears to have gone largely unreported as it has not typically been a condition that had to be addressed medically in order to treat a compensable injury, and medical providers typically only document ICD-9 diagnosis codes for injuries and conditions they intend to treat and wish to be paid for.<sup>11</sup> Furthermore, data limitations within occupational medicine can make measuring the prevalence of obesity in workers’ compensation complicated as height and weight data, the building blocks of the BMI, are not uniformly captured by all medical providers, workers’ compensation carriers and third party administrators.

In a 2011 CWCI analysis, Swedlow matched survey data on 20,000 injured workers which contained self-reported co-morbidity information, including height and weight data, against ICD-9 codes submitted during the course of treatment.<sup>12</sup> The results are shown in Exhibit 3.

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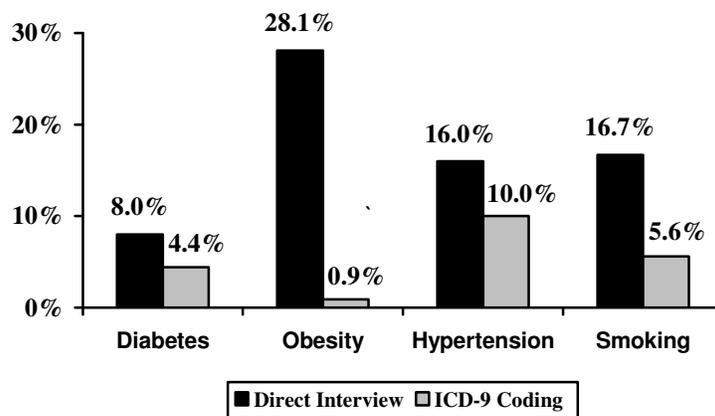
<sup>10</sup> The AMA Guides to the Evaluation of Permanent Impairment, which is used to determine an injured worker’s impairment and disability in California workers’ compensation does not specifically address obesity as a disease, so the concern is whether California case law (Guzman) could lead to rating by analogy.

<sup>11</sup> Most health systems, including workers’ compensation, use the International Statistical Classification of Diseases and Related Health Problem codes (ICD-9 codes) to classify diseases and a wide variety of signs, symptoms, abnormal findings, complaints, social circumstances and external causes of injury or disease, and ICD-9 codes are required for reimbursement for medical services delivered to patients.

<sup>12</sup> Presented at the November 2011 NCCI Actuarial Meeting and the March 2011 CWCI Annual Meeting.

### Exhibit 3.

#### Comparison of Co-Morbidity Prevalence Rates Direct Injured Worker Interview and Submitted ICD-9 Codes



For all four of the co-morbidities included in the analysis, the incidence rates recorded through direct injured worker surveys were significantly higher than the rates identified by the ICD-9 codes on the claims, with the biggest disparity involving the incidence of obesity, which was reported by 28.1 percent of the injured workers surveyed, but which was only included as an ICD-9 code in 0.9 percent of the claims. This is consistent with research findings noted in a recent Los Angeles Times article which showed that more than half of all obese patients have never been told by a medical professional that they need to lose weight, reflecting both the reluctance on the part of some physicians to offend their patients, and an unwillingness to open a lengthy consultation or initiate a course of treatment for which they might not be reimbursed.<sup>13</sup>

### Data

Though obesity among workers' compensation patients has been much more prevalent than indicated by medical bill data, that may soon change if obesity becomes an increased consideration in the treatment of injured workers. To better understand the differences between claims with and without an obesity co-morbidity and to establish a baseline for tracking future changes in obesity rates and claim characteristics within California workers' compensation, the authors used CWCI's Industry Claims Information System (ICIS) database<sup>14</sup> to compile a sample of 1.2 million open and closed workers' compensation claims with dates of injury between 2005 and 2010. This study sample included claims from national and regional (California) workers' compensation insurers, as well as self-insured employers, and was representative of the broad range of policies (industry type and premium/payroll size) and worker and claim characteristics (injury type, demographics) found in the overall population of California workers' compensation claims. The data collected from the sample included injured worker demographics, claim

<sup>13</sup> Healy, M., Gorman, A. AMA Declares Obesity a Disease. The Los Angeles Times, June 18, 2013.

<sup>14</sup> The ICIS database contains descriptive (employer, injured worker and claim milestones such as claim type, litigation, claim notification, etc.) and transaction-level benefit and medical treatment detail (individual benefit payments and medical treatment and medical diagnostic information) on each claim in the study sample.

characteristics, employer characteristics and medical and indemnity benefit payments, as well as a full inventory of medical diagnosis and treatment data, which was used to identify the presence of co-morbidity conditions.<sup>15</sup>

## Results

### Differences in Claim Characteristics

Using the study sample, the authors compared the prevalence of known cost drivers between claims with and without the obesity co-morbidity diagnosis ICD-9 codes. Those cost-drivers included:

- Claim Type (injuries with and without lost time from work)
- Diagnostic Category
- Attorney Involvement
- Presence of Other Co-Morbidities
- Presence of Opioid Painkillers or Psychotropic Prescriptions

### Claim Type

Workers' compensation distinguishes between different types of injuries on a variety of dimensions, the most basic of which is whether the injured worker had an injury which required only medical attention and whether or not there were any temporary or permanent disabling factors. The breakdown of the study sample by type of claim is summarized in Exhibit 4.

#### Exhibit 4. Injured Worker Claim Type: Claims With & Without Obesity Co-Morbidity

	Percent of Claims	
	Claims w Obesity Co-morbidity	Claims w/o Obesity Co-morbidity
Number of Claims	5,597	1,180,276
Percent of Sample (All Claims)	0.5%	99.5%
Medical Only (no lost time)	16.8%	71.5%
Indemnity Claims (any lost time)	83.2%	28.5%
Temporary Disability	15.7%	13.8%
Permanent Disability	67.6%	14.8%

The study sample of accident year 2005-2010 claims shows that those that had obesity as a co-morbidity accounted for a relatively small proportion (0.5%) of the workers' compensation claims, a finding that is consistent with other studies.<sup>16</sup> Exhibit 4 also notes significant differences in claim type, as 83.2% of claims with an obesity co-morbidity were indemnity claims (injuries with paid time off work), triple the rate for claims without obesity as a co-

<sup>15</sup> For example, the presence of ICD-9 codes 278 – 278.02 within an injured worker's medical bill detail were used to identify obesity.

<sup>16</sup> Schmid, F., Laws, C. and Montero, M. Indemnity Benefit Duration and Obesity. NCCI 2013.

morbidity. This disparity was primarily due to the much higher incidence of permanent disability among the obesity claims, as 67.6% of the claimants with an obesity co-morbidity received a permanent disability payment – more than 4.5 times the rate noted for claimants without obesity (14.8%).

### Diagnostic Category

Exhibit 5 shows the top ten injury categories for claims with an obesity co-morbidity, and for comparative purposes, the percentage of non-obesity claims accounted for by these diagnoses.

#### Exhibit 5. Top 10 Diagnostic Injury Categories

	Claims w/Obesity Co-Morbidity	Claims w/o Obesity Co-Morbidity
Medical Back Problems w/o Spinal Cord Involvement	24.0%	14.1%
Degenerative, Infective & Metabolic Joint Disorders	10.8%	2.5%
Sprain Of Shoulder, Arm, Knee, Lower Leg	9.7%	10.0%
Wound, Fracture Of Shoulder, Arm, Knee, Lower Leg	8.0%	2.9%
Other Injuries, Poisonings & Toxic Effects	7.0%	4.9%
Spine Disorders W/ Spinal Cord Or Root Involvement	6.7%	1.0%
Ruptured Tendon, Tendonitis, Myositis & Bursitis	5.7%	3.7%
Hernia	4.4%	0.6%
Carpal Tunnel Syndrome	3.1%	0.6%
Minor Wounds & Injuries	3.0%	17.5%
Sub-total	82.5%	57.8%

The distribution by diagnostic injury category shows that claims with an obesity co-morbidity have been heavily concentrated in just a few injury categories, led by medical back problems without spinal cord involvement – typically back sprain and strain injuries -- which have accounted for nearly a quarter of all obesity co-morbidity claims compared to only about 1 in 7 claims without an obesity co-morbidity.

Other injury categories that have represented a relatively high percentage of claims with an obesity co-morbidity include degenerative, infective and metabolic joint disorders; wounds and fractures of the upper and lower extremities; spine disorders with spinal cord or root involvement; hernias; and carpal tunnel syndrome. The top 10 injury categories have accounted for more than 82% of all claims with an obesity co-morbidity, while these same diagnostic categories have accounted for less than 58% of the claims without an ICD-9 code for obesity.

### Attorney Involvement

Claims that involve attorneys are associated with higher costs than those in which attorneys are not involved because they are usually more complex, remain open longer, and may involve disputes over causation, apportionment, treatment, extent of injury and return to work. Among the 2005-2010 injury claims used for the study, the attorney involvement rate was sharply higher among the claims with the obesity co-morbidity, as shown in Exhibit 6.

## Exhibit 6. Attorney Involvement Rates

	Percent of All Claims	
	Claims w/ Obesity Co-morbidity	Claims w/o Obesity Co-morbidity
Claims w/Attorney Involvement	68.4%	15.4%

More than 68% of the claims with the obesity co-morbidity involved an attorney, which is nearly 4.5 times the attorney involvement rate of claims without the co-morbidity -- a result that is consistent with the prior finding (Exhibit 4), which showed that these claims were 4.5 times as likely to result in permanent disability.<sup>17</sup>

## Presence of Other Co-Morbidities

As noted earlier in the report, the presence of an obesity co-morbidity is often associated with other co-morbidities such as heart disease, diabetes and hypertension. Using the study sample of AY 2005-2010 work injury claims, the authors reviewed the ICD-9 codes and identified those cases that involved any condition that fell into any of five distinct co-morbidity categories: metabolic (e.g. diabetes, thyroid disease); circulatory (e.g. hypertension ,cardiac irregularities); mental health (e.g. depression, bi-polar disorder); inflammation (e.g. arthritis, muscular atrophy); and substance abuse (e.g. tobacco, alcohol, illicit drugs). Exhibit 7 shows the prevalence of other co-morbidities for claims with and without the obesity co-morbidity.

## Exhibit 7. Percentage of All Claims with Additional Co-Morbidities

Co-Morbidity Category	Percent of All Claims	
	Claims w/ Obesity Co-Morbidity	Claims w/o Obesity Co-Morbidity
Metabolic	15.1%	0.9%
Circulatory	29.2%	1.7%
Mental Health	25.6%	3.0%
Inflammation	70.4%	14.0%
Substance Abuse	8.9%	0.9%

Across all 5 co-morbidity categories, claims with an obesity co-morbidity had significantly higher rates of additional co-morbidities than claims without the obesity co-morbidity. The leading example of a specific metabolic co-morbidity is diabetes, a condition often associated with obesity. More than 15% of the claims with an obesity ICD-9 code also had a metabolic co-morbidity, while more than 29% of the obesity co-morbidity claims also had a code indicating a circulatory co-morbidity. Thus, the incidence rates for metabolic and circulatory co-morbidities were 17 times higher for claims with the obesity co-morbidity than for claims without. Rates of mental health, inflammation, and substance abuse co-morbidities were about 9, 5 and 10 times higher for claims with obesity ICD-9 codes than those without. It is likely that the true prevalence of these co-morbidities among all claims is also underreported for similar reasons noted above for obesity.

<sup>17</sup> CWCI's 2012-2013 ICIS Injury Scorecard Series also documented the high level of attorney involvement in permanent disability claims, noting that the attorney involvement rate on AY 2001 through 2007 PD claims at least 42 months post injury ranged between 80% to 90%. CWCI ICIS Injury Scorecard Series, February 2012-April 2013.

## **Presence of Opioid Painkillers or Psychotropic Prescriptions**

Over the past decade, the use of narcotic painkillers – most notably Schedule II opioids such as vicodin, oxycontin and fentanyl – and psychotropic drugs (including Prozac, Valium, and Klonopin) which affect the central nervous system and change patient behaviors or perceptions -- has increased in workers' compensation, so these medications have become significant cost drivers in the system. The authors reviewed the prescription drug payment data from the claims in the study sample to determine the prevalence of these drugs in claims with and without the obesity co-morbidity. The results are shown in Exhibit 8.

### **Exhibit 8. Percentage of All Claims w/Opioid & Psychotropic Pharmaceuticals**

	<b>Claims w/ Obesity Co-Morbidity</b>	<b>Claims w/o Obesity Co-Morbidity</b>
Opioid Rx	69.0%	18.5%
Psychotropic Rx	25.7%	2.7%

The use of both opioids and psychotropic drugs was significantly higher among claims with the obesity co-morbidity than for those without. Opioids were prescribed in nearly 7 out of 10 claims with an obesity ICD-9 code – almost 4 times the rate noted for claims that did not have an obesity co-morbidity; while psychotropics were prescribed in just over a quarter of the obesity co-morbidity claims, nearly 10 times the rate noted for other claims. Again, this finding is consistent with the observed differences in diagnostic categories and other co-morbidities.

### **Differences in Average Medical and Indemnity Cost per Claim and Paid Time off Work (Temporary Disability Days)**

The differences in claim characteristics noted above have significant influence on claim costs and return-to-work outcomes. To gain a better understanding of the association between obesity as a co-morbidity and injured worker claim outcomes, the authors case-mix adjusted the two groups to control for differences in claim type (medical only, temporary and permanent disability claims), age, gender, attorney involvement, diagnostic category and claim status (open/closed claims), then compared the average medical and indemnity payments, as well as the average number of paid temporary disability (lost-time) days for claims with and without the obesity co-morbidity. The results are displayed in Exhibit 9.

**Exhibit 9. Average Case-Mix Adjusted Benefit Payments & Paid Temporary Disability Days per Indemnity (Temporary and Permanent Disability) Claim**

Average Benefit Payments and Paid TD Days per Claim	Claims w/ Obesity Co-morbidity	Claims w/o Obesity Co-morbidity	Difference
<b>Average Total Benefits</b>	\$116,437	\$64,231	81.3%
<b>Medical Benefits</b>	\$68,468	\$35,091	95.1%
<b>Indemnity Benefits</b>	\$47,970	\$29,140	64.6%
<b>Average # of Paid TD Days</b>	242.6	134.7	80.1%

After case-mix adjustment, the authors found that total medical benefit payments (for medical treatment, pharmaceuticals, medical legal, progress reports, etc.) on claims with the obesity co-morbidity averaged \$68,468, or nearly double (+95.1%) the \$35,091 average for claims without obesity as a co-morbidity. Average indemnity payments were also significantly higher, averaging \$47,970 for the claims with the obesity co-morbidity, or nearly 65% more than the average for other claims, so overall, the total payments on claims with the obesity co-morbidity averaged 81% more than for claims without this co-morbidity (\$116,437 vs. \$64,231). In addition, the average number of lost work days was 80% higher for the claims with the obesity co-morbidity ICD-9 code (242.6 days vs. 134.7 days). All of the observed differences were statistically significant ( $p < .05$ ).

**Discussion:** The finding that more than a quarter of all injured workers in California identify themselves as obese, the reclassification of obesity as a treatable disease rather than just a complicating factor, and the resulting pressure on providers to address the condition and on insurers to pay for treatments, increases the likelihood that obesity will become more prevalent in California workers' compensation, not only as a co-morbidity, but as a compensable consequence of injury – for example, when an injured worker gains weight due to inactivity or as a side effect of their prescribed medications. In certain situations, it may even be claimed as a primary diagnosis.

The CWCI analysis of AY 2005 to 2010 claims experience provides important benchmark data about obesity within California workers' compensation prior to the AMA's reclassification of this condition which will be helpful in evaluating the effect of this change over time.

First, obesity is much more prevalent among California injured workers than has been indicated by the 0.9% of all claims that have an ICD-9 code for obesity in the medical bill submissions, suggesting that the number of workers' compensation cases in which obesity will need to be addressed may increase dramatically. Second, while the number of claims in which obesity has been flagged as a co-morbidity is relatively small, the data show that 83% of these claims have involved lost time, and 68% are associated with a permanent disability, with back sprains and strains and upper and lower extremity sprains comprising one-third of the cases. The relative complexity of these claims is also borne out by the high incidence of multiple co-morbidities (including circulatory problems, mental health issues, and most notably inflammatory conditions such as arthritis – which is indicated in more than 70% of the claims that have obesity as a co-morbidity); the high level of attorney involvement; as well as the high percentage of these claims

in which opioid painkillers and psychotropic drugs are dispensed. Given these characteristics, it is perhaps not surprising that the average medical payments on the AY 2005-2010 claims that included an ICD-9 code for obesity were 95% higher than those without, average indemnity payments were nearly 65% higher and the average number of lost work days was 80% higher. To the extent that such disparities continue in the future, these results suggest that any increase in the volume of claims involving the treatment of obesity could have a significant impact on workers' compensation losses.

A review of other research on obesity in workers' compensation provides mixed results. Schmid found that average indemnity payments for obese injured workers were 5 to 6 times as much as those paid to non-obese injured workers.<sup>18</sup> Similarly, a 2007 analysis of the health records of Duke University employees<sup>19</sup> noted that extremely obese workers (BMI  $\geq$  40) not only had twice as many workers' compensation claims as workers in the normal weight range, their medical costs were 7 times higher, and the amount of time they lost from work was nearly 13 times higher – 183.63 days of lost work per 100 full-time employees compared to 14.19 days for those in the normal weight range. In contrast, Shaw's study of injured workers with acute low back pain<sup>20</sup> found that obese injured workers did not initially require additional time off work or significant job modifications, although the study authors note that there still could be longer term issues, which points to the need for additional research to determine if there are differences in closing ratios, timing, claim duration, or use of transitional duty programs that would impact the amount of indemnity paid on a claim that includes an ICD-9 code for obesity.

While this study and much of the other research point to higher costs associated with the presence of obesity in workers' compensation, the issue of liability in cases involving obesity is complicated by the intersection of different healthcare systems. For example, Medicare Set Asides and Secondary Payer requirements, also known as Section 111 reporting, which attempt to distinguish Medicare's responsibilities for treatment from those of other systems such as workers' compensation, may require additional clarification in the definition of obesity as a comorbidity as opposed to obesity as an occupational injury. As with other conditions, workers' compensation payers also may have to address reimbursement requests for conditional payments for obesity treatments made under Medicare.

On the other hand, given the increase in insurance coverage to millions of Americans under the Patient Protection and Affordable Care Act, and the requirement that health insurers cover pre-existing conditions, it could be that workers' compensation insurers who find they have to pay for obesity-related expenses may subrogate against the group health payers, especially in situations where there is evidence that the injured worker was obese prior to the work injury.

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<sup>18</sup> Schmid, F., Laws, C. and Montero, M. Indemnity Benefit Duration and Obesity. NCCI 2013.

<sup>19</sup> Ostbye T, Dement JM, Krause KM. Obesity and Workers' Compensation. Results from the Duke Health and Safety Surveillance System. Arch Intern Med. 2007 Apr 23;167(8):766-73.

<sup>20</sup> Shaw, W., Tveito, T., Woiszwilllo, M.J., and Pransky, G. The Effect of Body Mass Index on Recovery and Return to Work After Onset of Work-Related Low Back Pain. JOEM, Vol 54, No 2, Feb 2012

Despite such uncertainties, it is clear that the implementation of operational and financial changes stemming from the change in classification of obesity as a medical disease will create new challenges and incentives for control and treatment. In a time of major reform within the California workers' compensation system, the impact of changes in the classification of obesity will be an area of continued study and scrutiny.

#### **About the Authors**

Bob Young is the Communications Director of the California Workers' Compensation Institute.

Alex Swedlow is the President of the California Workers' Compensation Institute.

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#### **About CWCI**

The California Workers' Compensation Institute, incorporated in 1964, is a private, nonprofit 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 80 percent of California workers' compensation direct written premium, as well as many of the largest public and private self-insured employers in the state.

California Workers' Compensation Institute  
1111 Broadway, Suite 2350, Oakland, CA 94104; [www.cwci.org](http://www.cwci.org)  
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