NCCI Holdings, Inc.

NCCI RESEARCH BRIEF

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Workers Compensation Prescription Drug Study
2007 Update

Background

Recent events in the prescription drug (Rx) arena may have significant impacts on workers compensation (WC) medical costs. These events include:

- The withdrawal of some major drugs from the marketplace that were used often in WC claims
- Newly approved generic versions of popular drugs
- A slowdown in the number of new drugs introduced

At the same time, we have seen a significant slowdown in the growth of the Rx share of medical costs in the latest year. Whether this is a temporary slowdown or the beginning of a period of moderating trends in WC Rx costs remains to be seen. However, even though the growth rate in Rx has slowed, overall WC medical expenditures continue to rise and Rx expenditures are growing at least as rapidly as overall medical costs.

WC Prescription Drug Study 2007 Update—Key Findings

- There are some signs that the WC prescription drug share of total medical costs is leveling off, at least temporarily.
- Some states' WC prescription drug costs per claim vary significantly from average
- Changes in utilization are the most significant driving force behind changes in total WC prescription drug cost
- Anti-inflammatories and analgesics represent about half of the total amount paid for drugs in WC in 2005, and comprise 6 of the top 10 drugs
- Additional savings of about 12% of total WC prescription drug costs could have been realized from using generic equivalents for the 2005 service year
- In Service Year 2005, drugs with no generic equivalent accounted for 31% of prescription drug costs. This is down sharply from the 53% for Service Year 2002 that we reported in 2004

Enhancements From Previous Studies

Previous NCCI WC drug cost studies were released in 2003, 2004, and 2006. These are available at **ncci.com**. Compared to previous studies, this study:

- Expands the limited 10-state sample to include a nationwide sampling
- Splits aggregated analysis into low-, average-, and high-cost states
- Examines prescribing patterns by age of claim
- Examines observed WC prescription drug share of total medical costs by service year and injury year
- Expands list of top prescribed drugs from 20 to 50 (see Appendix 1)
- Adds a summary of research on "off-label" use of drugs in general healthcare

Study Data

This year's update was expanded to include a nationwide sampling of data. The data used in the study includes claims for injuries that occurred from 1994 to 2005 and services for those injuries that were provided from 1996 to 2005. For the purposes of this study, "prescription drug" is defined as a transaction identified with a National Drug Code (NDC) or with a carrier-specialized drug code. As such, not all drug codes used in WC are included in this study.

Examples of drug codes not included in this study are:

- Healthcare Common Procedure Coding System (HCPCS)
  - Includes physician and drug costs
- Hospital Revenue Codes
  - Do not separately identify drugs
  - Most of the drugs included would be for a single use during some hospital service
- Current Procedural Terminology (CPT) 99070
  - Typically for drugs and supplies used during a doctor visit

Discussion of Findings

Trends in the Prescription Drug Share of WC Medical Costs

Exhibits 1 and 2 show the incremental Rx share of medical costs for each service year[a] or year after injury in which services occur. For example, for injuries that occurred in 2004, the incremental Rx share of medical costs for the second service year is the ratio of amounts paid for drugs dispensed in 2005 to amounts paid for all medical services in 2005. Two important patterns are evident in these exhibits:

First, the share increases for later years of service. For example, for Injury Year[b] 2002, the incremental Rx share of medical costs was:

- 2.3% in the first service year
- 4.2% in the second service year
- 9.9% in the third service year
- 15.3% in the fourth service year

This pattern is evident in both exhibits, for every injury year. The increase in the share across the service years of an injury year is caused more by the drop in incremental medical costs as claims age, rather than by any change in prescription drug costs as claims age. Prescription drug costs are relatively stable from one service year to another for any given injury year.

The second pattern is the generally increasing incremental share in some service years for more recent injuries. For example, for the fourth service year, for Injury Year 1994 the share was about 7%, while for Injury Year 2002 this share was about 15%. However, for Service Years 1 through 4 (Exhibit 1) the latest injury year does not follow this pattern, whereas for Service Years 5 through 12 (Exhibit 2), there is no slowdown in the latest injury year. The removal of certain drugs from the market may have contributed to the decrease in the most recent injury year of service years 1 through 4. This is discussed in detail in a later section. For now, we will examine the effect of this trend on the overall Rx share of medical costs.

Is the Share of Prescription Drug Costs to Medical Costs Stabilizing?

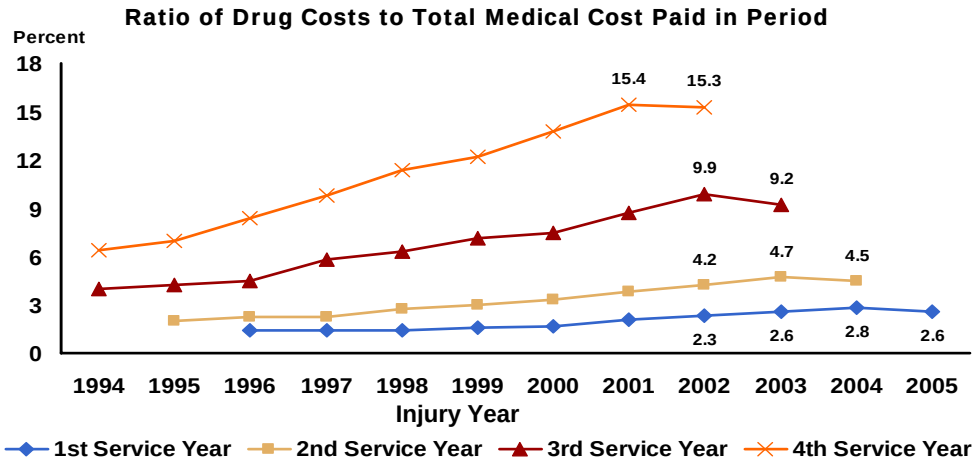

Exhibit 1: Prescription Drugs' Share of Medical Costs

Is the Share of Prescription Drug Costs to Medical Costs Stabilizing?

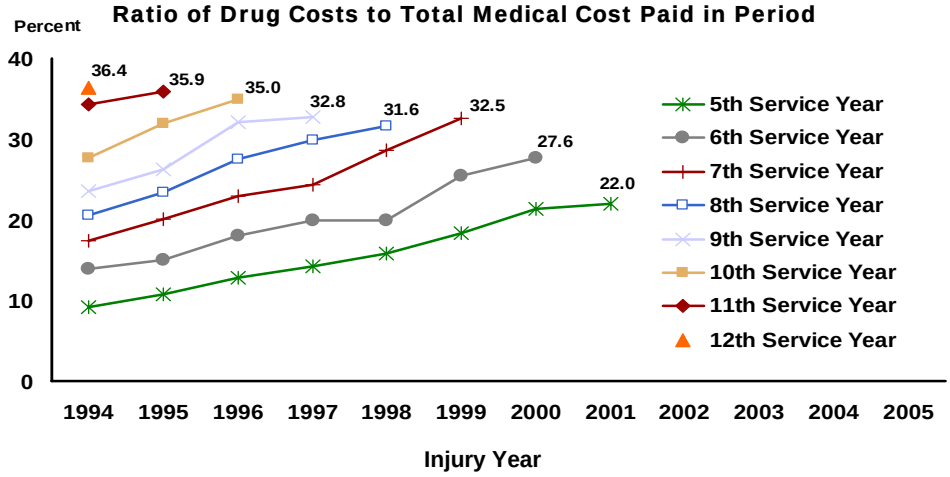

Exhibit 2: Prescription Drugs' Share of Medical Costs

In order to estimate the ultimate cost of prescription drugs, we need to forecast how these trends will evolve in the future. Exhibit 3 displays projections under three scenarios:

- **Not Trended** assumes that the upward trend in each service year would not continue, and so holds the most recent incremental Rx share constant for future injury years (this is the only method used in previous studies)
- **Trended** considers the latest share a temporary adjustment and allows the historical upward trend to continue
- **Trended After 5th Service Year** considers that the trend may continue in the later service years but not the earlier ones

When trended, the trend was continued for four more injury years, and then the ratios were held constant. If the trend continues for another four years, the ultimate Rx share of total medical costs could continue to increase. If the trend does not continue, the ultimate share may stabilize.

Rx Share of Medical Costs
All Study States Combined
Estimated Ultimate

Injury Year[b]	Not Trended	Trended	Trended After 5th Service Year
2001	13.8%	17.1%	17.1%
2002	14.1%	17.6%	17.5%
2003	14.2%	17.9%	17.7%
2004	14.2%	18.2%	17.8%
2005	14.2%	18.4%	17.8%

Exhibit 3

Note: Injury Years 2001 to 2005 evaluated as of July 1, 2006. Additionally, service year figures include data from injury years prior to 2001.

This year's study shows a leveling off in the prescription drug share of total WC medical costs by accident year for the not trended and the trended after 5th service year projections. If the prescription drug share of medical costs remains roughly constant, then, instead of increasing faster than WC medical costs, WC prescription drug costs would rise at about the same rate as overall WC medical costs.

Changes in Price, Utilization, and Cost

Prescription drug costs per claim rose from Service Year 2000 to Service Year 2004 and fell slightly (based on preliminary estimates) in 2005. While costs rose from 2000 to 2004, the rate of increase slowed during that period.

Exhibit 4 shows that the change in total drug costs is driven more by utilization than price. In this exhibit:

- Cost change is the total dollar impact
- Price change is the portion of cost change that can be attributed to price changes of the drugs purchased in the previous year
- Utilization change is the difference between total cost change and price change; it includes changes in the number of prescriptions per claim and the impact of changes in the mix of drugs prescribed (e.g., from existing drugs to newer and higher priced alternatives)

Price changes from year to year are relatively stable and are a small part of the total drug cost change. Utilization changes are the driving force in drug cost changes for WC.

Utilization Is a Bigger Cost Driver Than Price

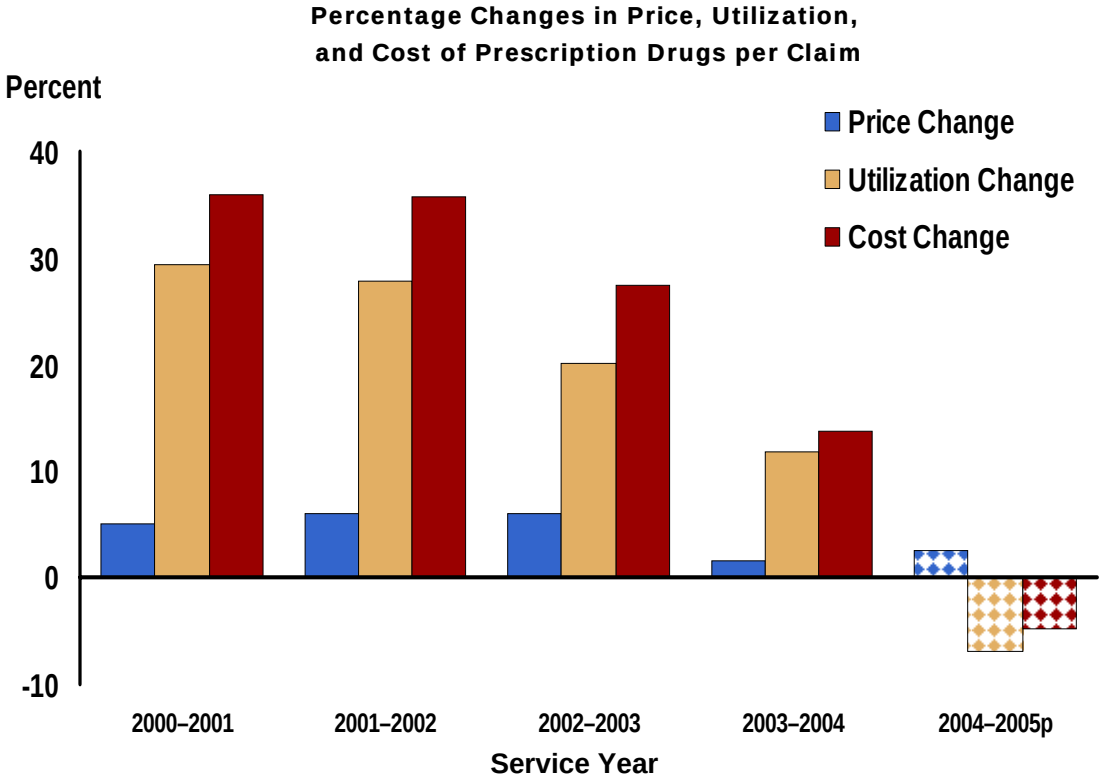

Exhibit 4: Changes in Price, Utilization, and Cost

p Preliminary, most recent service year is subject to material reporting lag, resulting in increases in both the utilization and total impacts at subsequent maturities.

Comparisons Among States

Average prescription drug costs per claim vary widely among states included in the study. We reviewed drug costs per claim for 35 states.

- Almost half (16 out of 35) of the states had prescription drug costs per claim between $400 and $800; we are denoting these as “average-cost” states
- Eleven states had average costs per claim under $400 (“low-cost” states)
- Eight states had costs above $800 per claim (“high-cost” states)

Exhibit 5 shows these 35 states by drug cost per claim category. Throughout the report, for numbers broken out by low-, average-, and high-cost states, the groups shown in the map are used. However, whenever a nationwide number is shown, it is based on all states for which data is available.

It is interesting to note the concentration of low-cost states in the Midwest.

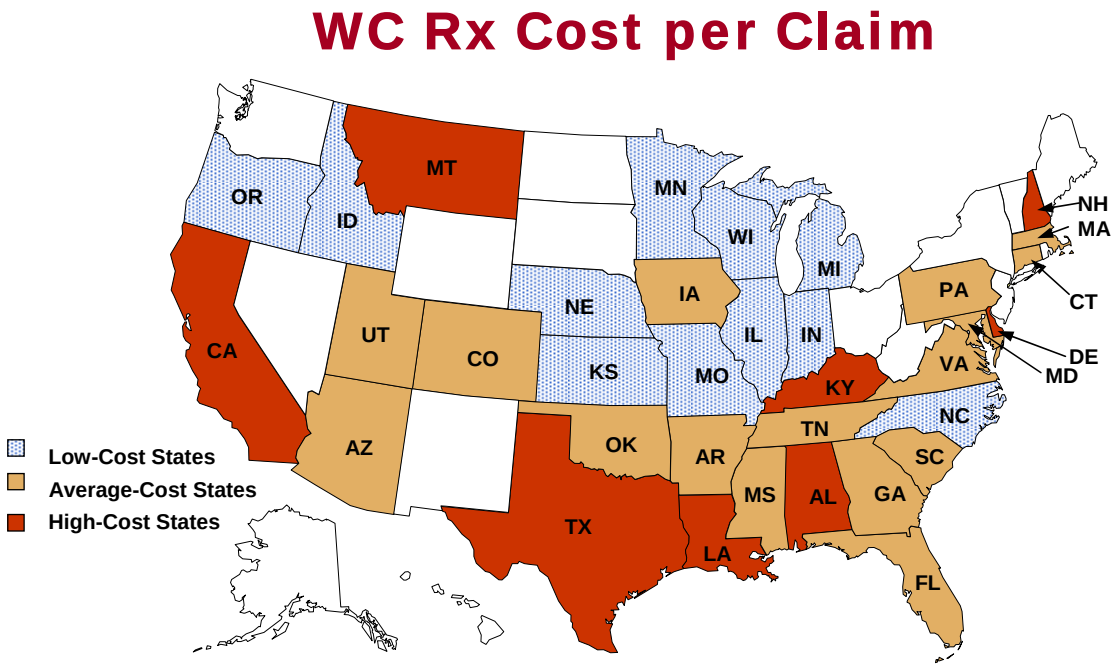

Exhibit 5: Interstate Comparisons

Utilization is the biggest reason for cost differences between states. The relativities to the national average in Exhibit 6 show that (a) price is relatively uniform across low-, average-, and high-cost states and (b) differences in cost come from differences in utilization.

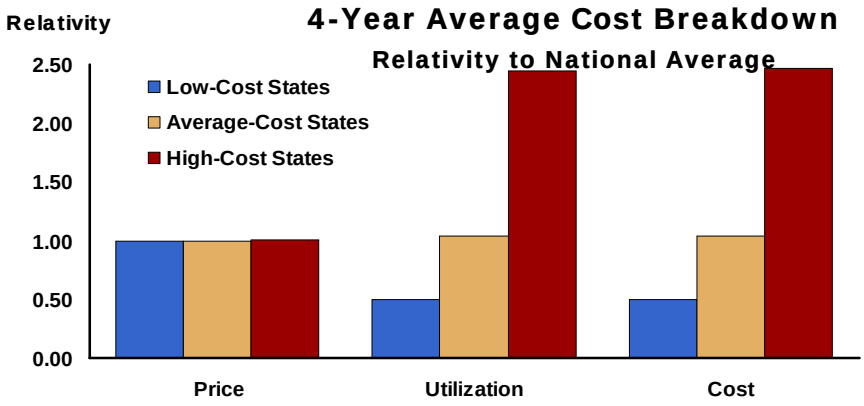

Exhibit 6

Utilization patterns are analyzed in Exhibit 7, which shows relativities to the national average of:

- The percentage of claims involving medical payments with prescriptions
- The number of prescriptions per claim with at least one prescription
- The impact of the mix[c] of drugs prescribed on those claims

The proportion of claims with prescriptions does not vary significantly, although individual states may vary from the group average.

- Lower cost states
  - Had fewer prescriptions per claim with at least one prescription
  - Used a less expensive mix of drugs
- Higher cost states
  - Had more prescriptions per claim with at least one prescription
  - Used a more expensive mix of drugs

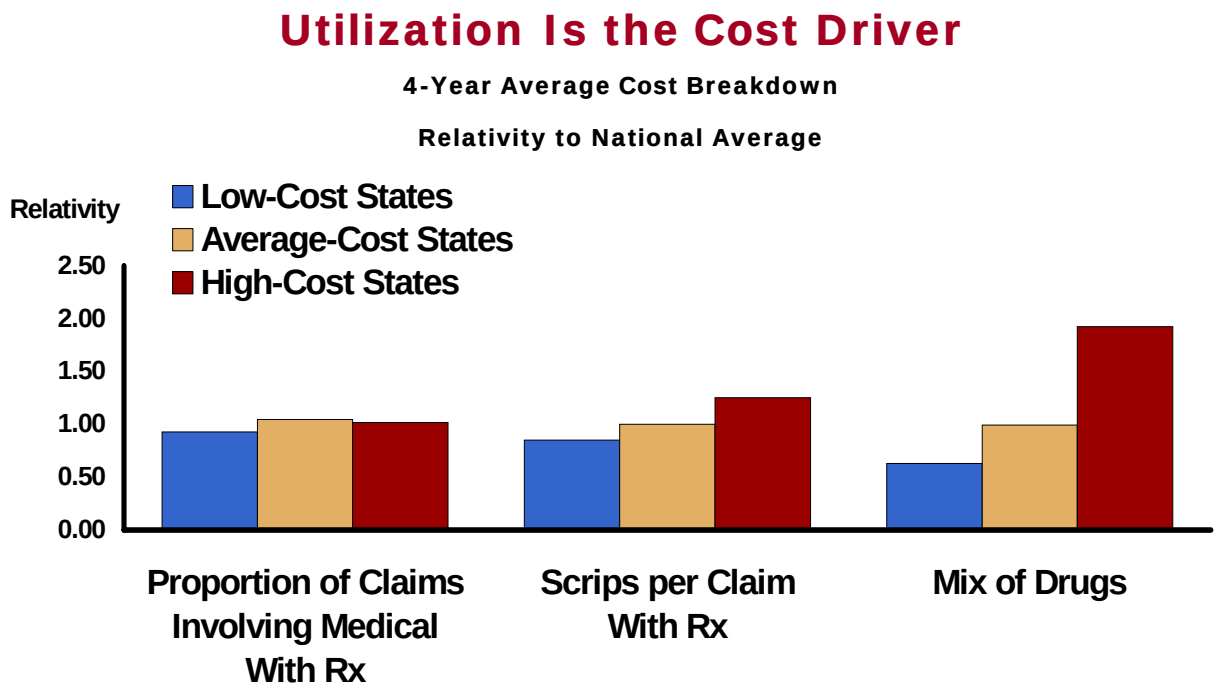

Exhibit 7

Prescribing Patterns

This year's update adds more detail to the drug group analysis, shown in Exhibit 8, by dividing the anti-inflammatories and analgesics into separate categories and adding categories for psychotherapeutics and sedatives/hypnotics. Appendix 1 provides a list of leading drugs in each category. There was a dramatic decrease in the share of prescription drugs paid for anti-inflammatories—dropping from 31% in Service Year 2001 to 16% in Service Year 2005. Conversely, the use of analgesics and muscle relaxants increased during the same period, from 28% to 34%, and 9% to 13%, respectively.

Drug Group	Share of Total Prescription Drugs Paid by Service Year					
	2001	2002	2003	2004	2005	All Years
Analgesics	28%	29%	29%	31%	34%	31%
Anti-inflammatories	31%	27%	24%	22%	16%	23%
Muscle Relaxants	9%	11%	12%	12%	13%	12%
Central Nervous System (CNS) Drugs	8%	8%	9%	9%	9%	9%
Psychotherapeutics	11%	10%	9%	9%	9%	9%
Gastrointestinal Agents	4%	4%	5%	5%	5%	5%
Skin Preparations	1%	1%	2%	3%	4%	3%
Sedatives/Hypnotics	0.4%	1%	2%	2%	3%	2%
Anti-infectives	4%	4%	3%	3%	4%	3%
Other	4%	4%	4%	4%	4%	4%

Exhibit 8

Interesting changes take place for each drug group as claims age. Exhibits 9 and 10 show the distribution of total drugs paid in Service Years 2004 and 2005 respectively. The shares paid for the anti-inflammatories, muscle relaxants, and anti-infectives drop significantly in the first few years of a claim. Conversely, analgesics, gastrointestinal agents, CNS drugs, psychotherapeutics, and sedatives/hypnotics show significant increases in the share of total Rx paid over the same time period. This suggests that these drugs are being used for chronic conditions.

Drug Group	Percentage of Total Prescription Drugs Paid for Service Year 2004 Age of Claim (in Years)											
	1	2	3	4	5	6	7	8	9	10	11	12
Anti-inflammatories	38%	29%	20%	16%	15%	13%	12%	12%	11%	12%	11%	N/A
Analgesics	20%	27%	31%	35%	35%	37%	39%	38%	41%	39%	41%	N/A
Muscle Relaxants	16%	13%	12%	10%	10%	9%	8%	8%	8%	7%	7%	N/A
Anti-infective Agents	10%	3%	1%	1%	1%	0%	1%	1%	1%	1%	1%	N/A
Skin Preparations	2%	3%	3%	3%	3%	3%	3%	3%	3%	3%	2%	N/A
Gastrointestinal	3%	6%	6%	5%	5%	5%	5%	5%	5%	5%	5%	N/A
CNS Drugs	2%	8%	11%	12%	13%	12%	12%	12%	12%	12%	10%	N/A
Psychotherapeutic	2%	6%	9%	11%	12%	13%	14%	14%	13%	13%	14%	N/A
Sedatives/Hypnotics	1%	2%	3%	3%	3%	3%	3%	3%	2%	3%	3%	N/A
Other	5%	3%	3%	3%	3%	3%	4%	5%	4%	4%	6%	N/A

Exhibit 9

Percentage of Total Prescription Drugs Paid for Service Year 2005 Age of Claim (in Years)

Drug Group	1	2	3	4	5	6	7	8	9	10	11	12
Anti-inflammatories	30%	21%	16%	12%	11%	10%	9%	9%	9%	8%	9%	9%
Analgesics	22%	30%	33%	35%	39%	39%	40%	41%	39%	44%	43%	42%
Muscle Relaxants	19%	15%	13%	11%	10%	10%	9%	8%	8%	8%	8%	7%
Anti-infective Agents	12%	3%	2%	1%	1%	1%	1%	1%	1%	1%	1%	0%
Skin Preparations	3%	4%	5%	5%	4%	4%	5%	4%	4%	4%	4%	3%
Gastrointestinal	3%	6%	6%	6%	5%	5%	6%	5%	5%	5%	6%	5%
CNS Drugs	2%	8%	11%	12%	12%	12%	11%	12%	12%	10%	11%	11%
Psychotherapeutic	2%	6%	9%	11%	12%	12%	13%	13%	14%	13%	12%	14%
Sedatives/Hypnotics	1%	3%	4%	3%	4%	4%	3%	3%	3%	3%	3%	3%
Other	5%	4%	3%	3%	3%	3%	4%	4%	5%	5%	5%	6%

Exhibit 10

Placing the values of Exhibits 9 and 10 in a mirror image graphical presentation (see Exhibit 11) highlights the drop in anti-inflammatories from Service Year 2004 to 2005. This decrease in anti-inflammatories, especially for the most recent injury years, appears to be the driving force behind the moderation of the trend in the drug cost share of WC medical costs. The specific anti-inflammatories that contribute to this change are discussed below in “Noteworthy Changes in Rankings.”

Shares Change as Claims Age

Claims for Service Years 2004–2005

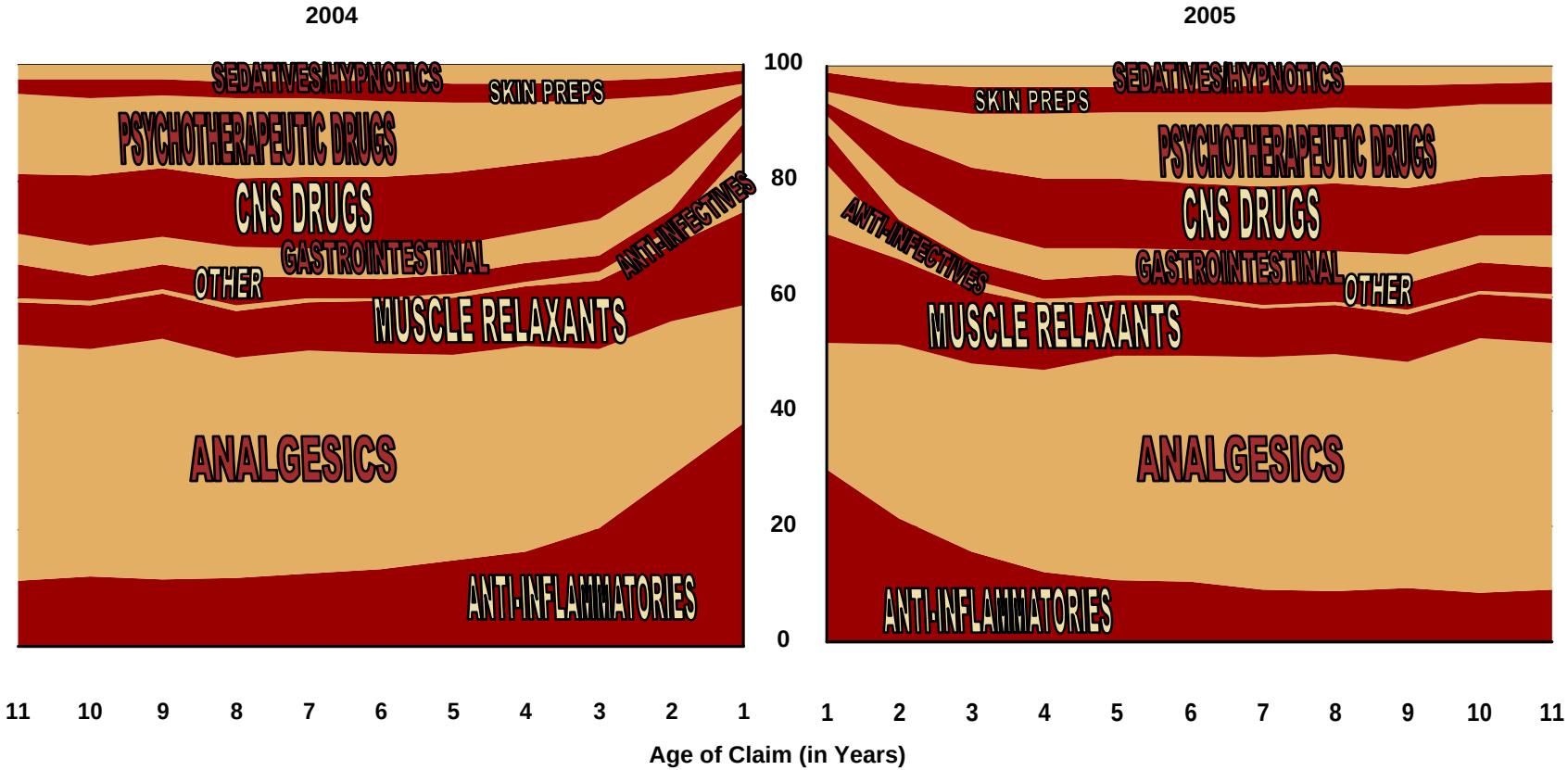

Exhibit 11

Most Frequently Prescribed Drugs in WC

Exhibit 12 shows the rank, by total amount paid, of the top 20 drugs for Service Year 2005.

Rank of Top 20 Prescribed Drugs by Total Paid in WC

Drug Name	FDA Approval	2005	2004	2003	2001–2005
Hydrocodone/Acetaminophen	7/85	1	3	4	3
Gabapentin	9/03	2	38	*	17
OxyContin®	12/95	3	1	1	1
Carisoprodol	<1/82	4	6	6	6
Celebrex®	12/98	5	2	2	2
Lidoderm®	3/99	6	10	15	11
Skelaxin®	4/64	7	9	10	9
Mobic®	8/00	8	21	25	18
Oxycodone HCL	<1/82	9	27	83	24
Naproxen	3/94	10	11	9	8
Actiq®	11/98	11	15	30	20
Cyclobenzaprine HCL	5/89	12	14	12	12
Ambien®	12/92	13	13	13	14
Tramadol HCL	6/02	14	16	16	16
Ranitidine HCL	7/97	15	12	11	13
Duragesic®	8/90	16	7	8	7
Ibuprofen	8/85	17	19	18	15
Fentanyl	1/05	18	--	--	45
Tizanidine HCL	6/02	19	18	14	19
Oxycodone HCL/Acetaminophen	<1/82	20	28	52	31

Exhibit 12

* Insignificant amount (#367)

Note: Drugs listed without registered trademark symbol® are generics.
Source for FDA approval dates: FDA Electronic Orange Book.

Exhibit 13 displays the shares of total prescription drug costs for the top 20 prescribed drugs in Service Year 2005. This exhibit shows that:

- The top 20 prescribed drugs, by total paid, represented 58% of the total prescription drugs paid
- Twelve of the top 20 were generics

For WC prescriptions filled during 2005, generics were supplied 87% of the time when they were available. The remaining 13% of drugs supplied, which corresponds to 19% of costs, would have allowed for an additional savings of about 12% of total prescription drug costs. In the same time period, drugs with no generic equivalent accounted for 31% of total prescription drug costs.

For the 10-state sample used in the 2004 update, the percentage of WC prescriptions using drugs with no generic equivalent declined from our 2004 estimate of 53% for Service Year 2002 to 30% for Service Year 2005. The withdrawal from the marketplace of some major drugs that were used often in WC claims could be a contributing factor to this decline.

Appendix 1 expands Exhibit 13 to the top 50 drugs and arranges them by drug group. Appendix 2 gives a description of the top 11 drugs listed in Exhibits 12 and 13. The top 50 drugs account for almost 80% of the total prescription drugs paid in Service Year 2005.

Top 20 Prescribed Drugs by Total Paid in WC
(Service Year 2005)

Drug Name	% of Total Prescription Drug Paid	Brand vs. Generic
Hydrocodone/Acetaminophen (analgesic)	6.5%	Generic
Gabapentin (CNS* Drug)	4.9%	Generic
OxyContin® (analgesic)	4.7%	Brand (generic available 9/04)
Carisoprodol (muscle relaxant)	4.0%	Generic
Celebrex® (anti-inflammatory)	3.6%	Brand (generic not available)
Lidoderm® (skin preparations)	3.6%	Brand
Skelaxin® (muscle relaxant)	3.0%	Brand (generic not available)
Mobic® (anti-inflammatory)	2.8%	Brand (generic available 7/06)
Oxycodone HCL (analgesic)	2.8%	Generic
Naproxen (anti-inflammatory)	2.6%	Generic
Actiq® (analgesic)	2.4%	Brand (generic not available)
Cyclobenzaprine HCL (muscle relaxant)	2.2%	Generic
Ambien® (sedative/hypnotic)	2.2%	Brand (generic not available)
Tramadol HCL (analgesic)	2.2%	Generic
Ranitidine HCL (gastrointestinal)	2.1%	Generic
Duragesic® (analgesic)	2.0%	Brand (generic available 1/05)
Ibuprofen (anti-inflammatory)	1.9%	Generic
Fentanyl (analgesic)	1.7%	Generic
Tizanidine HCL (muscle relaxant)	1.4%	Generic
Oxycodone/Acetaminophen (analgesic)	1.4%	Generic

Exhibit 13

* Central Nervous System

Noteworthy Changes in Rankings

As in previous studies, we see several indications of the substitution effect taking place when popular brand name drugs go off-patent or are taken off the market and generics are introduced into the market.

OxyContin® was the first extended release version of Oxycodone HCL, which had been on the market for over 25 years. The first generic for OxyContin® (extended release Oxycodone HCL) was approved by the FDA for sale beginning in September 2004. Oxycodone HCL's shares of total WC Rx paid were:

- 2001 through 2003: less than 0.2%
- 2004: 0.9%
- 2005: 2.8%

Oxycodone HCL moved up to rank #9 in 2005.

OxyContin's® shares of total Rx paid were:

- 2001: 9.7%
- 2002: 7.8%
- 2003: 7.3%
- 2004: 6.5%
- 2005: 4.7%

OxyContin's® maker, Purdue Pharma, recently pleaded guilty to charges that they misled regulators, doctors, and patients about the drug's risk of addiction and its potential for abuse.[1] It will be interesting to see what effect, if any, this action will have on the use of OxyContin® in WC.

Neurontin®, which was ranked #3 (6.3% of total medical paid) in Service Year 2003, has disappeared from the top 20 drug list in 2005 data. Neurontin's® generic, Gabapentin, has risen from #367 in 2003, with a 0.01% share, to #2 in 2005, with a 4.9% share. Off-label use of Gabapentin is discussed below.

Anti-inflammatories Vioxx® and Bextra® (ranked #5 and #7, respectively, in 2003 data) have also disappeared from the top 20 list in 2005. Both drugs have been taken off the market: Vioxx® in September 2004 and Bextra® in April 2005. These actions have contributed to the significant decrease in the portion of total prescription drugs paid in Service Year 2005 for anti-inflammatories (see Exhibit 11).

It is not clear what drugs doctors may be prescribing for patients who were taking Vioxx® and Bextra®, although we do see some increase in the analgesics group in that same time period. We also see a significant increase in percentage of total Rx paid for the anti-inflammatory Mobic®—rising from 0.7% in 2003 to 2.8% in 2005 (see Exhibit 14). However, this replacement only accounts for part of the share Vioxx® and Bextra® had had. Given the approval of a generic form of Mobic® in July 2006, it will be interesting to see what change occurs in Mobic's® share of 2006 total Rx paid.

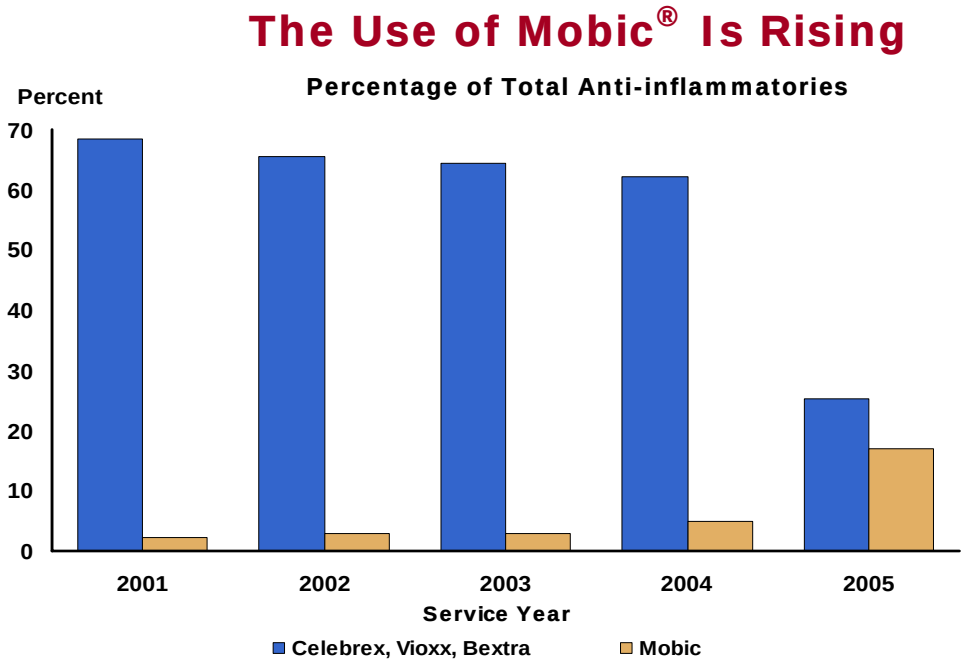

Exhibit 14

The pain medication Actiq® continues to climb the rankings—moving from #30 (0.6% of total prescription drug paid) in 2003 to #11 (2.4% of total prescription drug paid) in 2005. Off-label use of Actiq® is discussed below.

Other Items of Interest

Prescription Drug Expenditure Trends in General Healthcare System

The decline in the nation's general healthcare drug cost growth rate continued for the sixth straight year in 2005. As seen in Exhibit 15, this growth rate peaked at 18.1% in 1999. In contrast, this growth rate was 5.8% in 2005. Projections of national health expenditures by the Center for Medicare and Medicaid Services (CMMS) indicate an end to this downward trend in the average annual percent change in the prescription drug cost share of national healthcare expenditures.[2]

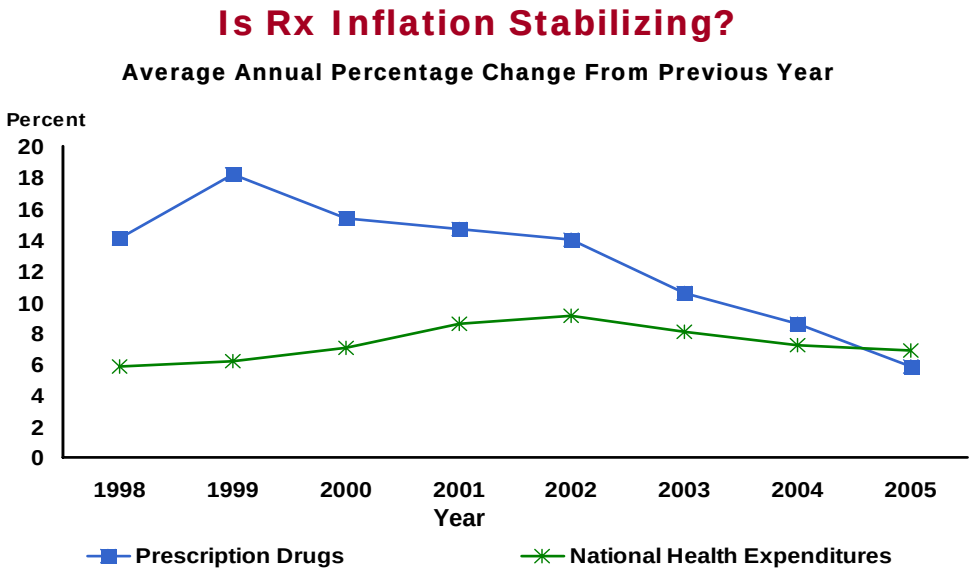

Exhibit 15

Off-Label Prescribing of Prescription Drugs

The FDA approves the use of drugs for certain specific conditions. Prescribing a drug for any other use is called "off-label." A licensed physician may prescribe a drug for uses not approved by the FDA. Off-label uses, in certain circumstances, are appropriate and acceptable medical practice.[3] However, there are many concerns regarding off-label drug use including possible absence of rigorous scientific scrutiny, patient safety, and costs to the healthcare system.

A recent study on off-label drug use[4] published in the *Archives of Internal Medicine* concluded that the practice is common in outpatient care, and most occurs without scientific support. The study used a wide sampling of nationally representative 2001 data that included off-label prescriptions of the 100 most used drugs and 60 other commonly used medications. The major findings of the study are:

- Twenty-one percent of the total number of prescriptions were off-label
- Seventy-three percent of the off-label prescriptions lacked evidence of clinical effectiveness
- Many of the off-label uses were a logical extension of the FDA-approved indications

The study also found that Gabapentin (generic form of Neurontin® and ranked #2 in WC in 2005) had the highest percentage (83%) of off-label prescriptions, with only 20% having strong scientific support. Amitriptyline HCL (#53 in WC) also had a high percentage (81%) of off-label prescriptions.

The study did acknowledge the importance of the ability to prescribe off-label in adding innovation to clinical practices. The authors also called for policy makers to consider strategies to reduce underevaluated off-label prescribing that may affect patient safety or represent "economically wasteful prescribing practices."

Another recent study by the University of Georgia[5] had similar findings regarding off-label prescriptions for CNS drugs according to the Public Affairs News Bureau at the University of Georgia. The study found that 75% of patients who received antidepressants, 80% who received anticonvulsants, and 64% who received antipsychotics received at least one of these drugs off-label.

The study also found that Neurontin® was prescribed off-label 98% of the time in 2001. Information on Pfizer's (manufacturer of Neurontin®) Web site (neurontin.com) states that the drug can be used to treat nerve pain that follows shingles in adults and also treats partial seizures in adults and children. The study found Neurontin® is commonly prescribed for migraine headaches, back pain, and psychiatric conditions such as bipolar disorders.

A study[6] conducted by pharmacy benefit management company Prime Therapeutics LLC, using data from a three-month period in 2005, found a high incidence of off-label prescriptions for the analgesic Actiq® (ranked #11 in WC at 2.4% of total prescription drugs paid). The Prime study found that almost 90% of the Actiq® prescriptions in the study were off-label, or not prescribed according to FDA guidelines. Actiq® is only approved by the FDA for the management of breakthrough cancer pain in patients with malignancies who are already receiving and who are tolerant to opioid therapy for their underlying persistent cancer pain. Only 22% of the patients using the drug in the study had a diagnosis of cancer or AIDS. In addition, more than 15% of the Actiq® prescriptions were for more than the FDA's recommended maximum of 120 lollipops per month.

Future Research

Possible areas of future research include:

- Prices paid in WC compared to average wholesale price and average sales price
- Off-label uses in WC
- What drugs are replacing the "Big 3" Cox-2 inhibitors (Vioxx®, Bextra®, Celebrex®)
- Sequence of drugs over the life of a claim
- Use of related drugs
- Expanded analysis of patterns by age of claim
- Drug use by size of claim, injury type, age of worker, gender

NCCI will continue to monitor and report on prescription drugs and other important issues that affect the WC industry.

CREDITS

John Robertson, Satya Arya, and Gina Cooper of Actuarial and Economic Services, Barry Llewellyn of Regulatory Services, and James Bonk of Data Quality Research contributed to this study.

APPENDIX 1
Top 50 Prescribed Drugs by Total Paid in WC Service Year 2005

Drug Name	Percentage of Total Rx Paid	Rank
HYDROCODONE W/ACETAMINOPHEN	6.53%	1
OXYCONTIN®	4.70%	3
OXYCODONE HCL	2.78%	9
ACTIQ®	2.43%	11
TRAMADOL HCL	2.15%	14
DURAGESIC®	2.03%	16
FENTANYL	1.66%	18
OXYCODONE HCL-ACETAMINOPHEN	1.43%	20
AVINZA®	0.94%	25
PROPOXYPHENE NAPSYLATE W/APAP	0.91%	26
TRAMADOL HCL-ACETAMINOPHEN	0.79%	31
KADIAN®	0.76%	32
ENDOCET®	0.75%	33
PERCOCET®	0.73%	34
ULTRACET®	0.72%	35
MORPHINE SULFATE	0.66%	38
ANALGESICS SUBTOTAL	**29.96%**	
CELEBREX®	3.62%	5
MOBIC®	2.83%	8
NAPROXEN	2.59%	10
IBUPROFEN	1.90%	17
ETODOLAC	1.03%	24
NABUMETONE	0.79%	29
PIROXICAM	0.65%	39
DICLOFENAC SODIUM	0.64%	41
BEXTRA®	0.56%	43
NAPROXEN SODIUM	0.41%	48
ANTI-INFLAMMATORY SUBTOTAL	**15.02%**	
CEPHALEXIN	1.05%	23
ANTI-INFECTIVES SUBTOTAL	**1.05%**	
GABAPENTIN	4.91%	2
TOPAMAX®	1.19%	21
NEURONTIN®	0.88%	27
GABITRIL®	0.38%	49
CENTRAL NERVOUS SYSTEM (CNS) DRUGS SUBTOTAL	**7.35%**	
RANITIDINE HCL	2.09%	15
NEXIUM®	0.65%	40
PREVACID®	0.61%	42

APPENDIX 1 (cont'd)

Top 50 Prescribed Drugs by Total Paid in WC Service Year 2005

Drug Name	Percentage of Total Rx Paid	Rank
GASTROINTESTINAL SUBTOTAL	**3.35%**	
CARISOPRODOL	4.04%	4
SKELAXIN®	3.00%	7
CYCLOBENZAPRINE HCL	2.19%	12
TIZANIDINE HCL	1.44%	19
FLEXERIL®	0.66%	37
BACLOFEN	0.36%	50
MUSCLE RELAXANTS SUBTOTAL	**11.69%**	
EFFEXOR XR®	1.09%	22
CYMBALTA®	0.82%	28
ZOLOFT®	0.79%	30
LEXAPRO®	0.67%	36
PROVIGIL®	0.52%	44
WELLBUTRIN XL®	0.49%	45
ALPRAZOLAM	0.46%	46
SEROQUEL®	0.43%	47
PSYCHOTHERAPEUTIC DRUGS SUBTOTAL	**5.27%**	
AMBIEN®	2.17%	13
SEDATIVE/HYPNOTICS SUBTOTAL	**2.17%**	
LIDODERM®	3.57%	6
SKIN PREPARATIONS SUBTOTAL	**3.57%**	

APPENDIX 2

2005 Top 11 Prescription Drugs in WC

1. **Hydrocodone/Acetaminophin** (hye droe KOE done) / (ah see ta MIH no fen) (generic form of Vicodin®) is a narcotic analgesic used to relieve moderate to severe pain.
2. **Gabapentin** (ga bah PEN tin) (generic form of Neurontin®, approved in 2003) is used in the treatment of some types of seizures and the management of postherpetic neuralgia (nerve pain caused by the herpes virus or shingles).
3. **OxyContin®** (ox i KON tin) is a controlled-release narcotic painkiller prescribed for around-the-clock relief of moderate to severe pain.
4. **Carisoprodol** (kar eye soe PROE dole) (generic form of Soma®) is a muscle relaxant used to treat injuries and other painful musculoskeletal conditions.
5. **Celebrex®** (SELL eh breks) is a nonsteroidal anti-inflammatory drug (NSAID) used to treat pain or inflammation caused by many conditions such as arthritis, ankylosing spondylitis, and menstrual pain. It is also used in the treatment of hereditary polyps in the colon.
6. **Lidoderm®** (LYE doe derm) is used to relieve the pain associated with sunburn; insect bites; poison ivy; poison oak; poison sumac; minor cuts; scratches; and burns; sores in the mouth; dental procedures; hemorrhoids; and shingles (herpes infection).
7. **Skelaxin®** (skell AX in) is a muscle relaxant used to treat skeletal muscle conditions such as pain or injury.
8. **Mobic®** (MOH bik) is a nonsteroidal anti-inflammatory drug (NSAID) used to treat pain or inflammation caused by arthritis.
9. **Oxycodone HCL** (ox i KOE done hydrochloride) is a narcotic pain reliever used to treat moderate to severe pain. The extended-release form of this medication is for around-the-clock treatment of pain.
10. **Naproxen** (na PROX en) (generic form of Naprosyn®) is a nonsteroidal anti-inflammatory drug (NSAID) used to treat pain or inflammation caused by conditions such as arthritis, ankylosing spondylitis, tendinitis, bursitis, gout, or menstrual cramps.
11. **Actiq®** (AK tik) is a narcotic pain medicine used to treat “breakthrough” cancer pain that is not controlled by other medicines.

Note: These drugs may also be used for purposes other than those listed.

Source: Drugs.com.

NOTES

[a] The first service year consists of all services in the calendar year of the injury. The second service year consists of all the services provided in the calendar year following the year of injury, and so on. For example, if an injury occurs in November 1999, any treatments and prescriptions filled in 1999 are part of the first service year, and any treatments in 2000 would be in the second service year. Treatments in 2001 would be part of the third service year, and so on.

[b] WC looks at costs by injury year (the year of injury) because insurance coverage continues (potentially for many years) following the date of injury in WC. This "long-tail" feature of WC is distinct from most other lines of insurance coverage, which are normally confined to the 12-month policy year for which premium is charged. As a result, other types of insurance coverage are much more sensitive to short-term increases in costs, while WC is subject to substantial long-term cost pressures.

The "long-tail" nature of WC is critical and underscores the need for further research. Substantial quantities of medical service are routinely delivered for many years following the occurrence of a WC claim. As a result, estimates of the annual costs and reserves on serious claims must fully account for the compounding effect of medical inflation. For example, at an annual medical cost inflation of 10%, the annual cost of a fixed regimen of medical treatment will be nearly double the first year's cost in the eighth year following the claim.

[c] The term mix refers to all possible drug prescribing pattern differences: brand, strength, size of container, etc. Reasons for such differences are neither examined nor controlled for. Mix difference is cost difference minus difference due to price minus difference due to claims involving Rx minus difference due to number of prescriptions per claim with Rx.

REFERENCES

[1] Barry Meier, In Guilty Plea, OxyContin Maker to Pay $600 Million, *New York Times,* May 10, 2007.

[2] Centers for Medicare and Medicaid Services, Office of the Actuary, National Health Statistics Group, National Health Expenditures, Table 2, 1960–2005. http://www.cms.hhs.gov/NationalHealthExpendData/downloads/tables.pdf

[3] Testimony on Supplemental Indications for Approved Prescription Drugs by Michael Friedman, US Department of Health & Human Services, September 12, 1996.

[4] David C. Radley, MPH; Stan N. Finkelstein, MD; Randall S. Stafford, MD, PhD, "Off-Label Prescribing Among Office-Based Physicians," May, 8, 2006.

[5] Sam Fahmy, "University of Georgia Researchers Find High Rates of Off-Label Prescriptions for Antidepressant, Anticonvulsant and Antipsychotic Drugs," University of Georgia, Public Affairs News Bureau, July 25, 2006.

[6] Study Finds 90 Percent of Actiq "Lollipop" Prescriptions Are Off-Label, Prime Therapeutics LLC, January 16, 2007. http://www.primetherapeutics.com/PDF/actiq.pdf