

## Motivating the Tipping Point for Appropriate Medication Utilization

**High-Risk Profiling Study reveals important medication utilization trends for injured workers.**



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*Do you know...*

*...over 22% of injured workers are treated by multiple prescribers who may be unaware of other medication therapies prescribed for their patients?*

*...28% of injured workers have duplicate medication therapies—many without the knowledge of their prescribers?*

*...nearly 7% of injured workers receive doses of acetaminophen higher than the recommended maximum dosage per day—placing them at risk of liver damage?*

*Note: Numbers based on PMSI High-Risk Profiling Study population.*

What if there were a tool that could actually show all the opportunities for intervention to safeguard the health of injured workers from inappropriate medication utilization—in time to affect positive outcomes?

And, what if there were the added bonus of controlling costs and mitigating risk with these interventions?

With MedAssess Targeted Intervention, you have access to such a tool through the **High-Risk Profiling Service** (formerly known as Arkos Risk Management™ System). This retrospective medication utilization review detects high-risk drug therapies. Then, through the intervention of clinical pharmacists, prescribing physicians are alerted regarding the medication issues or conflicts identified.

To measure the effectiveness of the Arkos program, PMSI conducted a *High-Risk Profiling Study*, designed to evaluate the impact of this risk management and cost-containment strategy, as well as document the associated savings. Within the study, the medication therapy of more than 2,000 injured workers was evaluated, and the findings were remarkable.

Data indicated that the use of a retrospective medication utilization review, combined with clinical intervention, yielded an average annual savings of \$1,100 to \$1,500 per injured worker—for a total annual program savings

of \$1.1 million. The average savings to the payor on the total annual drug spend for each of the 896 injured workers with successful interventions was 18.3%.

It is important to note that this study primarily represents the direct savings attributable to resolving drug therapy issues such as therapeutic duplications, high dosage, inappropriate duration of therapy and multiple prescribers—a small portion of the total savings achievable through a medication review program. Even greater savings can be realized from avoiding the hospitalizations, emergency room care and additional medical visits often caused by such drug therapy issues.

### COMPLICATED DRUG THERAPIES ENDANGER INJURED WORKERS AND DRIVE UP COSTS

Inappropriate medication utilization continues to be a major cost driver in all healthcare settings, including the workers' compensation pharmacy market. In its publication *Preventing Medication Errors*, the Institute of Medicine reported an annual cost of \$887 million due to adverse drug events in the ambulatory setting. The factors that can affect medication utilization start with this principle: Drug therapies can be complicated and often the prescribing physician is not aware of all the risk factors.

**“Inappropriate medication utilization continues to be a major concern in the care of injured workers...and exposure to liability and subsequent litigation is of considerable concern to payors.”**

**– Dr. Maria Sciame**



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**IMPORTANT TRENDS IN NEED OF INTERVENTION AS REVEALED BY THE HIGH-RISK PROFILING STUDY**

- In 22% of the cases studied, injured workers were treated by multiple prescribers, possibly leading to patient confusion, undesirable drug interactions, therapeutic duplications, additive adverse effects and potential abuse situations.
- Therapeutic duplication occurred in 28% of injured workers studied.
- Nearly 7% of injured workers studied received doses of acetaminophen higher than the recommended maximum daily dosage (4,000 mg)—placing them at risk of liver damage.
- Over 17% of the injured workers in the study group overused prescriptions by treating chronic pain with medication intended for short-term use.

**CHALLENGE OF MEASURING THE BENEFITS OF CONVERSION TO APPROPRIATE MEDICATION THERAPIES**

Workers’ compensation PBMs have developed various programs to manage medication utilization and contain costs through formulary management, concurrent and retrospective drug utilization reviews, generic conversion, and mail order conversion programs. These strategies are designed to promote good health outcomes and control expenses through direct savings and cost avoidance. Although quantifiable savings have been demonstrated with many of these programs, PBMs have had limited success in capturing the direct savings associated with their drug utilization review initiatives. More elusive is the quantification of the impact these utilization review strategies have had in avoiding unnecessary medical expenditures and mitigating risk by conversion to more appropriate medication therapies.

And it’s not just the measurement that’s hard to pin down. The industry is also challenged with identifying the most effective next steps to influence more appropriate medication prescribing. For some time, the impression has been that with the growing mountain of pharmacy utilization data out there, these next steps would be universally accepted and implemented. The reality is that effective tools for influencing medication utilization beyond formulary controls and point-of-sale edits are scarce.

Furthermore, the impact of run-away drug utilization on total medication spend is evident. Payers are realizing that escalating Average Wholesale Prices (AWPs) are not the only drivers of increasing costs—inappropriate medication utilization is also a large part of the equation. The industry needs effective tools for managing medication utilization as well as data that demonstrates the effectiveness of these programs in producing measurable savings and improved health outcomes. This data can then be leveraged to persuade prescribing physicians to respond and act upon advisories warning them of inappropriate medication use. This is the fine edge of an industry tipping point.

**TAPPING TECHNOLOGY TO INFLUENCE PRESCRIBER BEHAVIOR CHANGE**

With today’s complicated drug therapies, there are more instances of off-label usage, multiple prescribers and multiple pharmacies leading to increases in utilization and higher cost. The dilemma that today’s new drug is tomorrow’s management challenge is evidenced by the increased use of new opioid medications prescribed for injured workers. The ramifications of this variable alone, with its corollaries of potential addiction and resultant liabilities, compel PBMs to develop strategies to detect and intervene on high-risk medication therapies.

The need for technology capable of evaluating hundreds of thousands of pharmacy transactions for risk, coupled with interventions targeted at risk reduction and appropriate utilization is evident. The primary method for influencing prescriber behavior lies in the PBM’s ability to develop and utilize such technology and implement an effective clinical intervention program. This powerful combination, which affects change in prescribing patterns, results in appropriate medication utilization and optimal cost reduction. The tipping point is the dynamic between prescriber, injured worker and payor or PBM.

**PMSI’S HIGH-RISK PROFILING STUDY: ANALYZING THE EFFECT OF CLINICAL INTERVENTION**

Retrospective medication reviews are not the solution by themselves—but rather the tool with which to build strong cases to gain the cooperation of prescribing physicians. Since its rollout in 2006, High-Risk Profiling (Arkos) has been used to analyze the medication profiles of injured workers for high-risk medication usage for the purpose of reducing cost and mitigating risk by encouraging more appropriate medication utilization. The *High-Risk Profiling Study* documents the effectiveness of intervening in high-risk prescribing behaviors that negatively affect the injured worker and the payor. As a result of these interventions, therapeutic duplication and overuse concerns were successfully resolved 33% of the time, high-dosage issues 20.5% of the time, and multiple prescriber warnings were acted upon 20.7% of the time.

**Data indicated that the use of a retrospective medication utilization review, combined with clinical intervention, yielded an average annual savings of \$1,100 to \$1,500 per injured worker—for a total annual program savings of \$1.1 million.**

**Table 1** describes the methodology employed in the *High-Risk Profiling Study*. Medication-related issues were termed “conflicts.” The medication profiles of the 2,070 injured workers included in the study were evaluated for resolution of the conflict(s) noted on the prescriber advisory letter four months after letter submission.

**Table 2** defines the medication-related conflicts evaluated in the study and consolidates them into conflict groups. Conflict definition and distribution among the study population is noted. A total of 5,032 conflicts were evaluated for resolution.

**Table 3** lists the definition of a successful outcome for several of the most common study conflicts.

**TABLE 1. HIGH-RISK PROFILING STUDY—METHODOLOGY**

<p><b>Inclusion Criteria</b></p> <p>Top nine conflicts that generated a prescriber advisory letter, by frequency and clinical significance, and had measurable endpoints (coded as <b>targeted conflicts</b>)</p> <p>All other conflicts included in a prescriber advisory that had measurable endpoints but were not targeted conflicts (coded as <b>secondary conflicts</b>)</p> <p><b>Exclusion Criteria</b></p> <p>Conflicts without measurable endpoints (for example, recommendation for lab test)</p>	<p><b>Sample Population</b></p> <p>Original population of injured workers meeting inclusion criteria 2,476</p> <p>Number of injured workers no longer on service 406</p> <hr/> <p><b>Final study sample size 2,070</b></p> <p>Number of targeted conflicts in sample population 3,427</p> <p>Number of secondary conflicts in sample population 1,605</p> <hr/> <p><b>Total conflict sample size 5,032</b></p>
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Review type: Retrospective medication profile evaluation  
 Intervention period: January – June 2007 High-Risk Profiling (Arkos) cycles  
 Review period: 120 days post-intervention  
 Collection period: August – November 2007

**TABLE 2. CONFLICT DEFINITION AND DISTRIBUTION**

Conflict		Alert Messages	Number of Conflicts	% of Total Conflicts
<b>Therapeutic Duplication</b>			<b>1,418</b>	<b>28.0%</b>
Targeted	NSAIDs	Therapeutic duplication of NSAID agents and/or COX2 inhibitors may be occurring.	128	2.5%
	Skeletal muscle relaxants	Therapeutic duplication of skeletal muscle relaxants may be occurring.	244	4.8%
	Opioids	Duplicate therapy of opioid analgesics may be occurring.	928	18.4%
Secondary	All other therapeutic duplications		118	2.3%
<b>High Dose</b>			<b>328</b>	<b>6.6%</b>
Targeted	APAP	The maximum recommended dose of acetaminophen is 4,000 mg per day.	260	5.2%
	Toradol	Toradol (ketorolac) may be over-utilized.	4	0.1%
Secondary	All other high-dose precautions		64	1.3%
<b>Overuse Precaution</b>			<b>871</b>	<b>17.3%</b>
Targeted	Cyclobenzaprine	Cyclobenzaprine should be used only for short periods.	307	6.1%
	Meperidine	Potential hazards of meperidine are related to its toxic metabolite— it is not intended for chronic pain management.	170	3.4%
	Carisoprodol	Carisoprodol is usually intended for short-term use.	263	5.2%
Secondary	All other overuse precautions		131	2.6%
<b>Multiple Prescribers</b>			<b>1,123</b>	<b>22.3%</b>
Targeted	Utilizing multiple prescribers in the ambulatory environment can cause patient confusion, drug interactions, therapeutic duplications, additive adverse effects and possible medication abuse.		1,123	22.3%
<b>Additional Secondary Conflicts*</b>			<b>1,292</b>	<b>25.8%</b>
<b>Totals</b>			<b>5,032</b>	<b>100.00%</b>

\*Additional secondary conflicts included medication issues related to cost, drug-drug or drug-disease interactions and therapeutic appropriateness.

**TABLE 3. DEFINITION OF SUCCESSFUL OUTCOME FOR TARGETED CONFLICTS**

THERAPEUTIC DUPLICATION	
NSAIDs Skeletal muscle relaxants Opioids	If the targeted medication or its related duplicative medication was discontinued and remained discontinued by the end of the review period, then the intervention was a success.
HIGH DOSE	
APAP	If the daily amount of acetaminophen was less than four grams by the end of the review period, then the intervention was a success.
Toradol	If the medication was discontinued, or if the daily amount was less than 40 mg per day by mouth or 120 mg per day by IV or IM, and duration of therapy was less than or equal to five days by the end of the review period, then the intervention was a success.
OVERUSE PRECAUTION	
Cyclobenzaprine Meperidine Carisoprodol	If the targeted medication was discontinued and remained discontinued by the end of the review period, then the intervention was a success.
MULTIPLE PRESCRIBER	
Any medication	If the injured worker utilized less than four prescribers, who were located in separate practices or locations, within the last two months of the review period, then the intervention was a success.

**DATA REVEALS COST BENEFITS OF THE RISK MANAGEMENT PROGRAM**

Figure 1 provides an overview of the average annual savings per injured worker resulting from successful resolution of one or more medication-related conflicts. As stated, successful interventions—those in which the prescribing physician responded to an intervention notification and altered therapy—produced an average annual savings of \$1,100 to \$1,500 per injured worker per year. The study was balanced by extracting data that looked at annual savings per injured worker without regard to the success of the intervention. This data indicates that the program yields average annual savings of \$400–\$700 per evaluated injured worker. As stated, payors realized an average savings of 18.3% on the annual drug spend of each of the 896 injured workers achieving successful resolution of their medication-related problem(s).

**FIGURE 1. AVERAGE ANNUAL CASE SAVINGS—SUCCESSFUL VERSUS PROPOSED**



**The study showed that as a result of interventions, therapeutic duplication and overuse concerns were successfully resolved 33% of the time, high-dosage issues 20.5% of the time, and multiple prescriber warnings were acted upon 20.7% of the time.**

## ANNUAL PROGRAM SAVINGS EXCEEDS \$1 MILLION

When considering the total cost savings for all injured workers with successful interventions (n=896), the real value of a retrospective medication utilization review program becomes apparent. **Figure 2** shows an annual total program savings of \$1.1 million for the studied population.

## THE TIPPING POINT FOR APPROPRIATE MEDICATION UTILIZATION

The *High-Risk Profiling Study* data allows us to witness the tipping point of appropriate medication utilization. The feasibility of the intervention program is evident—and it is positioned to grow as an expected resource for prescribing physicians. Further, the data demonstrates that a clinical retrospective drug review program is instrumental in reducing inappropriate medication use and, therefore, reducing the risk to the injured worker, and minimizing the cost and liability exposure for the payor.

It is important to note that this study documents only a portion of the direct savings associated with the program, as only a sample of

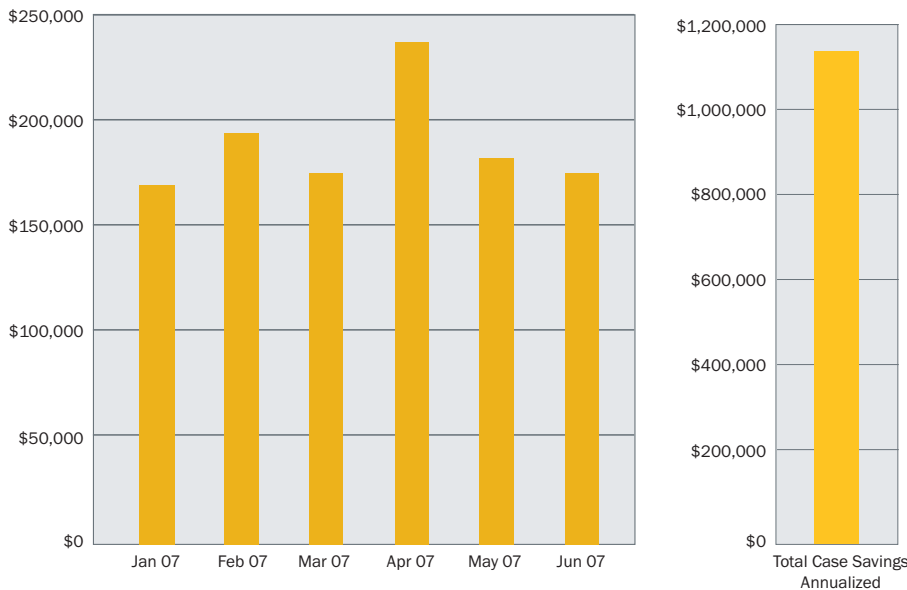
the total conflicts were captured. It is equally important to realize that direct savings represent a small portion of the total savings potential for this program.

## BOTTOM LINE: STRATEGIC PARTNERSHIP HAS REAL VALUE

True progress in cost containment and risk mitigation is accelerated when PBMs, prescribers and payors become strategic partners. PMSI's Arkos system enables the evaluation of hundreds of thousands of injured worker profiles. As a result, PMSI is able to provide physicians with essential information for improving the care of injured workers and also provide business partners with actionable data to better understand and control drug spend and reduce risk. In addition, we alert our business partners of opportunities for additional monitoring and intervention for individual injured workers who may be at high risk for poor health outcomes as a result of medication adverse events.

The benefit of the partnership between the PBM, prescriber and payor to the injured worker cannot be overestimated. The interaction of these three partners is the tipping point for driving appropriate medication utilization and positive outcomes.

**FIGURE 2. ANNUAL COST SAVINGS BY ARKOS CYCLE MONTH**



**This study only represents direct savings—a small portion of the total savings achievable through a retrospective medication review program. Even greater savings can be realized from the avoidance of hospitalizations, emergency room care and additional medical visits that often result from medication errors and adverse events.**

## ABOUT THE AUTHOR

Maria Sciamé, PharmD, CDE, RRT, Director of Clinical Services has over 10 years of experience in clinical practice and pharmacy administration. She serves as Clinical Assistant Professor of Pharmacy, University of Florida, has directed several clinical trials, and is a published author. Dr. Sciamé is also member of the American College of Clinical Pharmacy and the American Pharmacists Association.

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