EVIDENCE-BASED REPORT

An AI-Based Risk Management Tool Reduced Cost Impact of Opioids for a Third-Party Administrator

Program: OpioidRx-AI · Self-Insured Health Plan (10,000 Members)

Duration: 12-Month Intervention

Organization: Opioid Clinical Management Inc. (OPCM)

75%	**$2.28M**	**99%**
Reduction in members with high-risk Rx	Total health plan spending saved	Provider adoption of best prescribing practices

Introduction

The opioid epidemic is a complex and evolving public health crisis.[1] In the United States, opioids were reportedly responsible for 15.8 deaths per 100,000 individuals in 2019.[2] Opioid medications play an important role in pain management, but their use is associated with risks of misuse, overdose, addiction, and diversion. Among patients with chronic pain treated with opioids, the risks of misuse and addiction have been estimated at 21%–29% and 8%–12%, respectively.[3]

Moreover, among patients with an opioid addiction entering substance abuse treatment programs across the United States whose use or dependence began in the 2000s, 75% were introduced to opioids via prescription drugs.[4]

> *At a 2017 Opioid Misuse Prevention Summit, Dr. Don Teater demonstrated that among individuals given a 1-day, 8-day, or 31-day opioid prescription,* **6%, 13.5%, or 30%** *were still using the drug 1 year later — continuing to re-fill prescriptions because of discomfort associated with drug discontinuation, even though their pain had subsided.*[5]

Opioid medications have been associated with financial burden for health plans and their members. Increased total and prescription healthcare expenditures and resource utilization were observed among 31,696,671 adults prescribed an opioid compared to 31,536,639 adults without an opioid prescription in a serial cross-sectional study (2008–2017). Total annual expenditures were estimated at **$16,542** for a respondent with an opioid prescription versus **$7,067** without, and the total annual economic burden among individuals with an opioid prescription was estimated at **$524 billion**.[6]

Further, in a retrospective study on administrative claim data from 9,342 pairs of beneficiaries, **$14,810** in excess annual healthcare costs occurred in individuals diagnosed with opioid abuse, dependence, and overdose/poisoning.[7]

The quality of education on opioid prescribing received by medical students and residents has been shown to vary.[8] Moreover, exposing HCPs to opioid educational information has been associated with decreased opioid prescribing for chronic pain.[9] Therefore, the appropriate training of HCPs on opioid prescribing and adoption of best prescribing practices should be verified, and suboptimal prescribing practices should be identified and improved in a timely manner.

Many health plans rely on analytic programs provided by their pharmacy benefit managers (PBMs) to identify prescription patterns associated with a risk of opioid abuse. However, there is a need to identify the risk of opioid misuse and addiction earlier.

This report illustrates how OpioidRx-AI helps to identify HCPs potentially overprescribing opioid medications and to take action to improve these patterns in a health plan governed by a third-party administrator.

Methods

The AI-based risk management tool OpioidRx-AI, developed by Opioid Clinical Management (OPCM), was integrated to analyze and manage opioid prescription patterns in a 10,000-member self-insured health plan governed by a third-party administrator over 12 months.

Data Analysis

Using deidentified healthcare data from the medical records of the plan, patterns of opioid withdrawal effects, early indications of dependency, and unnecessary costs were detected. This allowed the identifica-

tion of providers who were potentially overprescribing opioids.

Member Cohort Tracking

Cohorts of plan members classified as being at-risk for opioid abuse were followed up each quarter. Members identified as at-risk were subsequently classified as *still-at-risk* or *non-at-risk* according to their opioid prescription utilization each quarter.

Enrollment and claim data were summarized each quarter for three member categories: (1) non-identified members (without opioid prescription history); (2) identified as still-at-risk for opioid abuse members; and (3) identified as not-at-risk (no longer at risk) for opioid abuse members.

Each quarter, a new cohort of members was identified as at-risk for opioid abuse based on their utilization of opioid prescriptions. Each cohort was tracked separately, with categorization of enrollment data and medical and prescription drug claims.

Provider Outreach

OPCM pharmacists confidentially contacted and educated the potentially overprescribing HCPs on the plan provider's behalf to validate or educate adoption of CDC's best practices for prescribing opioids. The participating pharmacists were retail pharmacists with over 20 years of experience.

> *Prescribers included in the program informed plan members of the intervention. Plan members could be asked to sign an opioid contract, undergo a drug screen, and be referred to a pain specialist.*

Results

Reduced Members with High-Risk Opioid Prescription

Over the course of the program, the number of plan members in the initial cohort with a high-risk opioid prescription decreased by approximately **75%** — from 196 at baseline to 50 after 12 months.

HIGH-RISK MEMBER REDUCTION

75%

Decrease in plan members with a high-risk opioid prescription — from 196 at baseline to 50 at 12 months.

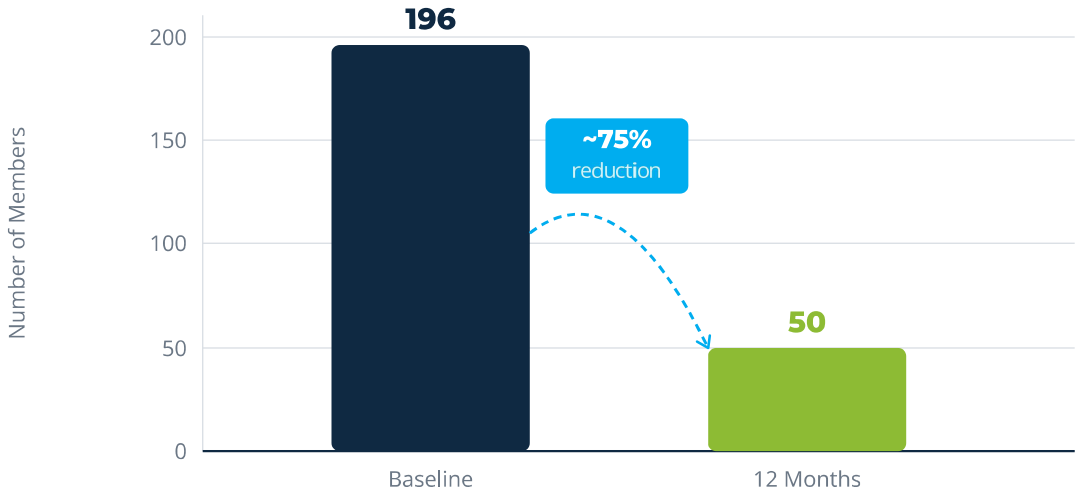

Figure 1. *Number of plan members with a high-risk opioid prescription at the beginning of the program and after 12 months.*

Increased Provider Conformance with CDC Guidelines

A sample of 928 providers was tracked for 1.5 years after initial OPCM contact. The difference in mean conformance rate across all guidelines between initial contact and 1.5 years later shows high statistical significance with paired t-test: p=0.00e+00, n=928. A threshold of $p < 0.05$ is generally used to determine statistical significance; p values of nearly zero indicate remarkable significance.

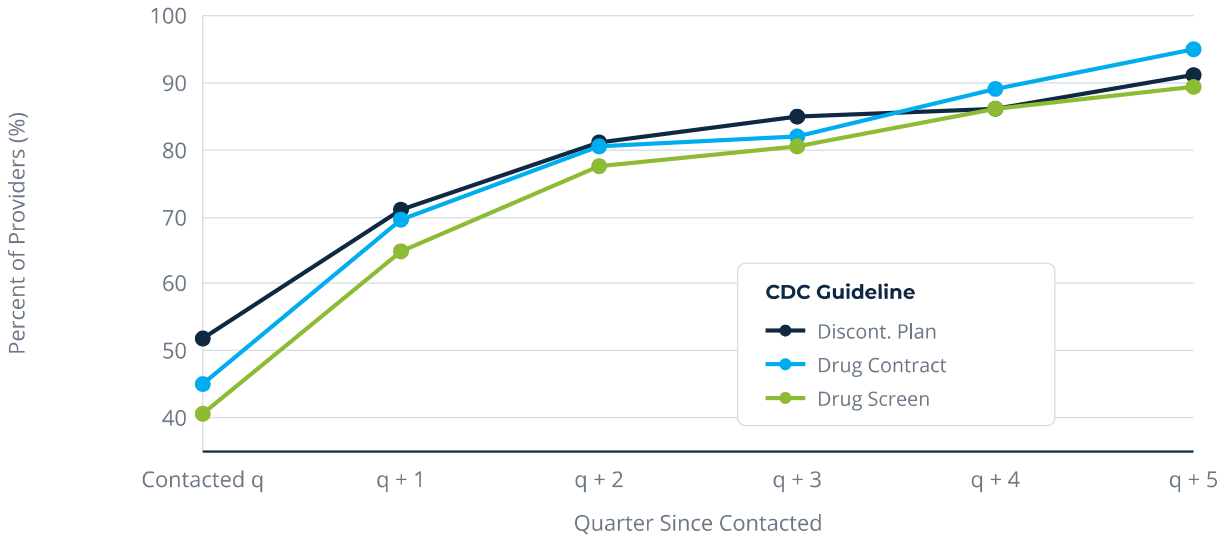

Figure 2. *Rate of provider adherence to each CDC guideline for opioid prescribing increases by at least 75% after first OPCM contact.*

Reduced Mean Health Plan Cost per Member

Throughout the 12-month study period, a **56%** reduction in the mean health plan cost per member with a high-risk opioid prescription was observed — from **$17,152** to **$7,516**.

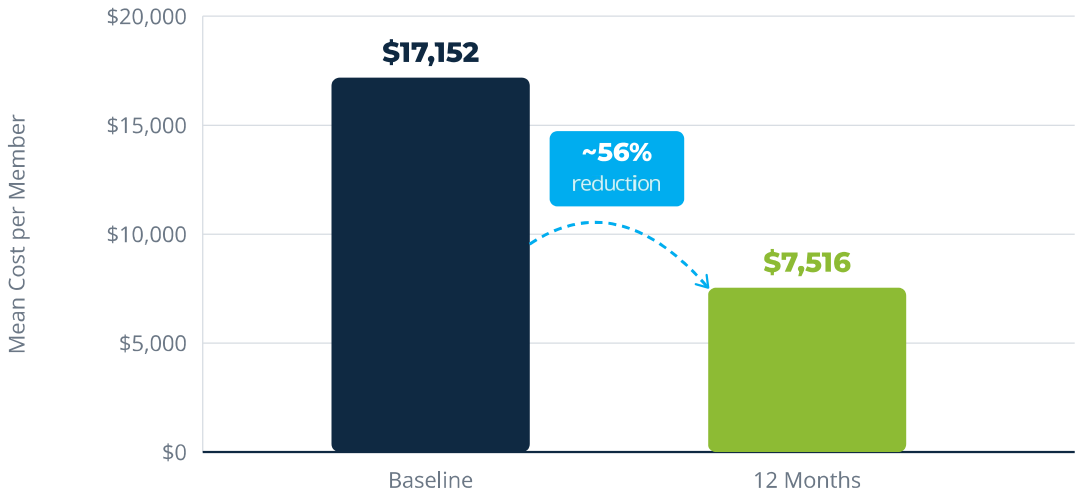

Figure 3. *Mean health care plan cost per member with a high-risk opioid prescription at the beginning of the program and after 12 months.*

For the initial cohort, the average cost per member per month (PMPM) varied from $900 to $1,500 for at-risk members compared to approximately $400 PMPM for the no-longer at-risk members — a savings of more than $500 PMPM. The at-risk opioid user's cost PMPM averaged approximately 12 times the cost of non-identified members, while the no-longer at-risk population cost was approximately 2.5 times the cost of non-identified members.

Increased Adoption of Best Practices

Over the 12 months of the program, the rate of provider adoption of best prescribing practices for opioids reached **99%** (313 of 315 providers).

PROVIDER BEST PRACTICE ADOPTION

99%

313 of 315 providers adopted best opioid prescribing practices by the end of the 12-month program.

Savings in Total Health Plan Spending

Over the course of the program, savings in total health plan spending related to opioid overprescribing reached **$2.28 million**.

TOTAL HEALTH PLAN SAVINGS

$2.28M

Savings in total health plan spending related to opioid overprescribing over 12 months.

Behavioral Health Impact

In patients with an opioid prescription, prescriptions for antidepressants, antipsychotics, and benzodiazepines decreased by **57%**, **45%**, and **49%**, respectively, over the 12 months of the program.

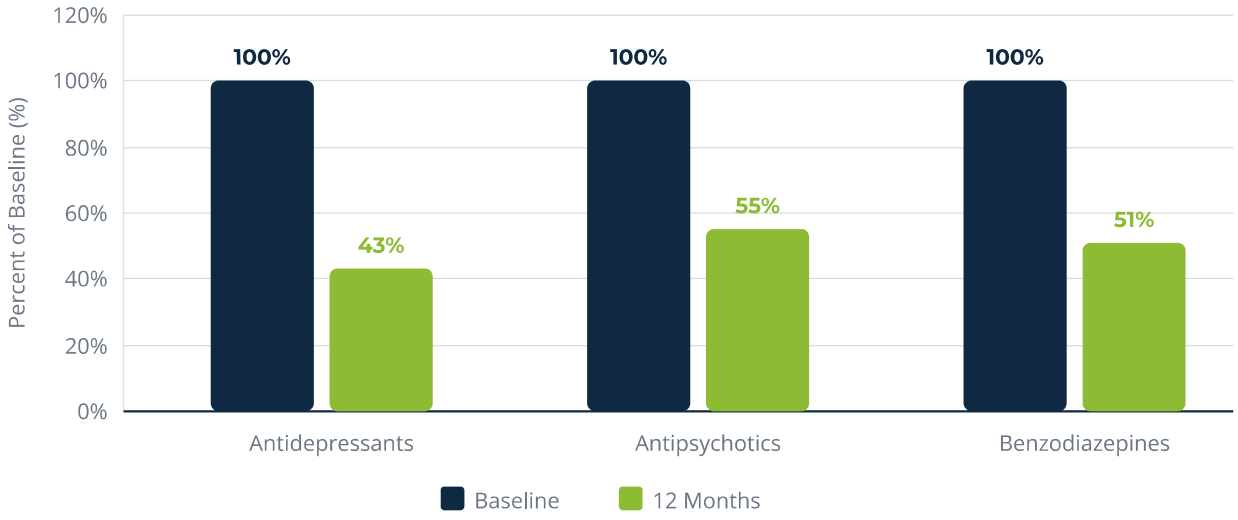

Figure 4. *Changes in antidepressant, antipsychotic, and benzodiazepine prescriptions during the program.*

Discussion

This report illustrates the potential of OPCM's AI-based risk management tool OpioidRx-AI to identify clinical risk patterns of opioid prescribing and to intervene with providers to align their prescription practices with CDC guidelines. In a self-insured health plan governed by a third-party administrator, this approach led to fewer at-risk members, decreased per-member costs, improved compliance with best prescribing practices, and reduced healthcare plan spending.

Early Detection Advantage

The findings corroborate the idea that an AI-based risk management tool can aid the timely detection of problematic opioid use. OpioidRx-AI leverages deidentified healthcare data to identify patterns of opioid withdrawal effects and to provide early indications of dependency and unnecessary cost within an organization's healthcare network.

> *This front-end data analysis may enable the identification of plan members at risk for opioid addiction* **months earlier** *than information from a state's drug database or PBMs would — by identifying physiological indicators that current PBM and TPA technology cannot detect for up to 5 months after initial presentation.*[7]

Mental Health Implications

An increased prevalence of mental disorders, including depression and anxiety, has been reported among individuals with opioid use disorder.[10] In addition, a recent retrospective analysis of medical record data from 49,770 patients from the US Department of Veterans Affairs (VA) healthcare system identified an increased risk of depression with prolonged duration of opioid analgesic exposure.[11] Thus, reducing opioid overprescription and the risk of developing opioid abuse may also help reduce the risk of negative mental health outcomes.

Community-Wide Benefit

The health benefits of a risk management tool that minimizes opioid overprescription may extend beyond plan members and their families. As HCPs who adopt best opioid prescription practices also treat patients outside of the health plan, the benefit of adopting good prescription practices may extend to other members of the community. In addition, OpioidRx-AI can be implemented within 8 weeks and requires only quarterly pharmaceutical claims from the health plan.

Prevention-Focused Framework

OpioidRx-AI's integration enables an early, high-level preventive intervention, providing opportunities for regular monitoring and proactive education of HCPs and members, and creating a prevention-focused provider network. OpioidRx-AI reviews data from paid pharmaceutical and medical claims identifying physiological (illness) indicators, which until now could not be identified by PBM and TPA technology. Current systems identify pathological (behavioral) indicators, which may not be found for up to 5 months after the initial presentation of physiological indicators.[7]

Eventually, the implementation of OpioidRx-AI can lead to significant savings on health plans and improved quality of life of plan members and the community.

References

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