EVIDENCE-BASED REPORT

An AI-Based Risk-Management Tool Reduced the Cost Impact of Opioids in a County School District

Program: OpioidRx-AI · Florida School District Teachers' Union Health Plan

Duration: 12-Month Intervention

Organization: Opioid Clinical Management Inc. (OPCM)

60.4%
Reduction in members identified at-risk

$1.45M
Healthcare plan spending saved

98%
Provider best practice compliance rate

Introduction

The opioid epidemic is a severe and complex public health crisis, and responding to it effectively has proven to be challenging.[1] Opioid medications play an important role in pain management, but their use is associated with substantial risks, including misuse, overdose, addiction, and diversion.

Among patients with chronic pain treated with opioids, the risk of misuse has been estimated at 21%–29%, and the rate of developing an addiction at 8%–12%.[2] In addition, 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.[3]

> *Dr. Don Teater reported at a 2017 Opioid Misuse Prevention Summit that among individuals given a 1-day, 8-day, or 31-day opioid prescription,* **6%, 13.5%, or 30%** *were still taking the drug after 1 year — continuing to re-fill prescriptions because of discomfort associated with drug discontinuation, even though their pain had subsided.*[4]

In addition, overprescribing opioid medications has been associated with excessive costs and financial burden for health plans and their members. In a retrospective study on administrative claims 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 compared to those without such diagnoses.[5]

Variations have been reported in the quality of education that medical students and residents receive on opioid prescribing.[6] Moreover, exposure to opioid educational information has been associated with decreased opioid prescribing in patients with chronic pain.[7] Thus, there is a need to ensure that healthcare providers are appropriately trained and adopt the CDC standards for opioid medication prescribing.

Furthermore, it is important to identify suboptimal prescribing practices as soon as possible to be able to intervene and modify them. 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 the utilization of an AI-based risk management tool that helps to identify healthcare providers (HCPs) potentially overprescribing opioid medications and to take action to improve these patterns in a health insurance plan of a teachers' union in a Florida school district.

Methods

The AI-based risk management tool OpioidRx-AI, developed by Opioid Clinical Management (OPCM), was applied to analyze and manage opioid prescription patterns in a Florida school district's teachers' union plan over 12 months.

Data Analysis

Using deidentified healthcare data from the medical records of the teachers' union network, patterns of opioid side effects, early indications of dependency, and unnecessary costs were detected. This allowed the identification 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.*

Brief Intervention Framework

This "brief intervention" is focused on helping a person (patient) change a specific behavior. Brief intervention methods may include brief assessment with feedback; techniques of behavioral modification; and setting goals, including contracting.[8]

Results

Reduced Members Identified as At-Risk

The number of members identified as at-risk for opioid abuse decreased by **60.4%** (from 149 to 59) over the 12-month program period.

AT-RISK MEMBER REDUCTION

60.4%

Decrease in plan members identified as at-risk for opioid abuse — from 149 at baseline to 59 at 12 months.

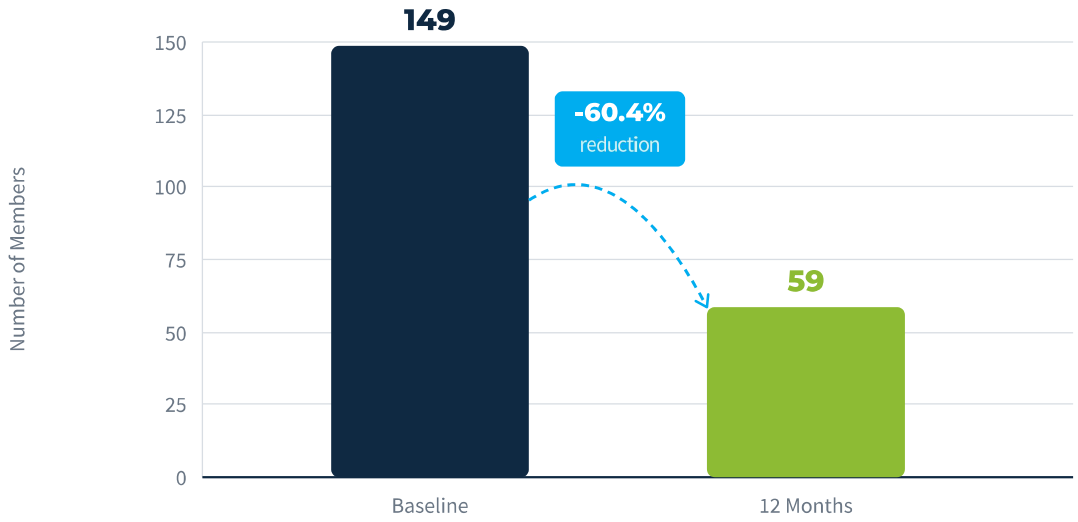

Figure 1. *Number of plan members identified as at-risk for opioid abuse at the beginning of the program and after 12 months.*

Increased Provider Conformance with Best Prescribing Practices

The percentage of providers complying with best prescribing practices increased from **54%** to **98%** over the course of the program.

PROVIDER BEST PRACTICE COMPLIANCE

98%

Provider compliance with best opioid prescribing practices increased from 54% at baseline to 98% over the course of the program.

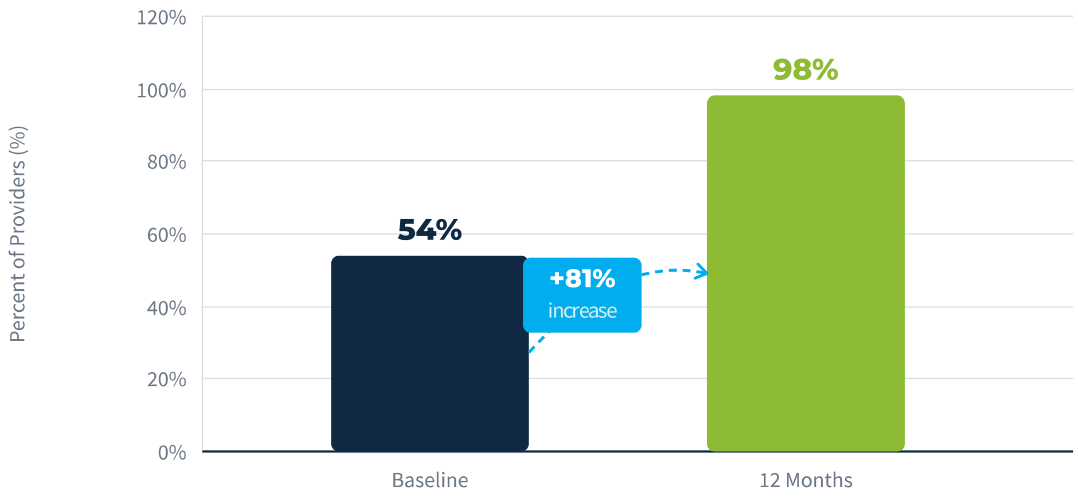

Figure 2. *Percentage of providers conforming with best opioid prescribing practices at the beginning of the program and after 12 months.*

Decreased Healthcare Utilization

Throughout the course of the program, the number of emergency visits, doctor visits, and hospitalizations decreased by **37%**, **41%**, and **39%**, respectively.

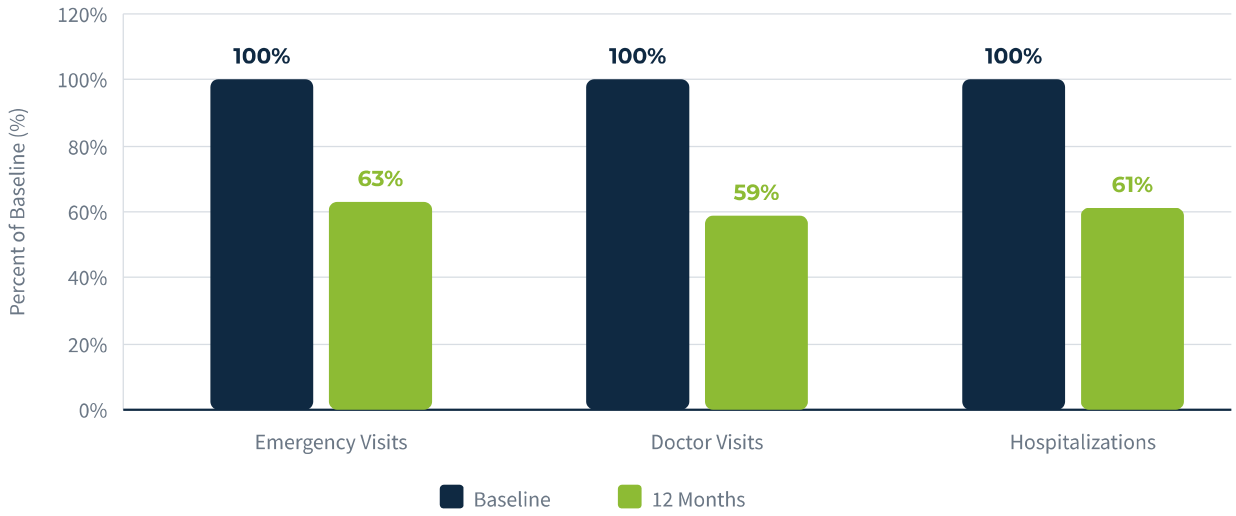

Figure 3. *Changes in the number of emergency visits, doctor visits, and hospitalizations over the course of 12 months from the beginning of the program.*

Reduced Healthcare Plan Spending

The healthcare plan spending was reduced by **$1.45 million** over the course of the program due to these reduced healthcare encounters.

Behavioral Health Impact

In patients with an opioid prescription, the prescriptions for antidepressants, antipsychotics, and benzodiazepines decreased by **37%**, **40%**, and **26%**, respectively, over the course of the program.

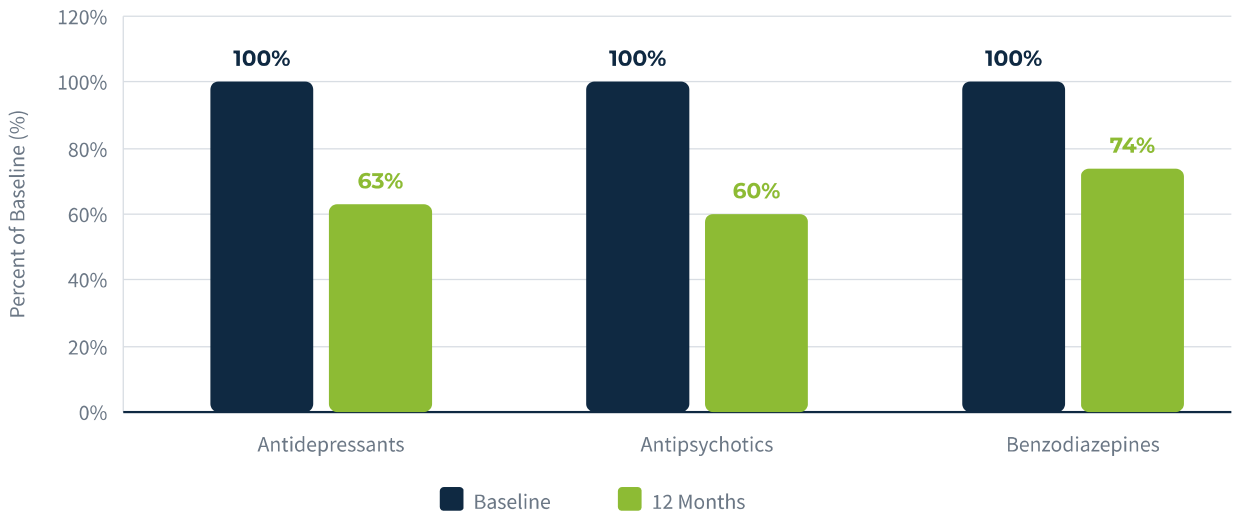

Figure 4. *Changes in antidepressant, antipsychotic, and benzodiazepine prescriptions during the program.*

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 prescribing practices with CDC guidelines. In a Florida school district teachers' union plan, this approach led to fewer at-risk members, decreased emergency and doctor visits and hospitalizations, 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 PBM would — by identifying physiological indicators that current PBM and TPA technology cannot detect for up to 5 months after initial presentation.*[5]

Mental Health Implications

An increased prevalence of mental disorders, including depression and anxiety, has been reported among individuals with opioid use disorder.[9] 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.[10]

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 prescribing practices also treat patients outside of the health plan, the benefit of adopting good prescribing practices may extend to other members of the community.

Implementation & Privacy

Ease of implementation and data privacy are important considerations when selecting an intervention program. OpioidRx-AI can be implemented within 8 weeks and requires only quarterly pharmaceutical claims (with no Patient

Health Information — PHI) from the health plan. All employee data remain anonymous.

Prevention-Focused Framework

Both treatment and prevention strategies play an important role in counteracting the opioid crisis. OpioidRx-AI integration enables early, high-level preventive intervention. It provides opportunities for regular monitoring and proactive education of HCPs and members, creating a prevention-focused provider network.

This report illustrates the potential of OpioidRx-AI to help a health plan reduce prescribing-related risks, lower costs, and improve patient outcomes. OpioidRx-AI reviews data from paid pharmaceutical and medical claims identifying physiological (illness) indicators, which until now could not be identified by pharmacy benefit manager (PBM) and third-party administrator (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.[5]

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

References

1. Volkow ND, Blanco C. The changing opioid crisis: development, challenges and opportunities. *Mol Psychiatry.* 2021;26(1):218–33.
2. Vowles KE, McEntee ML, Julnes PS, Frohe T, Ney JP, van der Goes DN. Rates of opioid misuse, abuse, and addiction in chronic pain: a systematic review and data synthesis. *Pain.* 2015;156(4):569–76.
3. Cicero TJ, Ellis MS, Surratt HL, Kurtz SP. The changing face of heroin use in the United States: a retrospective analysis of the past 50 years. *JAMA Psychiatry.* 2014;71(7):821–6.
4. Teater D. 2017 Opioid Misuse & Overdose Prevention Summit. 2017.
5. Kirson NY, Scarpati LM, Enloe CJ, Dincer AP, Birnbaum HG, Mayne TJ. The Economic Burden of Opioid Abuse: Updated Findings. *J Manag Care Spec Pharm.* 2017;23(4):427–45.
6. Khidir H, Weiner SG. A Call for Better Opioid Prescribing Training and Education. *West J Emerg Med.* 2016;17(6):686–9.
7. Price SM, O'Donoghue AC, Rizzo L, Sapru S, Aikin KJ. Opioid Education and Prescribing Practices. *J Am Board Fam Med.* 2021;34(4):802–7.
8. Barnes HN, Samet JH, et al. Brief Interventions with Substance Abusing Patients. *Medical Clinics of North America.* 1997;81(4):867–79.
9. Santo T Jr, Campbell G, Gisev N, Martino-Burke D, Wilson J, Colledge-Frisby S, et al. Prevalence of mental disorders among people with opioid use disorder: A systematic review and meta-analysis. *Drug Alcohol Depend.* 2022;238:109551.
10. Scherrer JF, Svrakic DM, Freedland KE, Chrusciel T, Balasubramanian S, Bucholz KK, et al. Prescription opioid analgesics increase the risk of depression. *J Gen Intern Med.* 2014;29(3):491–9.