How changing opioid prescribing patterns can impact risk scores

Medicaid expansion CDPS + Rx analysis

Christine Mytelka, FSA, MAAA
Melanie Kuester, PharmD, BCPS
Colin Gray, FSA, MAAA
Lucas Everheart

Milliman

Doctors are prescribing fewer opioids to avoid triggering addiction. How is this decline and a rise in alternative medications influencing measurements of population morbidity?

This issue brief provides data on the decline in opioids prescribed to Medicaid expansion populations and the increased use of other non-opioid pain relief drugs. It also addresses the corresponding effect that changing prescribing patterns may have on evaluating population health and risk-adjusted payments in risk-based managed care programs. Results reported in this issue brief were developed using the Chronic Illness and Disability Payment System (CDPS) risk adjustment model, version 6.2 (v.6.2).

The rise and fall of opioids

Opioids come under so many different brand names that some patients filling a prescription may not even be aware that they are receiving an opioid for pain. Oxycontin, oxycodone, Vicodin, MS Contin, hydrocodone, and Zohydro ER represent some of the available opioids. Nationwide, opioid prescribing peaked in 2012, at over 80 prescriptions per 100 persons. Between 2012 and 2016, the prescribing rate decreased by almost 20%. Even after this steep decline, 19% of the U.S. population filled at least one opioid prescription during 2016.[1]
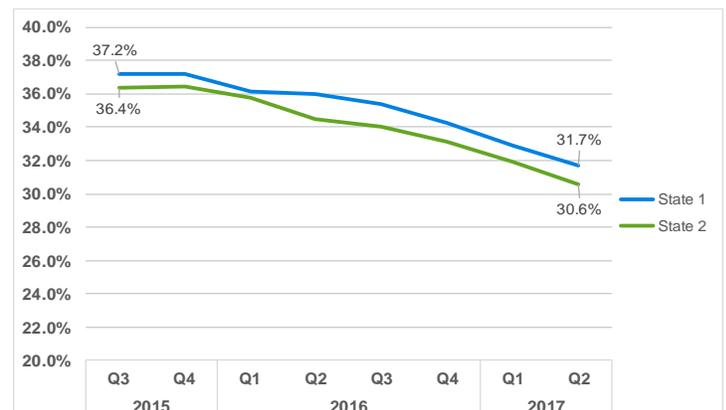
Prevalence of behavioral health conditions and substance use disorder in the Medicaid expansion population is significant, higher than in the commercial population,[2] and utilization of opioids is higher as well.[3]

The decline in opioid prescribing is even more pronounced in the Medicaid expansion population. Figure 1 presents historical data on the percentage of Medicaid expansion members receiving prescribed opioids in two states.

Between mid-2015 and mid-2017, the percentage of members with prescribed opioids declined by approximately 6% in both Medicaid expansion programs.

Although prescribing rates vary from state to state, the declining pattern in Figure 1 is typical.[4]

FIGURE 1:   PERCENTAGE OF MEMBERS PRESCRIBED AN OPIOID[5]

TREATMENT OF OPIOIDS IN MEDICAID RISK ADJUSTMENT
State Medicaid programs primarily rely on risk score analysis to monitor changes in population morbidity. When Medicaid populations are served by managed care organizations (MCOs), risk adjustment is used to adjust capitation amounts paid to each organization. This transfers revenue to MCOs with disproportionately higher-risk members, and reduces the incentive to develop networks less attractive to more costly members.

The CDPS risk adjustment model was developed by researchers at the University of California of San Diego.[6] The model was

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[1] CDC (2017). Annual Surveillance Report of Drug-Related Risks and Outcomes. Retrieved February 27, 2018, from https://www.cdc.gov/drugoverdose/pdf/pubs/2017-cdc-drug-surveillance-report.pdf.

[2] Substance Abuse and Mental Health Services Administration (2013). Behavioral Health Treatment Needs Assessment Toolkit for States. Retrieved February 27, 2018, from https://store.samhsa.gov/shin/content/SMA13-4757/SMA13-4757.pdf.

[3] Medicaid and CHIP Payment and Access Commission (June 2017). Medicaid and the Opioid Epidemic. Report to Congress on Medicaid and CHIP, Chapter 2. Retrieved February 27, 2018, from https://www.macpac.gov/wp-content/uploads/2017/06/Medicaid-and-the-Opioid-Epidemic.pdf.

[4] CDC, Annual Surveillance Report, ibid.

[5] For members enrolled during a given month, the percentage who received a prescribed opioid during the 12 months centered on the snapshot. Percentages shown represent the average for each quarter.

[6] CDPS. The Revision of CDP and the Development of a Combined Diagnostic and Pharmacy Based Risk Adjustment Model. Retrieved February 27, 2018, from http://cdps.ucsd.edu/CDPS_Update.pdf.

specifically designed with the Medicaid population in mind, and is commonly used for risk adjustment in state Medicaid programs. There are three versions of the Medicaid risk adjustment model: 1) the CDPS model develops risk scores using diagnosis codes, 2) the Medicaid Rx (MRx) model uses National Drug Codes (NDCs), and 3) the hybrid model (CDPS + Rx) uses both diagnosis codes and NDCs. The CDPS model that uses only diagnosis codes is not vulnerable to prescribing patterns because it does not use NDCs, and will not be discussed further in this report.

Opioids such as Vicodin and Percocet are used in the Medicaid Rx model to identify enrollees being treated for pain management. As opioid prescribing declines, the percentage of members identified in the pain category will also tend to decline. This may reduce overall Medicaid Rx risk scores over time, in a manner unrelated to the prevalence of pain or underlying conditions that might cause pain, such as back injuries or neurological conditions.

The Medicaid Rx developers identified pain medications, along with medications for generalized anxiety disorder (GAD), folate and iron deficiency anemias, eye, ear, nose, and throat (EENT) conditions, insomnia, and low-cost infections, as areas that "lack a clear consensus for use," and in which differences in prescribing may be due to "variations in practice patterns rather than illness severity." [7] For risk adjustment of health-based payments, the developers recommend consideration of a "restricted model" that excludes these drugs.

The hybrid CDPS + MRx model, often considered the most robust version because it includes both diagnosis code and prescribed drug data, does not use opioid NDCs, and thus is not directly affected by the decline in opioid prescribing. However, those using the hybrid model may be affected by a related increase in the use of non-opioid pain medications.

Switching to non-opioid pain control

In 2016, the Centers for Disease Control and Prevention (CDC) published guidelines on the use of opioids in chronic pain treatment.[8] Its findings were similar to the 2014 Agency for Healthcare Research and Quality (AHRQ) report on long-term opioid treatment of chronic pain. There is a lack of scientific evidence supporting long-term opioid use for chronic pain.[9]

Prescribers have since been encouraged to use their full arsenal of pain treatment options and to minimize opioid use and improve patient outcomes,[10] which may include:

- Nondrug pain relief treatments such as ice, physical therapy, cognitive behavioral therapy, and chiropractic treatment, among others.

- Pain relief drugs that are commonly used to replace opioids. These drugs include nonsteroidal anti-inflammatory drugs (NSAIDs, such as naproxen or meloxicam), antidepressants (especially venlafaxine and duloxetine), anti-epileptic medications (such as topiramate and gabapentin), corticosteroids, and muscle relaxants (such as carisoprodol and cyclobenzaprine).

As opioid use declines, we are observing a ripple effect: increasing use of several non-opioid pain medications.

With the declining use of opioids, increased use of replacement pain control medications can lead to aberrant risk scores.

OPIOID REPLACEMENTS IN CDPS + RX RISK ADJUSTMENT
In the historical data from the two Medicaid expansion states used in Figure 1 above, we observed material increases in the use of muscle relaxants and gabapentin, which can replace opioids to relieve certain types of pain.
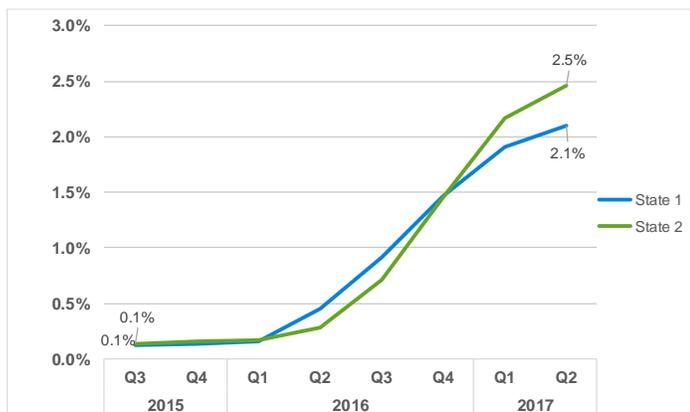
Muscle relaxants
The most commonly prescribed muscle relaxants are Flexaril (cyclobenzaprine), Skelaxin (metaxalone), and Soma (carisoprodol). Flexaril is the prescription most commonly seen in the data. Muscle relaxants appear in the CDPS + Rx model as indicators of multiple sclerosis (MS). MS is a severe and expensive illness, with a CDPS + Rx v.6.2 concurrent weight of 2.5.[11] The average risk score for the expansion population is approximately 1.3, meaning the model would retrospectively increase estimated medical cost for any individual flagged as having MS by almost twice the average medical cost, or roughly $10,000 per year. The prospective model impact of muscle relaxant utilization is approximately half of the concurrent model's impact, with a prospective weight under CDPS + Rx v.6.2 of 1.3 rather than 2.5. Muscle relaxants have been used for many other conditions besides MS for years, but their use is becoming more common with changes in pain treatment. As they become more widely prescribed, the linkage between muscle relaxants and MS has become even more tenuous.

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[7] Gilmer et.al. (2001). The Medicaid Rx Model. Medical Care Vol. 39:11:1188-1202.

[8] See the CDC Morbidity and Mortality Weekly Report (MMWR) of March 18, 2016.

[9] Chou et.al. Evidence Report/Technology Assessment No. 218: The Effectiveness and Risks of Long-Term Opioid Treatment of Chronic Pain.

[10] NIH National Center for Complementary and Integrative Health. Chronic Pain: In Depth. Retrieved February 27, 2018, from https://nccih.nih.gov/health/pain/chronic.htm.

[11] CDPS version 6.2 (2017), using concurrent weights for nondisabled adults.

Figure 2 provides historical data on the increase in prescribing for drugs in the multiple sclerosis condition category (MRX12) in the Medicaid expansion population from the same two states in Figure 1. The increase was driven by increased prescribing of muscle relaxants.

FIGURE 2:   PERCENTAGE OF MEMBERS IDENTIFIED IN MRX12 (MS)

MRX12 category prevalence increased sharply between 2016 and 2017. This leads the CDPS + Rx model to estimate an increase in the prevalence of multiple sclerosis, from 0.1% of the population to over 2%. Without adjustment to the model, the apparent increase in prevalence, multiplied by a 2.5 concurrent weight, could increase the risk score by 0.05. The Medicaid expansion populations in this analysis had a mean risk score of approximately 1.3, so a risk score increase of 0.05 equates to a 3% to 4% increase in implied morbidity. Reflecting model output would be incorrect, however, because the growth in the category is due to additional muscle relaxant prescriptions, which are primarily being used to control pain, instead of to treat MS.

Without adjustment to the model, increased prescribing of muscle relaxants could incorrectly estimate a 3% to 4% increase in population morbidity from 2016 to 2017.

Using prospective weights rather than concurrent weights would reduce the morbidity impact because the prospective MRX12 weight of 1.3 is just over half the concurrent weight of 2.5.
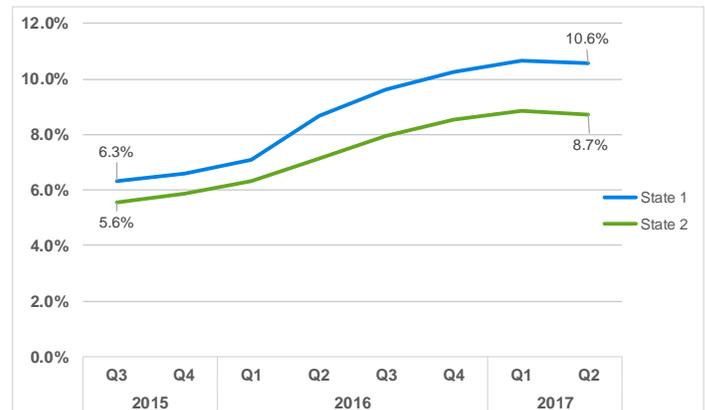
Gabapentin
We have also found an increase in utilization for the drug gabapentin, currently listed as an indicator of seizure disorders (MRX14 in the hybrid model). Growth in gabapentin utilization causes an apparent (and erroneous) 3% to 4% increase in the prevalence of seizure disorders in the two Medicaid expansion states studied for this report. Although the prevalence impact is twice the increase attributable to muscle relaxants, the risk score

impact of gabapentin is lower, because the seizure disorder category has a lower weighting (0.6 in the concurrent model, and 0.5 in the prospective model).

Gabapentin has been used for years as a treatment for individuals suffering from neuropathic pain, which can be either acute or chronic. As an aside, gabapentin is also now being abused by some individuals and has some value on the black market.[12]

FIGURE 3:   PERCENTAGE OF MEMBERS IDENTIFIED IN MRX14 (SEIZURE)

COST-NEUTRAL RISK ADJUSTMENT
Changes in prescribing patterns are clearly a concern when one is comparing risk scores from two different time periods, as the changes in prescribing patterns can make it difficult to assess the true morbidity changes over time.
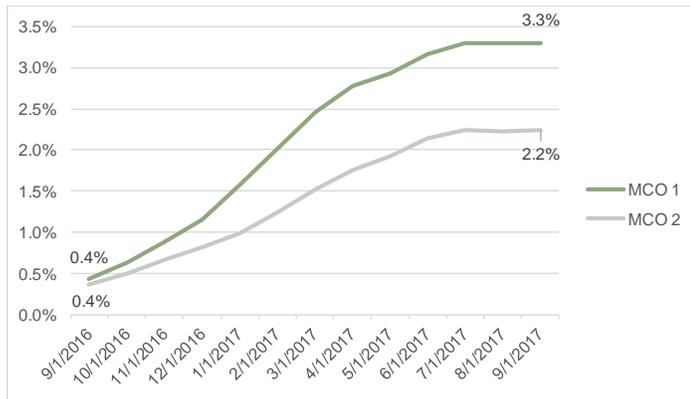
However, the most common type of Medicaid risk adjustment is cost-neutral risk adjustment, in which risk scores from multiple Medicaid MCOs are compared to assess differences in average morbidity among their members. Relative morbidity differences are then used to adjust capitation payments for each MCO, generally on a prospective basis, using prospective model weights. In this type of analysis, all risk scores are from the same one-year time period. Are changing prescribing patterns a concern in this context?

Figure 4 compares MRX12 (i.e., MS) prevalence for two MCOs in the same state. In both cases, the growth is primarily due to increasing use of muscle relaxants as a partial replacement for opioid prescribing. However, because MCO 1 has made more extensive use of muscle relaxants, the unadjusted model will incorrectly estimate a higher multiple sclerosis prevalence and award it a higher risk score. Using prospective risk scores (the type of analysis most commonly used for cost-neutral risk adjustment among MCOs), the unadjusted model would award

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[12] Rodriguez, Carmen (July 6, 2017). New on the streets: Gabapentin, a drug for nerve pain and a new target of misuse. Retrieved February 27, 2018, from https://www.statnews.com/2017/07/06/gabapentin-opioid-abuse/comment-page-10/.

MCO 1 approximately 2% more revenue than MCO 2 based on inaccurate identification of MS.

FIGURE 4: COMPARISON OF MRX12 PREVALENCE FOR TWO MCOS IN THE SAME STATE: GROWTH ATTRIBUTABLE TO MUSCLE RELAXANTS

Because muscle relaxants are not a reliable indicator of multiple sclerosis, those performing cost-neutral risk adjustment may wish to monitor the potential impact of increased prescribing of these drugs in the MRX12 category.

Conclusion

Risk adjustment models are powerful tools that allow us to quantify differences in population morbidity. As with all complex models, its utility is dependent on the validity of its assumptions, including the prescribing patterns used to specify model parameters during a historical time period.

We have observed reduced opioid prescribing, along with increases in the utilization of other drugs that can be used for pain relief but were previously associated with MS and seizure disorders. In some analyses, it may be appropriate to adjust the risk score model for prescribing changes, perhaps by removing selected drugs from the model and/or adjusting model weights. However, it is unlikely that opioid-related changes in prescribing practice will always have a significant impact on risk adjustment projects. For example, utilization of pain medications may be immaterial when performing risk adjustment for healthy children. Also, there may be no need for model adjustment when performing cost-neutral risk adjustment, as long as the actuary has confirmed that prescribing patterns are similar across MCOs.

This issue brief is intended to alert healthcare finance professionals to the potential effects of opioid-related prescribing changes when performing risk adjustment or longitudinal analyses of population morbidity.

CONTACT
Christine Mytelka
christine.mytelka@milliman.com

Melanie Kuester
melanie.kuester@milliman.com

Colin Gray
colin.gray@milliman.com

Lucas Everheart
lucas.everheart@milliman.com