

Analysis of Conditions Associated with High Opioid Use

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We performed an analysis that looked at factors associated with high opioid use that was divided into two parts. The first part of the analysis was a comparative assessment of select factors across three user populations: Part D beneficiaries, Opioid users, and High Opioid Users. The second part of the analysis was a systematic look of that same factors but restricted to just Part D beneficiaries and Opioid users. This analysis was performed as a step-wise regression and functioned as a sensitivity analysis to gauge the stability of the model as it was built up from 5 domains of variables.

Comparative Analysis

The analysis focused on three beneficiary cohorts, with each cohort successively more restrictive than the last:

- **Part D Beneficiaries:** Beneficiaries enrolled in Part D at any time in 2011, excluding beneficiaries in hospice in 2011 or during the last quarter of 2010.
- **Opioid Users:** Of the Part D Beneficiaries cohort, beneficiaries with at least one 2011 Part D claim for an opioid medication.
- **High Opioid Users:** Among the Opioid Users cohort, beneficiaries who had greater than 120 mg morphine equivalent dose (MED) daily for at least 90 consecutive days.

The analysis showed that select demographic and eligibility categories consistently had large effects (i.e., a large significant odds ratio). Additionally, the comorbidities with large effects encompassed those typically associated with high pain and also included two RxHCCs for behavioral conditions. There was no additional increase in model fit with the addition of the final domain of select interactions between select conditions.

Stepwise Analysis

For the Part D and Opioid user groups, we applied a stepwise logistic regression which added the following 5 domains of regressors in succession.

- Demographics (age, race, gender).
- Medicare Status (low-income subsidy (LIS) Status, Medicare Status Code).
- Beneficiary region.
- Comorbidities as RxHCCs (note: cancer RxHCCs 8, 9, 10, and 11 are grouped together).
- Interaction terms of high-pain and non-high pain RxHCCs that have high odds ratios. For the Part D population and the Opioid User population, respectively, we chose the ten most frequent combinations of these RxHCCs that occur in the data.

The results of the stepwise analysis revealed a consistent and stable model regardless of whether it was Part D beneficiaries or Opioid users. Of the 5 domains entered, the addition of Medicare status and comorbidities yielded the largest increases in model fit.

We found that for both the Part D and Opioid User populations, the model fit improves with the addition of each domain. Individual estimates did not radically change in sign or magnitude as more domains were added and proved to be quite robust. The lone exception to this trend was the “under 65” age variable which significantly changes upon introduction of the second domain of Medicare Status, and then remains essentially the same. The interaction terms do not offer any additional explanatory power.

Summary

For both the comparative and stepwise analyses, the variables that were consistently high predictors of high use of opioids (i.e., odds ratio (OR) greater than 3.0) included being “under 65” and the Medicare status of “disabled”. A number of comorbidities were associated with high opioid utilization.

There are several limitations of this analysis to note. This first is that this analysis was run using 2011 Prescription Drug Event (PDE) data but used comorbidities based on 2010 diagnoses. We did not have access to contemporaneous diagnoses at the time of this analysis. Therefore, we are assuming the beneficiary’s previous year’s health status remains constant when tying it to the following year’s drug utilization. This assumption can result in poor discrimination between active diagnoses and those which are “sticky” and continue to be associated with the beneficiary but which are no longer under active treatment. For example, there may be beneficiaries who did not have a particular condition in 2010 but could generate claims for the treatment of that new condition in 2011. In this case the presence of the new condition would not be captured. And conversely, there may also be beneficiaries for whom we identify conditions in 2010 that no longer generate claims for their treatment in 2011. The latter may also have contributed to our lack of identifying cancer as a predictor of high opioid use. Additionally, we did not have any diagnoses information for new Medicare enrollees in 2011.

Because of these analytical issues, we conclude that these findings are not useful to further refine the targeting criteria to identify potential overutilization of opioids. CMS will not release more detailed findings from this analysis due to concerns with limitations of the methodology and how these results would be interpreted.