Economic Burden of Opioid-Induced Constipation Among Patients With or Without Cancer in the United States

EE319

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Background

- Opioid use can cause opioid-induced constipation (OIC), often leading to difficult bowel movements with substantial discomfort[1,2]
- Previous studies have highlighted incremental healthcare costs linked to OIC[3-6], but they are limited by issues like outdated data and small sample sizes, with scant evidence on OIC among patients with long-term opioid use to manage chronic pain[7]
- OIC can negatively affect daily activities and productivity in patients managing non-cancer pain with opioids[1,2]
- Patients with cancer commonly suffer from pain caused by their condition, resulting in increased opioid consumption and a higher likelihood of developing OIC[8]

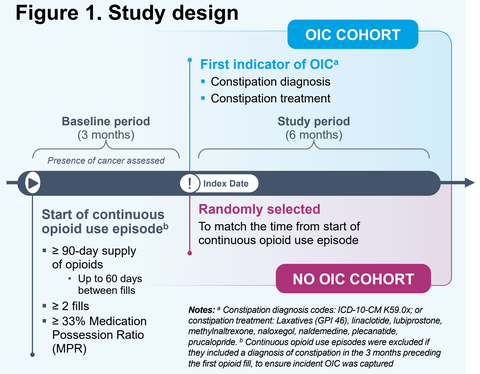
Objective

To compare healthcare costs between commercially insured continuous opioid users with and without opioid-induced constipation (OIC) in the United States (US), separately among patients with and without cancer

Method

- **Data source:** Komodo Research Data (KRD+) from 01/2016 - 02/2024
- Adult patients with ≥1 continuous opioid use episode were grouped into two distinct cohorts based on the presence of an OIC indicator during an episode (**Figure 1**)
  - Continuous opioid use episodes were defined as opioid use for ≥ 90 days, to align with the CDC's definition of chronic pain[7]

Figure 1. Study design



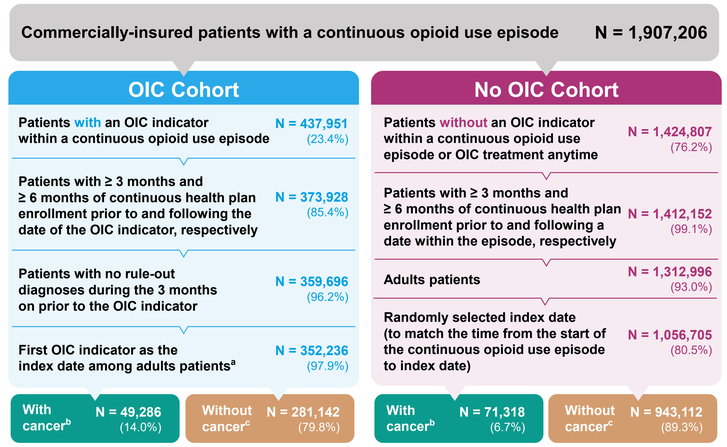
Notes: [a] *Constipation diagnosis codes: ICD-10-CM K59.0x; or constipation treatment: Laxatives (GPI 46), linaclotide, lubiprostone, methylnaltrexone, naloxegol, naldemedine, plecanatide, prucalopride.* [b] *Continuous opioid use episodes were excluded if they included a diagnosis of constipation in the 3 months preceding the first opioid fill, to ensure incident OIC was captured*

- **Entropy balancing** was applied to adjust for baseline characteristics including demographics (e.g., age, sex, region, insurance type), duration of opioid use, baseline morphine milligram equivalent (MME), and comorbidity profile, between the OIC and no OIC cohorts for patients with and without cancer, separately
- **Outcomes** included all-cause healthcare costs (estimated allowed amounts from medical claims, including inpatient, outpatient, and emergency department visits, and pharmacy claims; 2024 USD) during the study period, reported as per patient per year (PPPY)
  - Weighted GLM with a log link and Gamma distribution was used to compare healthcare costs between the OIC and no OIC cohorts for patients with and without cancer, separately

Results

SAMPLE SELECTION AND PATIENT CHARACTERISTICS

Figure 2. Sample selection



N: number; OIC: opioid induced constipation
Notes: *[a] Patients were excluded if they had a diagnosis of ileus, impaction, inflammatory bowel syndrome, intussusception, multiple sclerosis, stricture, volvulus, or other intestinal obstructions during the baseline period.* [b] *Cancer diagnosis codes: ICD-10-CM C00-C96 and D37-D39.* [c] *Patients without cancer included patients without a diagnosis of cancer in the 3-month baseline period. To avoid capturing outcomes related to cancer developed after OIC, patients with a diagnosis of cancer in the 6-month study period were further excluded from patients without cancer.*

Figure 3. Patient characteristics

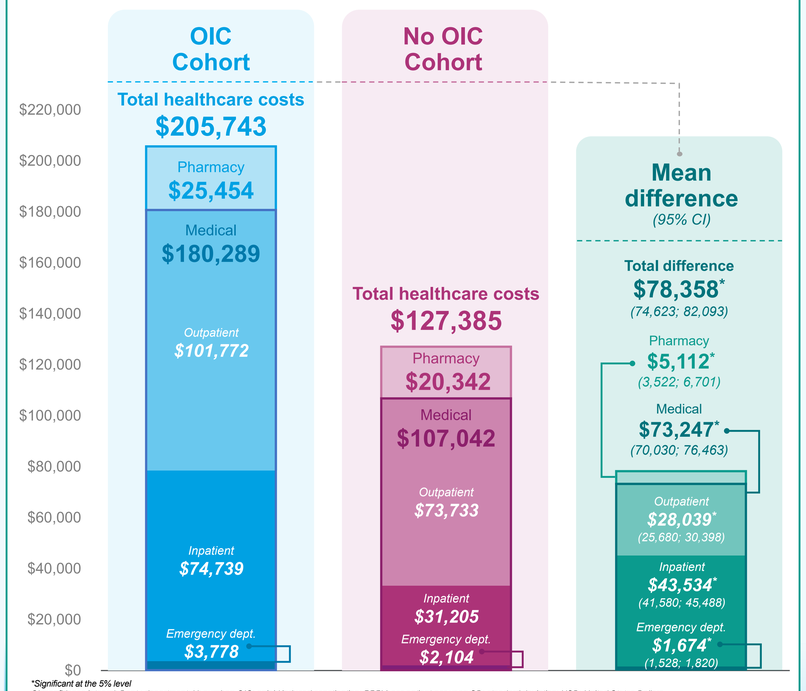
(after entropy balancing)

	Patients with cancer		Patients without cancer	
	OIC Cohort N = 49,286	No OIC Cohort N = 71,318	OIC Cohort N = 281,142	No OIC Cohort N = 943,112
Demographics at index				
Age (mean, years)	54.7	54.8	50.2	50.2
Female	54.0%	54.0%	59.2%	59.2%
Baseline characteristics				
Hypertension	42.8%	42.8%	35.6%	35.6%
Fluid and electrolyte disorders	18.2%	18.2%	6.6%	6.6%
Depression	17.6%	17.6%	16.8%	16.8%
Morphine Milligram Equivalent (mean, daily mg)	25.3	25.3	19.5	19.5

CCI: Charlson Comorbidity Index; MME: morphine milligram equivalent; MPR: medication possession ratio; N: number; OIC: opioid induced constipation; SD: standard deviation; std. diff.: standardized difference
Note: *[a] The top 3 most frequent comorbidities observed in patients with cancer were reported.*

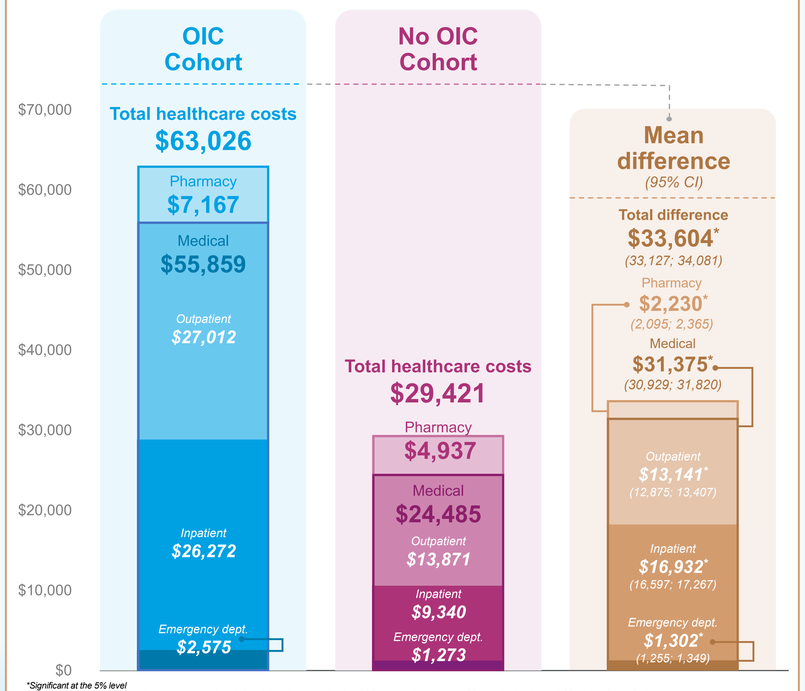
HEALTHCARE COSTS

Figure 4. Patients with cancer *(after entropy balancing)*



**Significant at the 5% level*
CI: confidence interval; Dept.: department; N: number; OIC: opioid induced constipation; PPPY: per-patient-per-year; SD: standard deviation; USD: United States Dollars

Figure 5. Patients without cancer *(after entropy balancing)*



**Significant at the 5% level*
CI: confidence interval; Dept.: department; N: number; OIC: opioid induced constipation; PPPY: per-patient-per-year; SD: standard deviation; USD: United States Dollars

For both patients with and without cancer, separately, patients in the OIC Cohort experienced higher healthcare costs than patients in the No OIC Cohort

Conclusions

Compared to the No OIC Cohort, the OIC Cohort had significantly higher all-cause annual healthcare costs, driven by increased medical and pharmacy costs, for both patients with and without cancer

Limitations

- Since this is a claims-based study, over-the-counter treatments for constipation were not captured
- Results are based on a commercially insured population and may not reflect the broader U.S. adult population with OIC
- This study faces typical limitations associated with claims data, including possible billing discrepancies and incomplete data

References

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Disclosures

PGS, RB, RB, NG, and AG are employees of Analysis Group, Inc., a consulting company that has provided paid consulting services to Bausch Health Companies, Inc., which funded the development and conduct of this study. AL is an employee of Salix Pharmaceuticals. SKS and OO are employees of and have stock ownership in Bausch Health. AS was a postdoctoral fellow with Rutgers Pharmaceutical Industry Fellowship Program at the time of study completion.