Poster #81

Prescribing NSAIDS/COX-2s in Patients Having Osteoarthritis is Associated with Both Negative Clinical Outcomes and Higher Costs

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BACKGROUND

- Osteoarthritis (OA) is a degenerative joint disease involving cartilage and many of its surrounding tissues and afflicts over 30 million US adults with hip and knees as the most commonly affected sites. [1]
- Pharmacological treatment options for OA pain commence with the use of oral analgesics, followed by topical/oral non-steroidal anti-inflammatory drugs (NSAIDs) and opioids. [2]
- NSAIDs (including oral COX-1 and COX-2 inhibitors) are one of the most commonly prescribed pain medications in the world and although recommended by clinical guidelines as the primary pharmacological treatment of choice for management of OA, NSAIDs require risk mitigation for their safe use especially in the elderly and in patients with pre-existing conditions. [2]
  - Such negative clinical outcomes include gastrointestinal (GI) issues, renal toxicity, and cardiovascular (CV) risk. [3,4]
- While such negative clinical outcomes have been studied, less in known about the extent to which these outcomes result in longer-term clinical and economic burden in real-world settings for patients diagnosed with OA of the hip and/or knee.

OBJECTIVE

- The objective o f this study was to assess the clinical and economic burden of commercially-insured patients previously diagnosed with OA of the hip and/or knee as it relates to their use of oral NSAIDs.

METHODS

Data source

- The study was a retrospective analysis of OptumHealth Care Solutions, Inc. data containing claims covering the period from Jan 1 2012 – Mar 31 2017 [5]
  - Data contained medical services and prescription drugs claims representing commercially-insured beneficiaries and their dependents from over 80 US-based companies and a range of commercial insurers

Time periods

METHODS (CONT.)

Sample Selection Criteria

- Eligible patients were required to satisfy the following criteria:
  - ≥18 years old with ≥2 diagnoses of OA of the hip and/or knee, and ≥90 days supply of NSAIDs during the three-year period from first NSAID prescription (index date) after the patient's first OA diagnosis.
  - Continuously-enrolled during the six months before (baseline period) and 36 months after (follow-up period) the index date.

Analytic Approach

- A pre-post study design was used to compare differences in clinical, health care resource use (HCRU), and all-cause health care costs in the baseline and 3-year follow-up period:
  - Selected clinical outcomes known to be associated with utilization of NSAIDs, including GI issues, CV events, and renal toxicity.
  - HCRU (e.g., number of inpatient, outpatient, emergency department visits) and costs (all-cause health care costs).
  - Baseline costs and HCRU were scaled to account for the fact the follow-up period is six times longer than the baseline period.
- Statistical significance was assessed using McNemar test for categorical variables and Wilcoxon signed-rank test for continuous variables.

FIGURE 1: Sample Selection

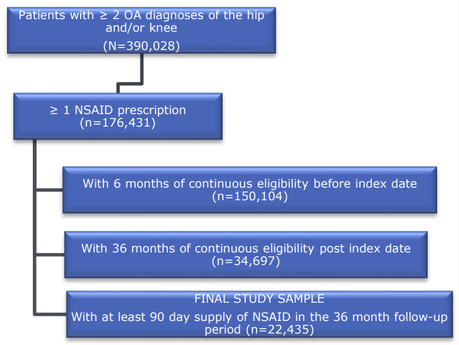
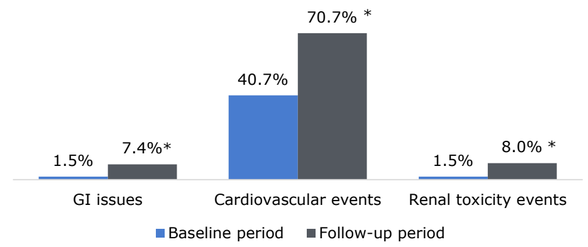
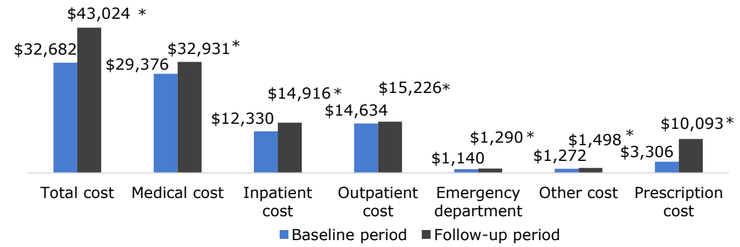


FIGURE 2: Selected Negative Clinical Outcomes During the Baseline and 3-year Follow-Up Periods



*Reflects p<0.01 relative to baseline.

FIGURE 3: All-Cause Health Care Costs During the Baseline and 3-year Follow-Up Periods†



† Baseline costs were multiplied by a factor of six to account for the fact the follow-up period is six times longer than the baseline period

* Reflects p<0.01 relative to baseline.

RESULTS

Sample Selection and NSAID Use

- A total of 22,435 patients met the study selection criteria (Figure 1).
- Patients were prescribed NSAIDs for an average of 489 days during the 3-year follow-up period.

Baseline Characteristics

- NSAID users were on average 61.5 years of age (34.7% age 65+) and predominantly female (60.8%) (Table 1).
- The majority of patients had knee OA only (57.5%) (Table 1).
  - 13.8% had hip OA only (Table 1).

Negative Clinical Outcomes During the 3-year Follow Up

- GI issues overall increased 393% (1.5% baseline v. 7.4% follow-up, p<0.01) (Figure 2).
  - Acute GI hemorrhages increased 667% (0.3% baseline v. 2.3% follow-up, p<0.01).
  - Iron-deficiency anemia also increased 400% (1.1% to 5.5%, p<0.01).

Negative Clinical Outcomes (cont.)

- CV events overall increased 74% (40.7% baseline v. 70.7% follow-up, p<0.01) (Figure 2).
  - Acute myocardial infarction increased 600% (0.3% baseline v. 2.1% follow-up, p<0.01).
- Renal toxicity events increased 433% (1.5% baseline v. 8.0% follow-up, p<0.01) (Figure 2).
  - Acute renal failure increased 740% (0.5% baseline v. 4.2% follow-up, p<0.01).

All-Cause Cost and HCRU Outcomes During 3-Year Follow Up

- Use of NSAIDs was associated with a cost increase of over $10,000 in the 3-year follow-up period ($43,024 vs $32,682, p<0.01) (Figure 3).
  - Inpatient costs ($14,916 vs $12,330, p<0.01) and prescription drug costs ($10,093 vs $3,306, p<0.01) were the biggest drivers of the differential (Figure 3).
- For HCRU, largest changes were all-cause inpatient admissions, which increased 293% (13.7% to 53.9%, p<0.01), and emergency department visits which increased 236% (14.8% to 49.7%, p<0.01).

TABLE 1: Selected Baseline Characteristics

Baseline Characteristics (6 months pre-index)	NSAID users (n=22,435)
Age, mean ± SD [median]	61.5 ± 10.7 [61]
≥ 65	34.7%
Gender, female	60.8%
OA Diagnoses	
Hip Only	13.8%
Knee Only	57.5%
Knee and Others	12.9%
Hip and Others	3.4%
Only Hip and Knee	2.6%
Hip, Knee, and Other	1.1%

LIMITATIONS

- The underlying data reflect a privately-insured patient population and may not be representative of other types of payer populations, such as Medicare or Medicaid.
- The study was not able to rule out the possibility that the increased costs were partially attributable to the prescription drug treatment versus other factors (e.g., OA disease progression).
- Care must be exercised in interpreting some of the results as the increase in negative clinical outcomes may be due to other confounding factors such as use of other medications or other comorbid conditions.
- Patients may be taking NSAIDs for reasons other than OA, and over-the-counter use of medications is unobservable.
- This study looked at chronic (i.e., use for ≥90 days), and does not reflect potential outcomes stemming from acute use.

CONCLUSIONS

- Prescribing NSAIDs ≥90 days for patients diagnosed with OA of the hip and/or knee is associated with increases in negative clinical outcomes (GI events, CV events, renal toxicity events), HCRU, and health care costs.
- Further investigation should be conducted to identify risk factors associated with these negative clinical outcomes (GI events, CV events, renal toxicity events).
- The findings are supportive of evaluating other new treatments for such patients with OA, treatments that may have a more favorable negative outcome profile.

REFERENCES

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DISCLOSURES

The authors do not have any conflicts of interest with respect to this study. Patricia Schepman and Craig Beck are employees of Pfizer, Inc.; Rebecca Robinson is an employee of Eli Lilly & Company; Alan White, Brad Rice, and Mike Somma are employees of Analysis Group, Inc.; Dr. Stuart Silverman is an employee of the Cedars-Sinai Medical Center and a Professor at the School of Medicine, UCLA. Funding was provided by Pfizer, Inc. and Eli Lilly & Co. Dr. Silverman and Analysis Group, Inc. received monies from Pfizer/Lilly in connection with this study

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