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Long-term Management of Low Back Pain with Opioids and Non-steroidal Anti-inflammatory Drugs in a Health System

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Introduction

In the past 15 years, there have been marked increases in the use of opioids to treat chronic non-cancer pain.^{1–3} Yet, there remains little to no clinical evidence supporting the long-term effectiveness of this class of drugs or therapeutics for this indication.⁴ Contemporaneous with the increase in opioid prescriptions, there has been a commensurate rise in opioid misuse.^{2,5} There are also serious risks associated with long-term use of non-steroidal anti-inflammatory drugs (NSAIDs), a comparable analgesic, such as gastrointestinal bleeding and renal disease.⁶ Within the context of these known risks and recommendations to use both classes primarily for acute pain (except cautionary use for select conditions when there is clear longitudinal symptom improvement), it is unclear how often opioids and NSAIDs are prescribed long-term despite potential risks.^{6–9} This study compares long-term use of both classes for patients with non-cancer low back pain in a large healthcare system.

Methods

The IRB of Henry Ford Hospital approved this study, which included 3,747 individuals who were health system members between 1998 and 2012. All individuals were aged ≥ 18 years, had an incident lumbago diagnosis (low-back pain; ICD-9 Code, 724.2), and filled a de novo prescription for an opioid or NSAID within 2 weeks of diagnosis. All individuals were required to be enrolled (with available records) for at least 6 months before the diagnosis, and 12 months after the initial prescription. These specifications allowed the identification of comparable patients with a new pain episode and a new analgesic treatment. Individuals were excluded if they had prior:

1. back pain diagnosis, procedure, or surgery;
2. diabetes (owing to NSAIDs' risk of lowering glucose levels) or cancer diagnosis;
3. gastrointestinal bleeding or renal insufficiency; or

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4. an opioid or NSAID prescription fill before the diagnosis.

As health plan members, individuals had a comprehensive record of prescription fills. These data were used to estimate continuous medication use for 1-year following initiation. Individuals who did not fill a prescription for either an opioid or NSAID for >90 days were considered to have stopped that class, and any fills following such a gap were considered a restart.

Data analyses, conducted in 2015, included calculating rates of continuous, 1-year use following initiation and restart of opioids and NSAIDs. Logistic regression compared continuous use with adjustment for age, sex, and race/ethnicity. Medication restart analyses were adjusted for time between stop and restart.

Results

The sample included de novo users of opioids ($n=387$) and NSAIDs ($n=3,360$). Overall, 8.5% of opioid initiates continued use for 1 year as compared with 2.1% of NSAID initiates (Table 1). Among those who stopped and restarted, 7.9% of opioid users subsequently continued use for 1 year versus 4.4% of NSAID users. Continuous use was more common among opioid users (AOR=3.06, $p<0.001$). Opioid users were also more likely to use continuously after restarting when compared with NSAID users (OR=1.87, $p=0.044$); however, this association was not significant after adjustment (AOR=1.66, 95% CI=0.85, 3.25).

Discussion

This study presents information on the long-term use of opioids and NSAIDs for non-cancer low-back pain. The data indicate that long-term use in this sample is three times more likely among opioid as compared with NSAID initiates. These data are important given evidence that chronic use of opioids may lead to addiction and hyperalgesia—possible reasons for long-term use among opioids initiates.^{2,10} Alternatively, opioids may have been used long-term if improved symptoms were observed.^{4,7,9} These data suggest that although both classes are primarily recommended for acute pain (or for cautionary long-term use when there is symptom improvement) and both have serious long-term risks, opioids appear to be used more extensively for long periods. The study findings are limited by their observational nature and the representation of a single health system. The authors were not able to capture over-the-counter NSAID use and pain severity. Importantly, the sample comprised individuals who had an incident diagnosis of lumbago, did not have a prior opioid or NSAID prescription, and did not have a prior contraindication for either treatment. These results support the need for a future prospective study comparing the long-term risks and benefits associated with these medications to provide evidence to support prescribing guidelines.

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References

1. Ahmedani BK, Peterson EL, Wells KE, Lanfear DE, Williams LK. Policies and events affecting prescription opioid use for non-cancer pain among an insured patient population. *Pain Physician*. 2014; 17(3):205–216. [PubMed: 24850102]
2. Bohnert AS, Valenstein M, Bair MJ, et al. Association between opioid prescribing patterns and opioid overdose-related deaths. *JAMA*. 2011; 305(13):1315–1321. <http://dx.doi.org/10.1001/jama.2011.370>. [PubMed: 21467284]
3. Boudreau D, Von KM, Rutter CM, et al. Trends in long-term opioid therapy for chronic non-cancer pain. *Pharmacoepidemiol Drug Saf*. 2009; 18(12):1166–1175. <http://dx.doi.org/10.1002/pds.1833>. [PubMed: 19718704]
4. Chou R, Fanciullo GJ, Fine PG, et al. Clinical guidelines for the use of chronic opioid therapy in chronic noncancer pain. *J Pain*. 2009; 10(2):113–130. <http://dx.doi.org/10.1016/j.jpain.2008.10.008>. [PubMed: 19187889]
5. CDC. Vital signs: overdoses of prescription opioid pain relievers---United States, 1999–2008. *MMWR*. 2011; 60(43):1487–1492. [PubMed: 22048730]
6. Kuritzky L, Samraj GP. Nonsteroidal anti-inflammatory drugs in the treatment of low back pain. *J Pain Res*. 2012; 5:579–590. [PubMed: 23271922]
7. Hegmann KT, Weiss MS, Bowden K, et al. ACOEM practice guidelines: opioids for treatment of acute, subacute, chronic, and postoperative pain. *J Occup Environ Med*. 2014; 56(12):e143–159. <http://dx.doi.org/10.1097/JOM.0000000000000352>. [PubMed: 25415660]
8. Makris UE, Abrams RC, Gurland B, Reid MC. Management of persistent pain in the older patient: a clinical review. *JAMA*. 2014; 312(8):825–836. <http://dx.doi.org/10.1001/jama.2014.9405>. [PubMed: 25157726]
9. Mai J, Franklin G, Tauben D. Guideline for Prescribing Opioids to Treat Pain in Injured Workers. *Phys Med Rehabil Clin N Am*. 2015; 26(3):453–465. <http://dx.doi.org/10.1016/j.pmr.2015.04.005>. [PubMed: 26231959]
10. Hooten WM, Lamer TJ, Twyner C. Opioid-induced hyperalgesia in community-dwelling adults with chronic pain. *Pain*. 2015; 156(6):1145–1152. <http://dx.doi.org/10.1097/j.pain.0000000000000170>. [PubMed: 25815431]

Table 1A

Comparison of Long-term Use of Opioids versus NSAIDS for Patients with Non-Cancer, Low-Back Pain

Panel A: Sample characteristics	All (n=3,747)	Opioid (n=387)	NSAID (n=3,360)	p-value
Sex				0.605
Male - n (%)	1,764 (47.0)	187 (48.3)	1,577 (46.9)	
Female - n (%)	1,983 (53.0)	200 (51.7)	1,783 (53.1)	
Race/Ethnicity				<0.001
White, non-Hispanic - n (%)	1,828 (48.8)	225 (58.1)	1,603 (47.7)	
Black, African American - n (%)	1,294 (34.5)	90 (23.3)	1,204 (35.8)	
Other	625 (16.7)	72 (18.6)	553 (16.5)	
Age - mean $\pm$ SD	42.4 $\pm$ 15.4	50.0 $\pm$ 17.2	41.6 $\pm$ 14.9	<0.001
Continuous use for 1-year from initiation - n (%)	N/A	33 (8.5)	71 (2.1)	<0.001
Continuous use for 1-year after restart (stopped and restarted medication) - n (%)	N/A	13 (7.9) n=165	83 (4.4) n=1897	0.044

Table 1B

Panel B: Logistic regression analyses	Unadjusted		Adjusted	
	OR (95% CI)	<i>p</i> -value	OR (95% CI)	<i>p</i> -value
Continuous opioid use for 1-year from initiation ^a	4.64 (3.01, 7.13)	<0.001	3.06 (1.87, 5.06)	<0.001
Continuous opioid use for 1-year after restarting medication (following initial use and stop) ^b	1.87 (1.02, 3.43)	0.044	1.66 (0.85, 3.25)	0.137

^aContinuous use of NSAIDs for 1-year is the reference group. Analyses are adjusted for age, sex, and race/ethnicity.

^bContinuous use of NSAIDs for 1-year after initially starting and stopping the medication is the reference group. Analyses are adjusted for age, sex, race/ethnicity, and time between stop and restart of same medication.

NSAIDS, non-steroidal anti-inflammatory drugs