Comparison of Knee Osteoarthritis Treatment Patterns by Rheumatologists vs. Other Providers in a U.S. Administrative Claims Database

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Background

- Knee osteoarthritis (OA), the most common type of OA, is a leading cause of pain and disability[1]
- The diagnosing physician type (rheumatologists [RH] versus general practitioners [GP] or orthopedic specialists [OS]) may impact treatment patterns among newly diagnosed knee OA patients
- The objective of this study was to compare demographics, clinical characteristics, and treatment patterns of patients with a new knee OA diagnosis made by different medical providers

Methods

- The IBM MarketScan® Research Databases were used to identify knee OA patients from 2013-2018, the index period
- **Figure 1** outlines inclusion criteria, attrition rates, and patient cohorts
- Outcomes were assessed from index date to the first of inpatient death, end of continuous enrollment, or end of the study period (variable follow-up)
- Diagnosing physician was defined by the provider type on the first claim with knee OA diagnosis
- Comorbid burden was calculated using the Deyo-Charlson Comorbidity Index (DCI), an aggregate measure of comorbid burden, assigning a weight of 1-6 points to select conditions[2]

Figure 1. Patient Selection

[1] Other types of diagnosing physicians accounted for < 1% of each patient population. Examples include emergency medicine, pain medicine, chiropractors, and other non-traditional OA physicians.

Results

Table 1. Demographic and Clinical Characteristics Stratified by Diagnosing Physician

| PATIENT CHARACTERISTICS[1]	GP-Diagnosed Patients N =98,804		OS-Diagnosed Patients N =232,567		RH-Diagnosed Patients N =15,517		GP vs RH	OS vs RH
	N/Mean	%/SD	N/Mean	%/SD	N/Mean	%/SD	p-value	p-value
Age								
Mean, SD	63.35	12.86	58.92	11.04	58.93	11.73	**<0.001**	0.913
Median	62.00		59.00		58.00			
Minimum, Maximum	18.00	105.00	18.00	102.00	18.00	100.00		
Sex (N, %)							**<0.001**	**<0.001**
Male	41,141	41.6%	95,597	41.1%	3,788	24.4%		
Female	57,663	58.4%	136,970	58.9%	11,729	75.6%		
Primary Insurance (N, %)							**<0.001**	**<0.001**
Commercial	56,789	57.5%	178,935	76.9%	11,539	74.4%		
Medicare	42,012	42.5%	53,622	23.1%	3,978	25.6%		
Unknown	3	0.0%	10	0.0%	0	0.0%		
Deyo-Charlson Comorbidity Index (DCI)							**<0.001**	**<0.001**
Mean, SD	1.40	2.17	1.01	1.78	1.53	2.00		

- 488,510 knee OA patients met inclusion criteria (**Figure 1**) and 346,888 patients were diagnosed by a physician type of interest (RH, 4.5%; GP, 28.5%; OS, 67%)
- On average, GP-diagnosed patients were older than OS- and RH-diagnosed patients (**Table 1**)
- While the majority of patients (60%) were female, this percentage was greatest among RH-diagnosed patients (75.6%) (**Table 1**)

### Figure 2. Comorbid Conditions Stratified by Diagnosing Physician
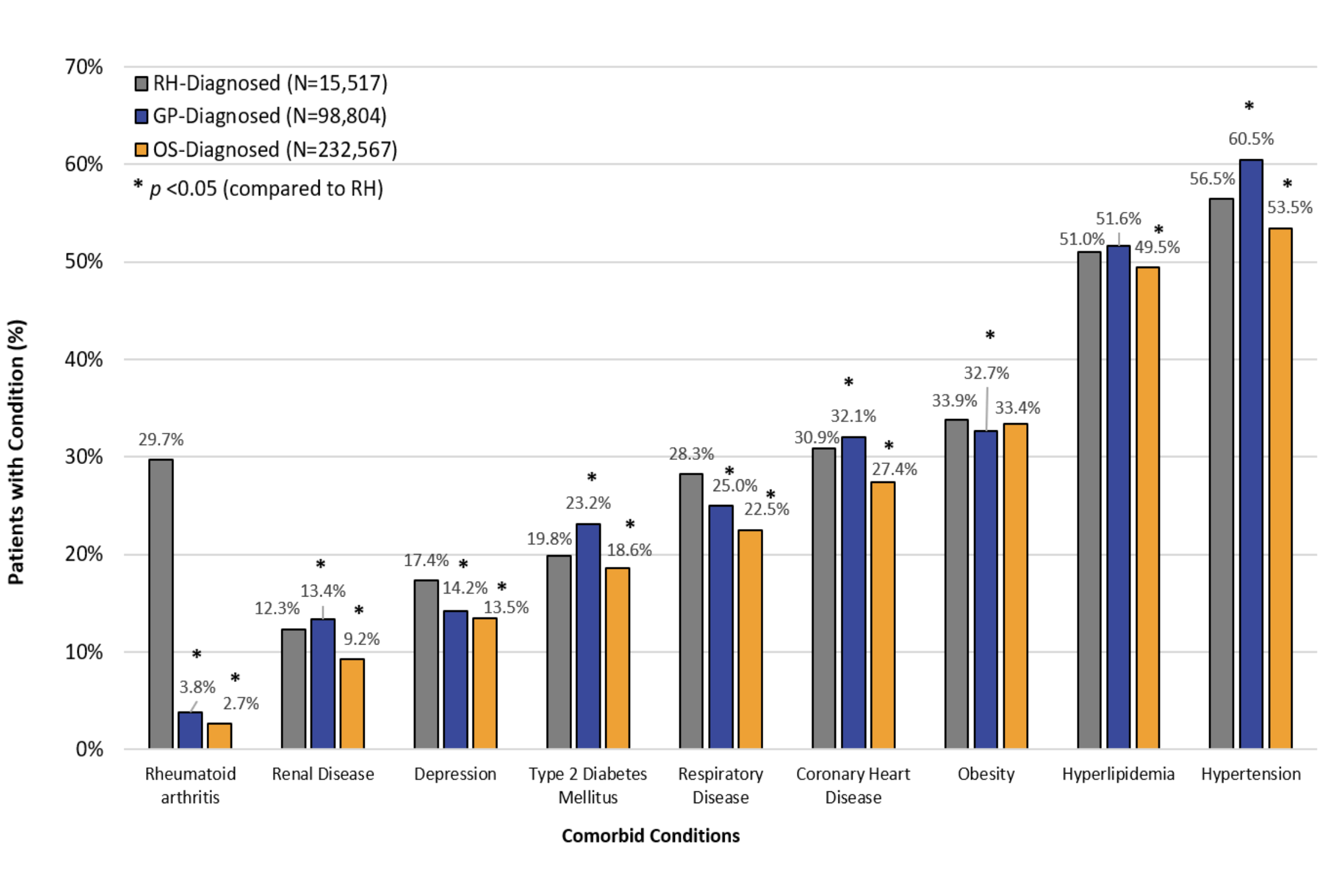
- RH-diagnosed patients had higher comorbid burdens compared to GP- and OS-diagnosed patients per DCI; these comorbid burdens included depression, respiratory disease, and rheumatoid arthritis (RA) (**Table 1**)
- Particularly, an RA diagnosis was about 10-fold higher in RH- than OS-diagnosed patients, potentially indicating that knee OA is an ancillary diagnosis noted during RA clinic visits (**Figure 2**)

Figure 3. Knee-OA-Related Treatments Stratified by Diagnosing Physician
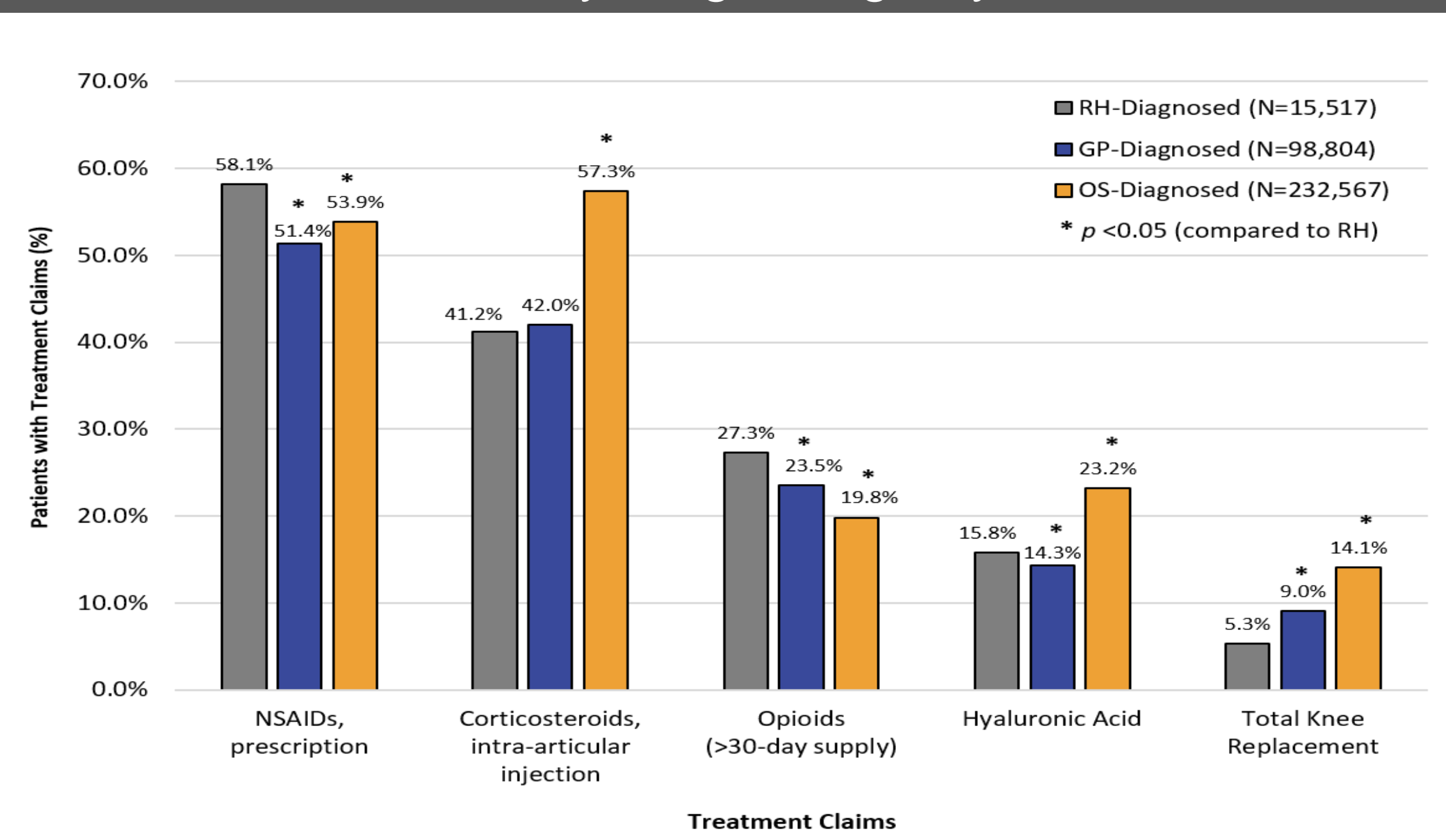
- OS-diagnosed patients received more intra-articular (IA) corticosteroids (CS) and IA hyaluronic acid (HA) compared to RH- and GP-diagnosed patients, while more RH-diagnosed patients received prescription NSAIDS and opioids (>30-day supply) than GP- and OS-diagnosed patients (**Figure 3**)
- RH-diagnosed patients also had fewer total knee replacements

Figure 4. Time from Knee OA Diagnosis to Treatment Stratified by Diagnosing Physician
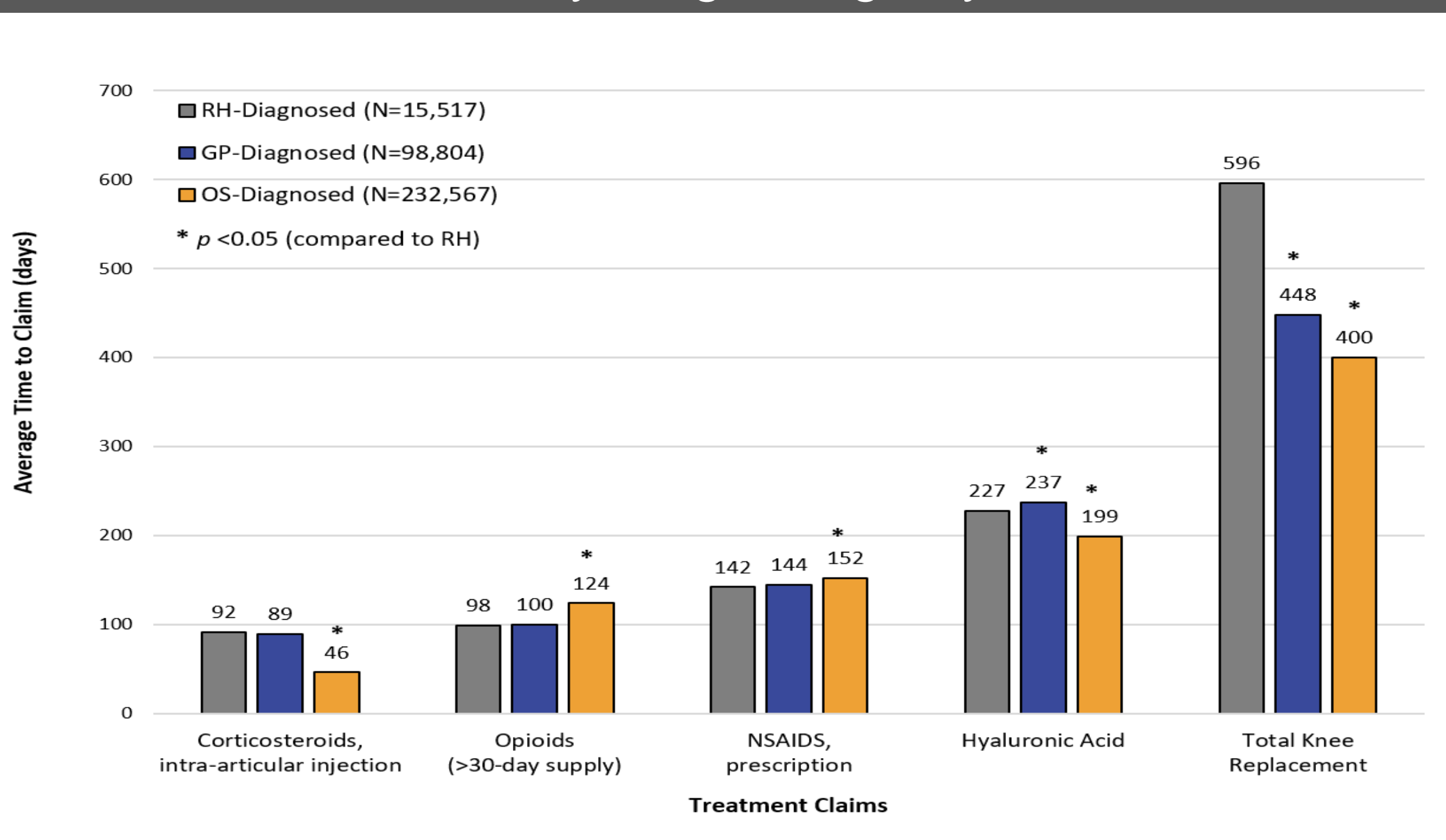
- (TKRs) than GP- and OS-diagnosed patients (**Figure 3**)
- OS-diagnosed patients had the shortest time to initiation for IA CS and HA compared to RH- and GP-diagnosed patients (**Figure 4**)
- Time to TKR initiation was longer in RH-diagnosed patients compared to GP- and OS-diagnosed patients (**Figure 4**)

Conclusions

- **Patients diagnosed by rheumatologists differed from other patients at baseline, particularly in their sex and comorbidities**
- **RH-diagnosed patients received less IA CS or IA HA than OS-diagnosed patients**
- **More RH-diagnosed patients received NSAIDS and opioid (>30-day supply) prescriptions than GP- or OS-diagnosed patients**
- **RH-diagnosed patients had the highest comorbid burden and received the least number of TKRs, potentially indicating that they were unsuitable candidates for surgery**
- **Further research into treatment patterns and characteristics of RH-diagnosed knee OA patients is warranted**

Limitations

- Patients with knee OA often seek over-the-counter pain relief prior to prescription medication; therefore, true medication use is likely to be underrepresented by claims
- No prior knee OA diagnosis for ≥24 months pre-index is an assumption of new diagnosis; this assumption may allow for the inclusion of patients with an established knee OA diagnosis
- As with all claims data, misclassification from diagnostic coding errors may occur, potentially resulting in misclassification of knee OA status, comorbid burden, and study outcomes
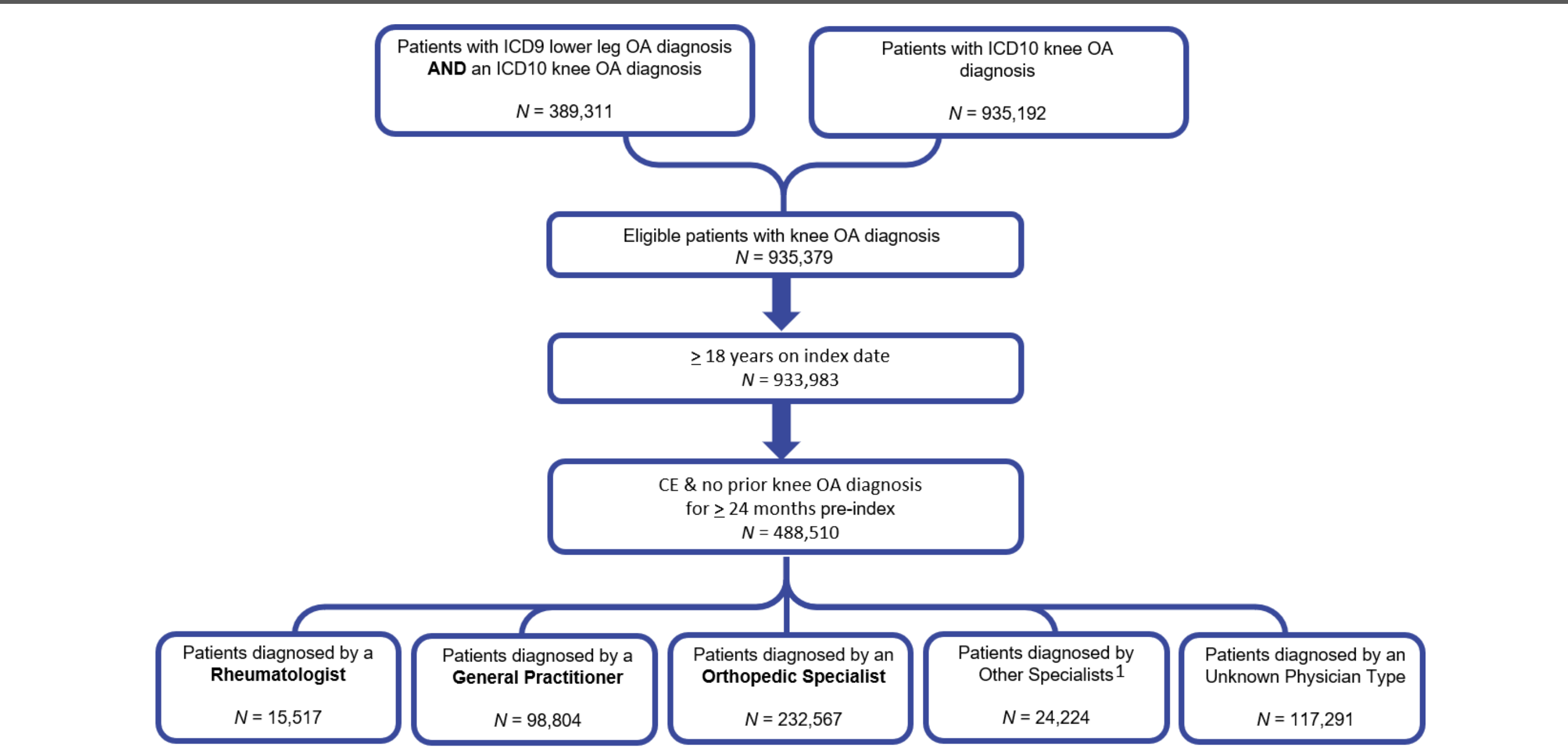
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