

# Patterns of prescription pain medication use among patients with hemophilia (PWH) in the United States based on a commercial insurance claims database

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## INTRODUCTION

- Hemophilia affects ~ 20,000 people in the United States (US) and over 400,000 people worldwide<sup>1,2</sup>
- Most PWH experience acute pain during joint bleeds; > 50% of patients experience chronic pain due to progressive joint damage and hemophilia arthropathy<sup>3,4</sup>
- Although pain management is an important part of disease care for hemophilia patients, few studies have examined pain management among hemophilia patients<sup>5</sup>

## OBJECTIVE

- Assess patterns of prescribed analgesic use among hemophilia A (HA) and B (HB) patients in a real world setting

## METHODS

- Analyzed 2004-2012 Truven MarketScan data—a claims database encompassing over 30 million employees in the US
- Sample included male patients aged 6-64 years with HA or HB diagnosis (ICD9: 286.0, 286.1) who met the following criteria:
  - ≥1 inpatient or ≥2 outpatient hemophilia-related claims 30 days apart
  - ≥2 pharmacy claims for clotting factors VIII or IX during the study period
  - ≥12 months of continuous benefit enrollment from the first hemophilia treatment observed in the database
  - No pharmacy claims for anti-inhibitor bypassing agent
- Included the following types of prescribed analgesics for assessment: opioids, COX-2 inhibitors, acetaminophen, and naproxen
  - Treatment regimens assessed according to the World Federation of Hemophilia guidelines and through consultation with treating clinicians<sup>1</sup>
- Identified the prescribed analgesics using corresponding J-codes in inpatient/outpatient claims and NDCs in pharmacy claims
- Assessed frequency of patients with pain medication (opioids and non-opioids), and annual average use separately for HA and HB patients
- Further stratified the results by age groups: 6-18, 19-44, and 45-64 years old, performed linear trend test using generalized linear model and reported corresponding p-values in tables 2 and 3

## RESULTS

- Identified 587 eligible HA and 49 HB patients, contributing to 2,670 and 204 person-years respectively (Figure 1)
- Of them, 297 (50.6%) HA and 17 (34.7%) HB patients had any analgesic prescription during the study period, contributing to 649 person-years (24.3%) of use among HA and 44 person-years (21.6%) among HB patients (Tables 1- 3)
- Opioids were prescribed more often than non-opioids (HA: 19.4% vs. 8.0%, HB: 15.2% vs. 9.3%, Tables 2 and 3)
- Older patients (age 45-64) used more pain medication and were more frequently prescribed opioids among both HA and HB populations
- Compared to people with chronic pain (33.9%) in the US, PWH used fewer analgesics overall but similar percentage had opioid prescriptions (15.5% among chronic pain population)<sup>6</sup>
- In contrast, prescribed opioid use over the past 30 days was higher among PWH than in the general population (≥ 20 years olds, 6.9%)<sup>7</sup>

## RESULTS (CONT.)

Figure 1. Sample Selection Flow Diagram

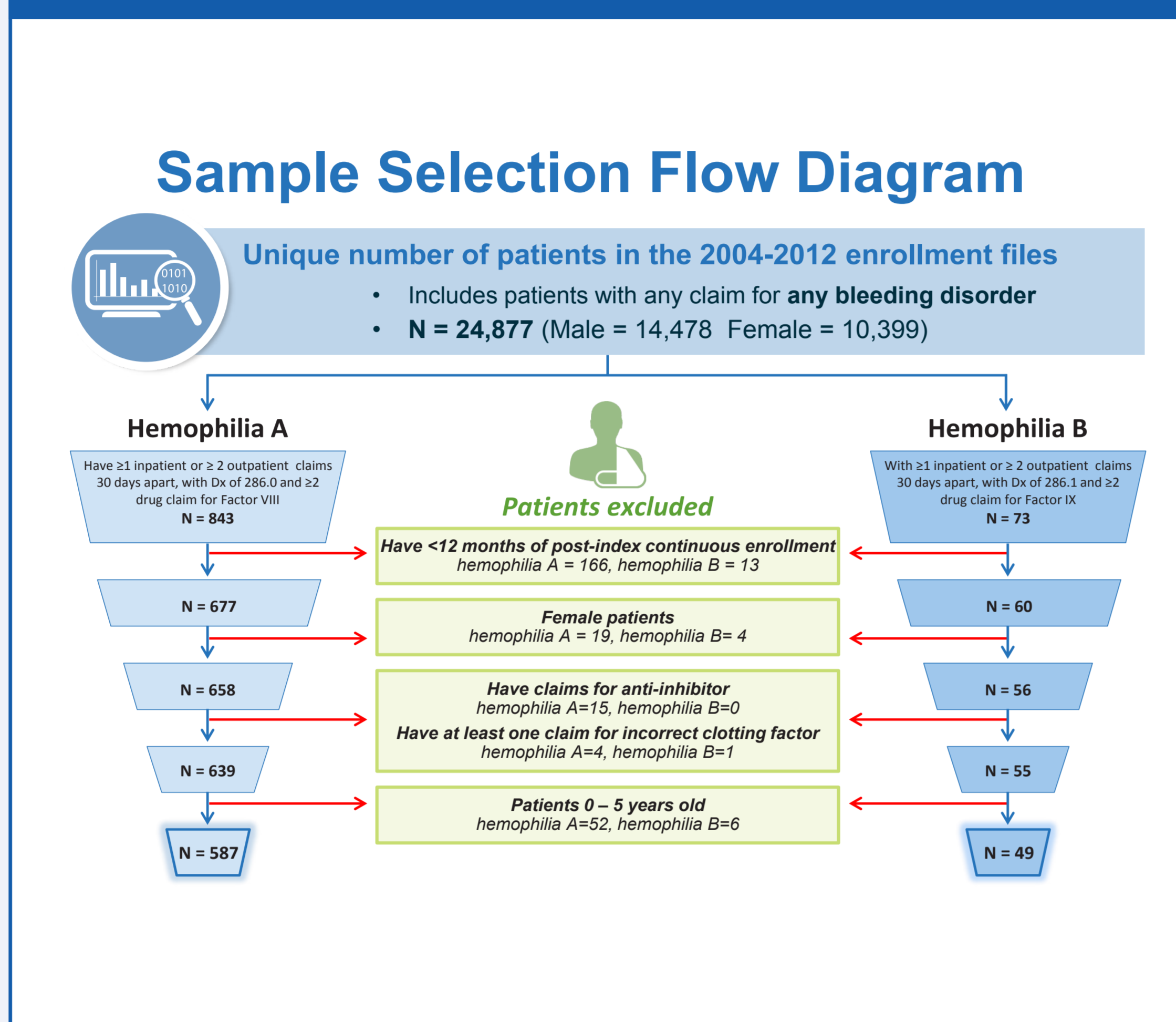


Table 1. Baseline patient characteristics and prescription pain medication use by hemophilia type

Variable description, N(%)	Hemophilia A (n = 587)	Hemophilia B (n = 49)
Mean follow-up years* (SD)	4.44 (2.33)	4.07 (2.45)
Mean age at index date (Range)	22.5 (6 - 62)	26.3 (6 - 62)
Region of residence at baseline:		
Northeast	96 (16.35)	4 (8.16)
North Central	139 (23.68)	16 (32.65)
South	231 (39.35)	21 (42.86)
West	115 (19.59)	8 (16.33)
Unknown	6 (1.02)	0 (0.00)
Number of Charlson comorbidities <sup>a</sup> present at baseline:		
0	459 (78.19)	43 (87.76)
≥ 1	128 (21.81)	6 (12.24)
Number of patients ever diagnosed with:		
HIV/AIDS	88 (14.99)	0 (0.00)
Hepatitis C	120 (20.44)	4 (8.16)
Any joint related problems <sup>b</sup>	176 (29.98)	7 (14.29)
Used any prescription pain medication in 2004-2012 period	297 (50.60)	17 (34.69)
Used prescription opioids in 2004-2012 period	268 (45.66)	14 (28.57)

\*Incremental follow-up with at least first 12 months of continuous enrollment from the index date, but not necessarily continuous after that.  
<sup>a</sup>List of 17 comorbidities, as described by Quan et al. 2005, used in claims data to assess a patient's overall health status.  
<sup>b</sup>Joint-related problems include diagnosis of arthropathy, osteoarthritis, difficulty walking, or stiff joints.

Table 2. Annual average pain medications utilization among Hemophilia A patients, overall sample and by various age categories (person-year level)

Per patient annual average (SD)	Total (Age 6 - 64)	Age 6-18	Age 19-44	Age 45-64	P-for-trend <sup>b</sup>
Total person-years <sup>a</sup>					
	2,670	1,272	930	468	
Any prescription pain medication					
Number (%) with ≥=1 script	649 (24.3%)	144 (11.3%)	307 (33.0%)	198 (42.3%)	<0.001
Number of scripts, mean (SD)	1.18 (3.56)	0.21 (0.87)	1.84 (4.56)	2.54 (4.89)	<0.001
Annual days of supply, Mean (SD)	23.18 (72.22)	1.84 (10.02)	31.38 (77.62)	64.86 (120.14)	<0.001
Prescribed opioids					
Number (%) with ≥=1 script	517 (19.4%)	125 (9.8%)	239 (25.7%)	153 (32.7%)	<0.001
Number of scripts, mean (SD)	0.84 (3.08)	0.17 (0.77)	1.41 (4.16)	1.57 (3.97)	<0.001
Annual days of supply, Mean (SD)	11.54 (49.46)	0.88 (4.70)	16.77 (56.08)	30.10 (83.38)	<0.001
Prescribed non-opioids					
Number (%) with ≥=1 script	213 (8.0%)	25 (2.0%)	104 (11.2%)	84 (18.0%)	<0.001
Number of scripts, mean (SD)	0.33 (1.45)	0.04 (0.34)	0.42 (1.53)	0.94 (2.55)	<0.001
Annual days of supply, Mean (SD)	13.04 (56.40)	0.98 (8.81)	16.38 (59.92)	39.18 (98.62)	<0.001

<sup>a</sup>Person-years contributed by the patients who ever took pain medications during their follow-up years. Some patients may not take pain medications for some years during their follow-up.  
<sup>b</sup>P-for-trend were obtained by performing generalized regression model.

Table 3. Annual average pain medications utilization among Hemophilia B patients, overall sample and by various age categories (person-year level)

Per patient annual average (SD)	Total (Age 6 - 64)	Age 6-18	Age 19-44	Age 45-64	P-for-trend <sup>b</sup>
Total person-years <sup>a</sup>					
	204	66	69	69	
Any prescription pain medication					
Number (%) with ≥=1 script	44 (21.6%)	2 (3.0%)	17 (24.6%)	25 (36.2%)	<0.001
Number of scripts, mean (SD)	0.88 (2.23)	0.06 (0.34)	0.91 (1.91)	1.64 (3.15)	<0.001
Annual days of supply, Mean (SD)	22.30 (61.18)	1.24 (7.82)	17.99 (38.94)	46.75 (92.43)	<0.001
Prescribed opioids					
Number (%) with ≥=1 script	31 (15.2%)	1 (1.5%)	14 (20.3%)	16 (23.2%)	0.001
Number of scripts, mean (SD)	0.50 (1.55)	0.02 (0.12)	0.78 (1.84)	0.67 (1.85)	0.014
Annual days of supply, Mean (SD)	8.32 (29.02)	0.06 (0.49)	14.49 (35.93)	10.06 (33.39)	0.047
Prescribed non-opioids					
Number (%) with ≥=1 script	19 (9.3%)	2 (3.0%)	3 (4.4%)	14 (20.3%)	0.002
Number of scripts, mean (SD)	0.39 (1.47)	0.05 (0.27)	0.13 (0.68)	0.97 (2.33)	<0.001
Annual days of supply, Mean (SD)	14.50 (52.95)	1.18 (7.58)	3.49 (18.12)	38.23 (84.37)	<0.001

<sup>a</sup>Person-years contributed by the patients who had any prescribed pain medication during their follow-up years. Some patients may not take pain meds for some years during their follow-up.  
<sup>b</sup>P-for-trend were obtained by performing generalized regression model.

## STRENGTHS AND LIMITATIONS

### Strengths:

- Large dataset with healthcare utilization data from a real world treatment setting, and thus, a diverse patient pool to capture overall pain management patterns
- This data allows an examination of treatment patterns over time

### Limitations:

- Since data were not available on over-the-counter analgesic use, as such, they likely underestimate rates of non-opioid analgesic use
- Lacking direct data on severity of disease, we used strict inclusion/exclusion criteria as a substitute in order to ensure that most of the moderately to severely ill patients were included

## CONCLUSIONS

- Notable use of prescription analgesics, particularly among older patients
- Opioids were used more frequently, and opioid use increased with age
- High rates of analgesic use among older patients suggests the need for greater pain control as the disease progress. It also suggests the importance of better bleeding event management as a means of delaying or preventing painful arthropathy
- Future studies should assess the outcomes associated with frequent analgesic use, and particularly opioid use, on patients' quality of life, and on dependency and abuse

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### Disclosures

Anshu Shrestha and Ningqi Hou are employees of Precision Health Economics, a consulting firm that received research funding from Biogen. Katharine Batt is a consultant to Precision Health Economics. Darius Lakdawalla is Chief Strategy Officer and holds equity at Precision Health Economics. Adi Eldar-Lissai is an employee and shareholder of Biogen.

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