ALL-CAUSE AND BLEEDING COSTS OF PATIENTS INITIATING P2Y12 INHIBITORS, FXA INHIBITORS, AND DABIGATRAN

Amanda Kong,[1] John Lee,[2] Kristin A. Evans,[1] Cynthia Morrow,[1] Jeffrey Erickson,[2] Deepak L. Bhatt[3]

[1]IBM Watson Health, Cambridge, MA, USA; [2] PhaseBio Pharmaceutical, Malvern, PA, USA; [3] Brigham and Women's Hospital, Harvard Medical School, Boston, MA, USA

Background & Objective

- P2Y12 inhibitors (P2Y12i) are antiplatelet medications used to prevent or treat heart attacks, strokes, and other cardiovascular events.[1]
- Factor Xa inhibitors (FXai) and dabigatran, a direct thrombin inhibitor (DTi), are anticoagulants indicated to prevent venous thromboembolism and clots associated with atrial fibrillation and joint replacements.[2][3]
- There is an increased risk of bleeding events associated with each of these medication classes,[4] though reversal agents are currently approved only for FXai and DTi.
- The purpose of this study was to describe all-cause and bleeding-related healthcare costs among patients initiating P2Y12i, FXai, or DTi.

Methods

Study Design and Data Source

- This retrospective cohort study used administrative claims data from the IBM® MarketScan® Commercial and Medicare Supplemental Research Databases spanning 1/1/2013-6/30/2019
- Inclusion and exclusion criteria are displayed in Figure 1.

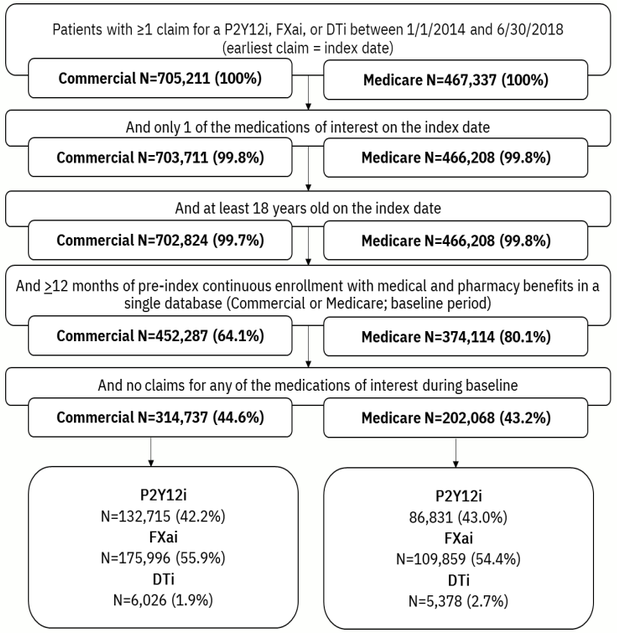
Outcomes

- All outcomes were assessed while patients were persistent on their index medication, defined as the time period between the index date and the earliest appearance of either a ≥30-day gap in days of supply, the end of the patient's continuous enrollment period, or the end of the study window [6/30/2019])
- Outcomes included:
  - **All-cause healthcare costs**: paid amounts from all medical and pharmacy claims
  - **Bleed-related healthcare costs**: paid amounts from all emergency room (ER) and inpatient (IP) medical claims with a diagnosis code for a bleed
- Internal bleeds (gastrointestinal [GI], intracranial, other internal), external bleeds, and bleeds related to medical procedures were included.
- All-cause and bleed-related costs are reported per patient per year (PPPY) to account for the variable length of the persistence period.
- Costs per individual bleeding events were also assessed.

Analysis

- Outcomes were compared between P2Y12i and FXai users, and between P2Y12i and DTi users using t-tests for continuous variables, and chi-square or Fisher's exact tests for categorical variables

Figure 1. Patient Selection



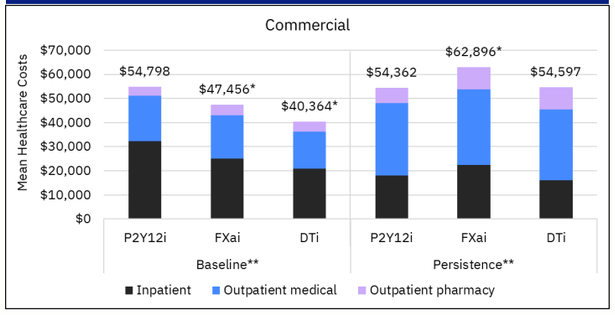
Results

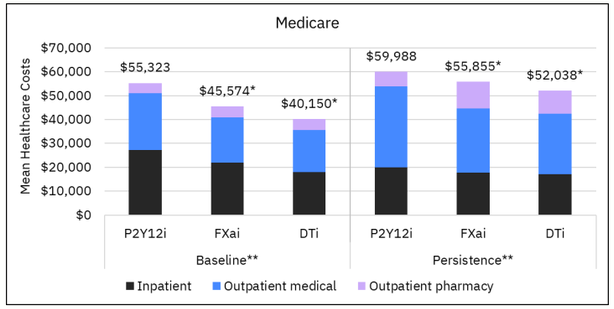
- Patients in the commercial sample presented a mean age in the early-to-mid 50s, while Medicare patients were aged in the mid-to-late 70s; the majority of patients were male (Table 1).
- Baseline all-cause healthcare costs were 15%-38% higher among Commercial and Medicare P2Y12i patients vs. FXai and DTi patients (Figures 2 and 3).
- While persistent on their index medication, Commercial P2Y12i and DTi patients incurred similar all-cause healthcare costs (Figure 2)
- Medicare P2Y12i patients incurred 7% and 15% higher all-cause healthcare costs than FXai and DTi patients, respectively, while persistent on their medication (Figure 3).
- Baseline costs per bleeding event among P2Y12i patients were 9%-20% higher than FXai patients, and 17%-40% higher than DTi patients (Figure 4).
- Costs per bleeding events while patients were persistent on their medication were similar between P2Y12i and FXai patients in each of the commercial and Medicare cohorts (Figure 4).

Table 1. Demographic Characteristics on the Index Date

	COMMERCIAL			MEDICARE		
	P2Y12i N=132,715	FXai N=175,996	DTi N=6,026	P2Y12i N=86,831	FXai N=109,859	DTi N=5,378
Age (Mean, SD)	55.4 (7.3)	53.2 (9.7)	54.7 (8.8)	76.5 (7.8)	77.1 (7.7)	76.7 (7.5)
Age category						
18-24	0%	2%	1%	0%	0%	0%
25-34	1%	4%	3%	0%	0%	0%
35-44	7%	11%	9%	0%	0%	0%
45-54	28%	27%	26%	0%	0%	0%
55-64	63%	56%	61%	2%	1%	1%
65-74	0%	0%	0%	43%	40%	41%
75+	0%	0%	0%	55%	59%	57%
Male	68%	54%	65%	57%	47%	54%
Geographic region	0%	0%	0%	0%	0%	0%
Northeast	17%	16%	21%	22%	25%	30%
North Central	22%	24%	18%	34%	30%	25%
South	49%	46%	39%	34%	33%	33%
West	11%	14%	21%	10%	12%	12%
Unknown	1%	1%	1%	0%	0%	0%
Insurance plan type[1]	0%	0%	0%	0%	0%	0%
Comprehensive/indemnity	5%	4%	4%	45%	42%	40%
Exclusive or preferred provider plan	58%	60%	56%	39%	41%	44%
Point-of-service	8%	7%	7%	5%	5%	6%
Health maintenance organization	10%	9%	16%	8%	9%	7%
Consumer-driven/high-deductible plan	18%	19%	14%	1%	1%	1%
Other/unknown	2%	2%	2%	1%	1%	1%
Index year	0%	0%	0%	0%	0%	0%
2014	28%	25%	32%	35%	29%	40%
2015	22%	21%	19%	23%	22%	18%
2016	22%	23%	29%	22%	24%	27%
2017	19%	21%	16%	16%	19%	12%
2018	8%	10%	6%	4%	7%	4%
Persistence period, days (Mean, SD)	438 (421)	448 (456)	416 (435)	468 (438)	480 (454)	475 (451)

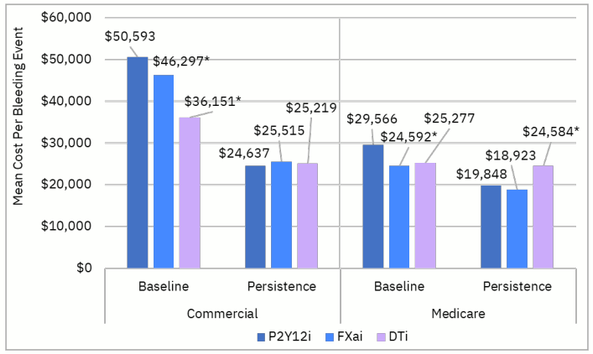
Figures 2 & 3. All-Cause Healthcare Costs During the Baseline and Persistence Periods





*p<0.001 vs. P2Y12i; **Baseline costs during 12 months before index medication initiation; costs during the persistence period are reported per patient per year

Figure 4. Cost Per Bleeding Event During the Baseline and Persistence Periods



*p<0.05 vs. P2Y12i

Limitations

- Medication persistence was based on filled prescriptions; patients were assumed to take the medication as prescribed, though this cannot be confirmed in claims data.
- There may be systematic differences between patients prescribed P2Y12i, FXai, and DTi that account for observed differences in outcomes and were not controlled for in this analysis.
- Results of this analysis may not be generalizable to patients without Commercial or Medicare supplemental insurance, or patients without health insurance.

Conclusions

- Patients prescribed P2Y12 inhibitors incurred all-cause and bleeding-related healthcare costs similar to or greater than patients prescribed FXa inhibitors or dabigatran.
- Results highlight the need for an effective reversal agent for the P2Y12i medication class, which could decrease bleeding events and associated costs among patients prescribed these therapies.

References

[1] U.S. National Library of Medicine. Antiplatelet drugs – P2Y12 inhibitors. https://medlineplus.gov/ency/patientinstructions/000100.htm
[2] Medscape. Factor Xa Inhibitors. https://reference.medscape.com/drugs/factor-xa-inhibitors
[3] Medscape. Dabigatran. https://reference.medscape.com/drug/pradaxa-dabigatran-342135
[4] Shimada et al. *Int J Med Sci.* 2019;7(16):1295-1303.

Disclosures

This study was funded by PhaseBio Pharmaceuticals. Dr. Bhatt receives research funding paid to Brigham and Women's Hospital from PhaseBio and serves as the Chair of REVERSE-IT, studying the ticagrelor reversal agent bentracimab.