

Healthcare Costs-Among Ticagrelor-Treated Patients With Bleeding or Undergoing Urgent Surgery in the United States: A Real-World, Retrospective Claims Analysis

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Background

- Ticagrelor is a potent P2Y₁₂ inhibitor prescribed to reduce ischemic events in acute coronary syndrome (ACS) ¹
- Patients on a P2Y₁₂ inhibitor have higher perioperative bleeding-related adverse events or delays in surgery which may increase healthcare resource utilization and costs.
- Unlike the irreversible thienopyridines (clopidogrel and prasugrel), ticagrelor reversibly antagonizes ADP-mediated platelet activation²
 - Guidelines recommend a 3 to 5 day ticagrelor washout period prior to surgery due to the high risk of increased surgical bleeding and associated increased mortality rates ³⁻⁶
 - Many non-deferrable surgeries cannot wait 3-5 days for washout prior to surgery and further delay could increase risk of thrombosis ^{7,8}
 - Platelet transfusion within 24 hours of ticagrelor discontinuation has minimal effect in restoring platelet activity due to ticagrelor's ability to inhibit freshly transfused platelets.⁹

Objective

- To describe bleeding and surgery-related costs among a cohort of patients with ACS being treated with

Methods

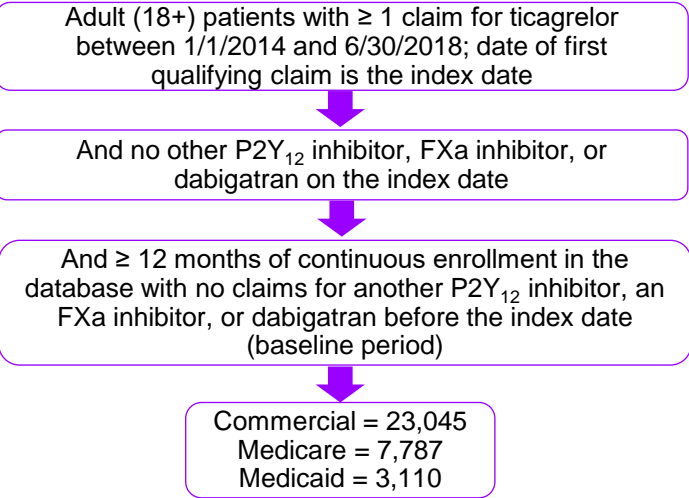
Study Design and Data Source

- The MarketScan Databases include medical and pharmacy insurance claims for patients with employer-sponsored private commercial or Medicare Supplemental insurance and patients covered by Medicaid in various US states
- All study data were obtained using International Classification of Diseases, 9th and 10th Revision, Clinical Modification (ICD-9/10-CM) codes, Current Procedural Terminology codes, Healthcare Common Procedure Coding System codes, and National Drug Codes
- Adult patients treated with ticagrelor between 2014 and 2018 were identified; the date of the earliest qualifying ticagrelor claim was set as the index date.
- At least 12 months of continuous database enrollment before the index date were required (baseline period).
- Bleeding events were identified by ER or inpatient claims with a diagnosis code for a bleed; urgent surgeries were identified by procedure codes on ER claims, or inpatient claims preceded by ambulance service.
- Costs of bleeding events and urgent surgeries were based on paid amounts on claims; events and costs were assessed during a variable-length period of ticagrelor persistence (no treatment gap >30 days)

Exclusions

- Patients were excluded if they had another P2Y₁₂ inhibitor, an FXa inhibitor, or dabigatran on the index date or during the baseline period. Aspirin was not an exclusion so patients could have received dual antiplatelet therapy.

Figure 1. Patient Selection



Limitations

This analysis has conventional limitations of retrospective claims-based analyses:

- This study was based on patients with health insurance coverage, and results may not be generalizable to uninsured ACS patients Diagnoses on claims may be mis-coded, thereby potentially underestimating the size of the patient population
- Medication persistence was based on filled prescriptions. Patients were assumed to take the medications as prescribed, but actual patient use could not be confirmed

Conclusions

- This study confirms that costs associated with either bleeding or surgical intervention among ticagrelor-treated patients was similarly substantial among payer types.
- Patients on ticagrelor often need urgent surgeries and other procedures, which can put them at risk of a bleeding event.
- This study highlights the need for a specific ticagrelor reversal agent that rapidly restores platelet function during bleeding, which could decrease the number of bleeding events and their related costs

Table 1. Reimbursed Costs of Bleeds and Urgent Surgeries

	Commercial		Medicare		Medicaid	
	Mean	SD	Mean	SD	Mean	SD
Cost per bleeding event	\$19,809	\$64,462	\$18,604	\$61,357	\$12,749	\$30,243
Cost per bleeding event including a transfusion or other treatment	\$29,675	\$79,005	\$19,510	\$38,309	\$14,443	\$31,759
Cost per intracranial hemorrhage	\$73,948	\$91,540	\$50,461	\$167,909	\$79,122	\$72,208
Cost per intracranial hemorrhage including a transfusion or other treatment	\$128,304	\$117,198	\$29,802	\$20,186	0 patients had ICH w/ treatment	
Cost per urgent surgery	\$34,143	\$75,759	\$32,806	\$82,307	\$21,779	\$51,029

Table 2. Bleed- and Surgery-Related Inpatient Admissions

	Commercial		Medicare		Medicaid	
	N/Mean	%/SD	N/Mean	%/SD	N/Mean	%/SD
Patients with an inpatient admission for a bleeding event (N, %)	422	1.8%	369	4.7%	127	4.1%
Average length of inpatient stay for bleeding events (Mean, SD)	6.1	8.5	5.8	7.5	5.8	5.1
Median	3.0		4.0		4.0	
Patients with an inpatient admission for an urgent surgery (N, %)	457	2.0%	300	3.9%	194	6.2%
Average length of inpatient stay for urgent surgery events (Mean, SD)	6.5	9.1	6.7	7.6	6.5	6.6
Median	3.5		5.0		4.0	

References

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