

# Evaluation of the impact of upstream clopidogrel on time to coronary artery bypass grafting (CABG)

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## INTRODUCTION

- Administration of dual antiplatelet therapy (DAPT) with aspirin and a P2Y12 inhibitor is an American College of Cardiology/ American Heart Association guideline recommendation for the management of non-ST elevation myocardial infarction acute coronary syndrome (NSTEMI-ACS) and ST elevation myocardial infarction (STEMI).<sup>1,2</sup>
- The optimal timing of administration for P2Y12 inhibitors in the setting of ACS is unknown; however, some studies suggest "upstream" administration is associated with a reduction in cardiovascular events (e.g., stent thrombosis, periprocedural myocardial infarction) as compared to provisional administration after coronary angiography.<sup>1</sup>
- The disadvantage of upstream administration is the potential to delay CABG while the P2Y12 inhibitor has a washout period (~5 days), resulting in added hospital costs and increasing the risk of iatrogenic complications.<sup>3</sup>

## PURPOSE

To evaluate whether the time to in-hospital CABG was impacted by upstream clopidogrel therapy for patients presenting to the University of Maryland Medical Center with either NSTEMI-ACS or STEMI.

## PATIENT POPULATION

### Inclusion Criteria

- Ages  $\geq 18$  years old
- Admission diagnosis of NSTEMI-ACS or STEMI
- In-hospital CABG

### Exclusion Criteria

- Admission diagnosis of unstable angina
- Prior P2Y12i maintenance therapy
- Elective CABG
- Delay to CABG resulting from complications by another disease state

## METHODS

- Retrospective chart review conducted on records between June 2011 – March 2017
- Pool of potential subjects identified through a search for ICD 9 and 10 codes for CABG, coronary angiography and cardiac catheterization
- Primary endpoint:
  - Mean number of days from presentation to CABG between patients who did or did not receive upstream clopidogrel therapy
- Secondary endpoints:
  - Mean number of days from presentation to CABG stratified by STEMI vs NSTEMI-ACS patients
  - Mean number of days from last dose of clopidogrel to CABG stratified by STEMI vs NSTEMI patients
- Statistical analysis
  - Differences in outcomes between exposures were detected using two-way analysis of variance (ANOVA) and t-tests

## RESULTS

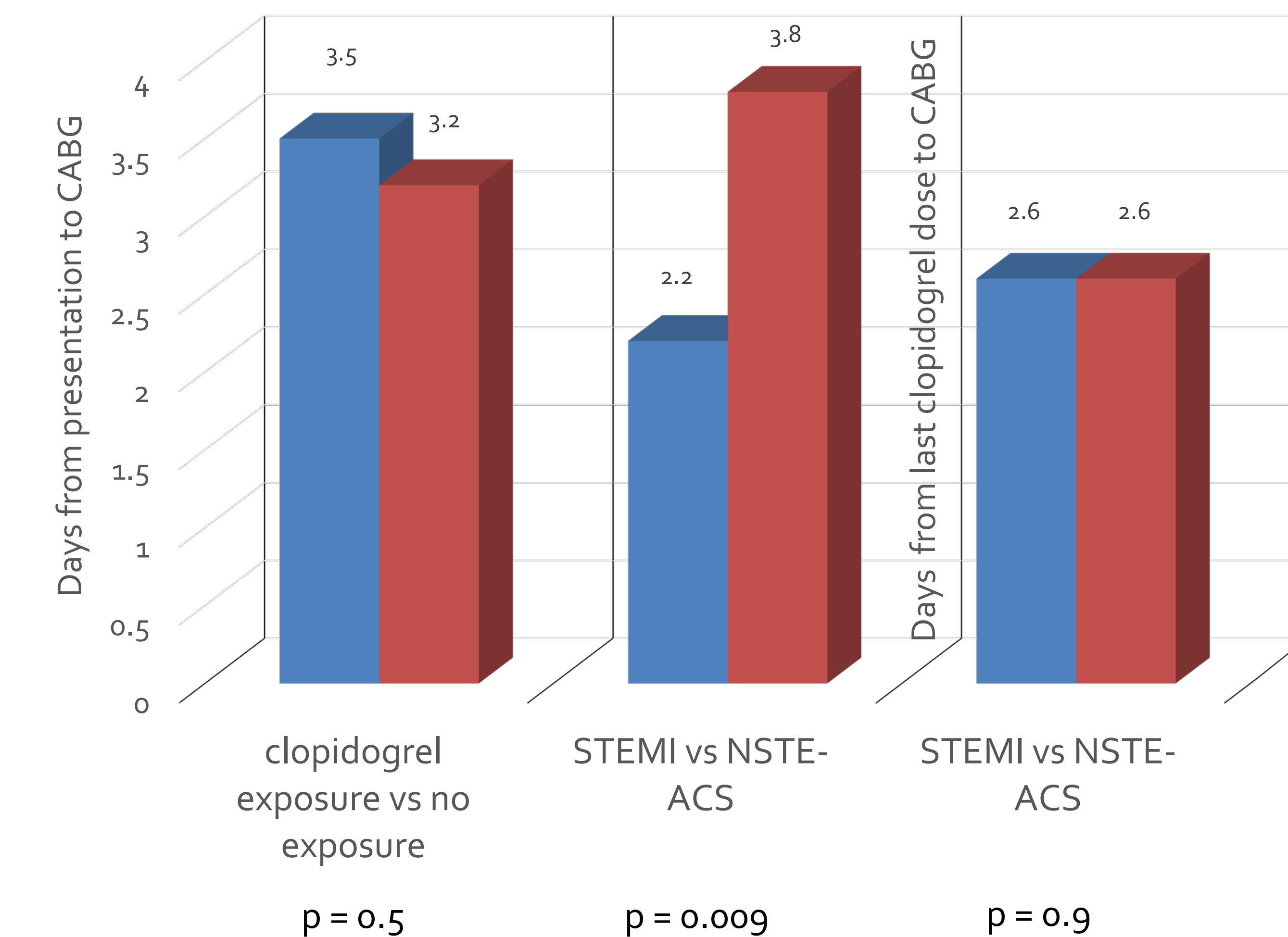
Table 1. Patient Demographics

Characteristics	Total (%), n=63	Upstream clopidogrel (n=34)	No upstream clopidogrel (n=29)	p value
<b>Age (years)</b>				
	64.4	64	64.9	0.8
<b>Gender</b>				
Male	71.4	70.6	72.4	0.9
Female	28.6	29.4	27.6	
<b>History of CAD</b>				
Yes	73	32.3	20.7	0.3
No	27	67.7	79.3	
<b>History of MI</b>				
Yes	17.5	14.7	20.7	0.7
No	82.5	85.3	79.3	
<b>Prior aspirin therapy</b>				
Yes	39.7	38.2	41.4	0.8
No	60.3	61.8	58.6	
<b>Type of MI</b>				
STEMI	28.6	23.5	34.5	0.3
NSTEMI-ACS	71.4	76.5	65.5	
<b>Percutaneous mechanical circulatory support use</b>				
Yes	50.8	38.2	65.5	0.03
No	49.2	61.8	34.5	

Table 2. Results

Primary Endpoints	Mean Days (95% CI)		
	Clopidogrel exposure	No exposure	p value
From presentation to CABG	3.5 (2.8,4.3)	3.2 (2.3, 4.0)	0.5
Secondary Endpoints	Mean Days (SD)		
	STEMI	NSTEMI-ACS	p value
From presentation to CABG	2.2 (2.0)	3.8 (2.3)	0.009
From last dose of clopidogrel to CABG	2.6 (1.6)	2.6 (1.7)	0.9

Figure 1. Primary and Secondary Outcomes



- 63 patients included in the final analysis with 34 exposed to upstream clopidogrel and 29 without exposure.
- The mean number of days from presentation to CABG in patients exposed to clopidogrel vs not exposed was 3.5 days (95% CI 2.8-4.3), and 3.2 days (95% CI 2.3-4.0; p=0.5, respectively)
- Aside from fewer patients on percutaneous mechanical support receiving upstream clopidogrel, baseline characteristics were the similar across study arms

## CONCLUSIONS

- Upstream administration of the P2Y12 inhibitor clopidogrel did not result in a delay to CABG for patients presenting with either NSTEMI-ACS or STEMI who were deemed surgical candidates
- Despite STEMI patients having an overall faster time to CABG from presentation, the mean number of days from last dose of clopidogrel did not differ between STEMI and NSTEMI-ACS patients, and therefore did not appear to be impacted by early exposure to clopidogrel

## REFERENCES

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