Association of Discharge Aspirin Dose With Outcomes After Acute Myocardial Infarction

Insights From the Treatment with ADP Receptor Inhibitors: Longitudinal Assessment of Treatment Patterns and Events after Acute Coronary Syndrome (TRANSLATE-ACS) Study

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Background—Aspirin is the most widely used antiplatelet drug postmyocardial infarction, yet its optimal maintenance dose after percutaneous coronary intervention with stenting remains uncertain.

Methods and Results—We compared outcomes of 10 213 patients with myocardial infarction who underwent percutaneous coronary intervention and were discharged on dual-antiplatelet therapy at 228 US hospitals in the Treatment with ADP Receptor Inhibitors: Longitudinal Assessment of Treatment Patterns and Events after Acute Coronary Syndrome (TRANSLATE-ACS) study from 2010 to 2012. Major adverse cardiovascular events and bleeding within 6 months postdischarge were compared between high-dose (325 mg) and low-dose aspirin (81 mg) by using regression models with inverse probability-weighted propensity adjustment. Overall, 6387 patients (63%) received high-dose aspirin at discharge. Major adverse cardiovascular events risk was not significantly different between groups (high versus low: unadjusted 8.2% versus 9.2%; adjusted hazard ratio, 0.99; 95% confidence interval, 0.85–1.17). High-dose aspirin use was associated with greater risk of any Bleeding Academic Research Consortium–defined bleeding events (unadjusted 24.2% versus 22.7%; adjusted odds ratio, 1.19; 95% confidence interval, 1.06–1.33), driven mostly by minor Bleeding Academic Research Consortium type 1 or 2 bleeding events not requiring hospitalization (unadjusted 21.4% versus 19.5%; adjusted odds ratio, 1.19; 95% confidence interval, 1.05–1.34). Bleeding events requiring hospitalization were similar by aspirin dosing groups (unadjusted 2.8% versus 3.2%, adjusted odds ratio, 1.22; 95% confidence interval, 0.87–1.70). Similar associations were observed in landmark analyses accounting for aspirin dosing change over time, and across subgroup analyses by age, sex, baseline aspirin use, and type of ADP receptor inhibitor (clopidogrel versus prasugrel/ticagrelor).

Conclusions—Among percutaneous coronary intervention–treated patients with myocardial infarction, high-maintenance-dose aspirin was associated with similar rates of major adverse cardiovascular events, but a greater risk of minor bleeding than those discharged on low-dose aspirin. (Circulation. 2015;132:174-181. DOI: 10.1161/CIRCULATIONAHA.114.014992.)

Key Words: aspirin ■ hemorrhage ■ major adverse cardiac events ■ myocardial infarction ■ outcomes research

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in high- versus low-dose aspirin users, but patients were followed for only 1 month. Based on these limited data, the American Heart Association/American College of Cardiology guidelines recently revised the recommendations to change the maintenance dose from high dose to low dose. In the context of these recent data and recommendation changes, current prescribing patterns for aspirin in the United States remain unclear.

Using data from the Treatment with ADP Receptor Inhibitors: Longitudinal Assessment of Treatment Patterns and Events after Acute Coronary Syndrome (TRANSLATE-ACS) observational study, the goals of our study were as follows: (1) describe current patterns of aspirin dosing among patients with myocardial infarction (MI) following PCI with stenting in contemporary US clinical practice; (2) examine the association of aspirin dosing with major adverse cardiovascular events (MACE) and bleeding; and (3) determine whether the relationships between aspirin dose and these outcomes vary by clinically relevant subgroups of age, sex, home aspirin use, discharge ADP receptor inhibitor type (clopidogrel versus higher potency ADP receptor inhibitors), or change in aspirin dose over time.

**Methods**

**Data Source**

The primary data source was the TRANSLATE-ACS study, a multicenter, prospective, longitudinal, observational study of >12,000 MI patients managed with PCI. Details of the design and conduct of the TRANSLATE-ACS study have been previously described. In brief, TRANSLATE-ACS included patients with either ST-segment-elevation MI or non–ST-segment-elevation MI who underwent PCI during the index hospitalization and were treated with ADP receptor inhibitors. Trained personnel at participating hospitals collected detailed clinical data during the index hospitalization, including baseline patient characteristics, bleeding history, presentation features, angiographic and procedural details, and in-hospital treatment and outcomes, using data element definitions aligned with the National Cardiovascular Data Registry where possible. Postdischarge follow-up occurred at 6 weeks, and at 6, 12, and 15 months post-MI via a centralized telephone interview conducted by trained study personnel at the Duke Clinical Research Institute. The follow-up interviews collected information on current medication (including aspirin dose), rehospitalizations, and changes in health status. Medical bills for all rehospitalizations were obtained. If a study end point was suspected based on billed diagnoses or treatments, medical records including hospital discharge summary, procedural reports, or angiographic films were obtained for end point validation by independent study physicians at the Duke Clinical Research Institute using protocol-defined criteria.

**Study Population**

These analyses included all acute MI patients enrolled in the TRANSLATE-ACS study between April 2010 and October 2012, except for the patients who died in-hospital (n=14), those who were not discharged on aspirin or were missing aspirin-dosing information (n=228), or those who did not have a stent implantation (n=473). To understand postdischarge aspirin-dosing changes (elicited via interview), we further limited our study population to patients who completed both 6-week and 6-month interviews, or just 6-week interviews if patients had died (excluding 1007 patients). Because the majority of patients in the United States were prescribed a daily aspirin dose of 81 mg or 325 mg, we excluded patients with a discharge aspirin dose other than 81 mg or 325 mg (n=431). After these exclusions, our final study population consisted of 10,213 patients discharged from 228 US hospitals.

**Data Definitions**

The discharge aspirin dose was abstracted from the medical record of the index hospitalization. Patients were divided into 2 groups according to aspirin dose at discharge: high dose (325 mg/d) versus low dose (81 mg/d). Clinical outcomes were MACE (the composite of death, MI, stroke, or unplanned revascularization) and Bleeding Academic Research Consortium (BARC)–defined bleeding events from discharge to 6 months. In brief, BARC bleeding is classified into the following hierarchical categories characterizing the severity of the bleeding: type 0 (no bleeding); type 1 (bleeding that is not actionable); type 2 (overt, actionable bleeding that does not fit the criteria for type 3, 4, or 5, but does require nonsurgical, medical intervention by a healthcare professional, leading to hospitalization or increased level of care, or prompting evaluation); type 3 (clinical, laboratory, and imaging evidence of bleeding with specific healthcare provider responses); type 4 (coronary artery bypass graft–related bleeding); and type 5 (fatal bleeding). For the purpose of this study, we reported any BARC bleeding (type 1–5), minor BARC 1 or 2 bleeding that did not require rehospitalization, and any other BARC bleeding that required rehospitalization. MACE and hospitalized bleeding events were independently validated via medical record review.

**Statistical Analyses**

Medians (with interquartile ranges) and percentages were used to describe the distribution of continuous and categorical variables, respectively. Baseline characteristics were compared between patients on high- versus low-dose aspirin by the Pearson χ² test or Fisher exact test for categorial variables and Wilcoxon rank sum test for continuous variables. Cox proportional hazards models were performed to investigate the relationship between aspirin dosing and MACE up to 6 months after discharge. Logistic regression models were derived to evaluate the association between aspirin dosing and bleeding. We chose covariates based on their previous known association or clinical relevance to the outcomes. These included age, sex, race, medical history of previous MI, PCI, coronary artery bypass graft surgery, stroke or transient ischemic attack, peripheral artery disease, atrial fibrillation/flutter, diabetes mellitus, hypertension, dyslipidemia, dialysis, current/recent smoker, chronic lung disease, gastrointestinal or genitourinary bleeding within the past 6 months, EuroQol–5 dimension index, cardiac arrest within 24 hours, cardiogenic shock within 24 hours, heart failure within 2 weeks, transfer from another acute care, body mass index, home aspirin use, home warfarin use, admission systolic blood pressure, preprocedure hemoglobin, preprocedure creatinine, and left ventricular ejection fraction ≤40 at discharge. We also included in-hospital treatment (unfractionated heparin, low-molecular-weight heparin, bivalirudin, glycoprotein IIb/IIIa inhibitor, radial versus other access, arterial closure device), in-hospital bleeding events, and discharge medications (clopidogrel, prasugrel, ticlopidine, ticagrelor, anticoagulants, angiotensin-converting enzyme inhibitor/angiotensin receptor blocker, and β-blockers). These covariates were used for inverse probability weighting (IPW) to adjust for potential confounding. A logistic regression model was constructed to estimate the propensity score for high- versus low-dose aspirin at discharge. For high-dose patients, weights were calculated by dividing the marginal probability of a high dose by the individual patient’s propensity score. Weights for low-dose patients were calculated by dividing 1 – the marginal probability of high-dose by 1 – the individual patient’s propensity score. Pre- and post-IPW balance of the covariates between aspirin dose groups were assessed by using Cramer Phi for categorical variables and R-squared for continuous variables. Values closer to zero indicate better balance. After IPW adjustment, all of the continuous variables were <0.0025 and all of the categorical variables were <0.05, indicating reasonable balance between high- and low-dose groups (Figure I in the online-only Data Supplement).
The primary analyses were based on the intention-to-treat principle. To account for aspirin dose change over time, a landmark model was used to assess the risk of MACE using the 6-week interview date as time 0 and assessed events up to 6 months postdischarge. Because of the possibility of confounding by selection bias, subgroup analyses for MACE and bleeding were performed according to age (<65 versus ≥65 years), sex, home aspirin use, and discharge ADP receptor inhibitor (clopidogrel versus higher-potency ADP receptor inhibitor [prasugrel or ticagrelor]). We used robust standard errors to account for within-hospital clustering in all models and robust sandwich covariance estimator for the Cox proportional hazards models. All statistical analyses were performed with the use of SAS version 9.4 (SAS Institute, Inc., Cary, NC). All P values are 2-sided, with P<0.05 considered statistically significant. Based on the event rates and sample size, our study has >90% power to detect a 11% relative reduction with high-dose aspirin. Each patient provided informed consent before the study enrollment. The institutional review board of the Duke University Health System approved the study.

Results

Patient Characteristics

Of 10 213 patients eligible for our analysis, 6387 (62.6%) received high-dose aspirin (325 mg) and 3826 (37.4%)

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**Table 1. Baseline Characteristics of Patients Receiving High-Dose Versus Low-Dose Aspirin at Discharge**

<table>
<thead>
<tr>
<th>Characteristics</th>
<th>Aspirin 325 mg</th>
<th>Aspirin 81 mg</th>
<th>P Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Demographics</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Age, y</td>
<td>60 (52–67)</td>
<td>61 (53–69)</td>
<td>&lt;0.001</td>
</tr>
<tr>
<td>Female</td>
<td>1737 (27.2)</td>
<td>1117 (29.2)</td>
<td>0.029</td>
</tr>
<tr>
<td>Race</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>White</td>
<td>5730 (89.7)</td>
<td>3340 (87.3)</td>
<td>&lt;0.001</td>
</tr>
<tr>
<td>Black</td>
<td>469 (7.4)</td>
<td>386 (10.1)</td>
<td>&lt;0.001</td>
</tr>
<tr>
<td>Asian</td>
<td>91 (1.4)</td>
<td>34 (0.9)</td>
<td>0.019</td>
</tr>
<tr>
<td>Hispanic</td>
<td>218 (3.4)</td>
<td>108 (2.8)</td>
<td>0.099</td>
</tr>
<tr>
<td>Medical history</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Previous MI</td>
<td>1131 (17.7)</td>
<td>808 (21.1)</td>
<td>&lt;0.001</td>
</tr>
<tr>
<td>Previous PCI</td>
<td>1248 (19.5)</td>
<td>864 (22.6)</td>
<td>&lt;0.001</td>
</tr>
<tr>
<td>Previous CABG</td>
<td>547 (8.6)</td>
<td>403 (10.5)</td>
<td>0.001</td>
</tr>
<tr>
<td>Atrial fibrillation/flutter</td>
<td>246 (3.9)</td>
<td>238 (6.2)</td>
<td>&lt;0.001</td>
</tr>
<tr>
<td>Previous stroke or TIA</td>
<td>309 (4.8)</td>
<td>251 (6.6)</td>
<td>&lt;0.001</td>
</tr>
<tr>
<td>Peripheral artery disease</td>
<td>381 (6.0)</td>
<td>266 (7.0)</td>
<td>0.049</td>
</tr>
<tr>
<td>Diabetes mellitus</td>
<td>1603 (25.1)</td>
<td>1051 (27.5)</td>
<td>0.009</td>
</tr>
<tr>
<td>Hypertension</td>
<td>4213 (66.0)</td>
<td>2635 (68.9)</td>
<td>0.003</td>
</tr>
<tr>
<td>GI/GU bleeding within last 6 mo</td>
<td>51 (0.8)</td>
<td>45 (1.2)</td>
<td>0.055</td>
</tr>
<tr>
<td>EQ-5D index</td>
<td>75 (60–85)</td>
<td>75 (60–85)</td>
<td>0.243</td>
</tr>
<tr>
<td>Medication before admission</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Aspirin</td>
<td>2422 (37.9)</td>
<td>1674 (43.8)</td>
<td>&lt;0.001</td>
</tr>
<tr>
<td>ADP receptor inhibitor</td>
<td>772 (12.1)</td>
<td>478 (12.4)</td>
<td>0.358</td>
</tr>
<tr>
<td>Anticoagulant</td>
<td>107 (1.7)</td>
<td>196 (5.1)</td>
<td>&lt;0.001</td>
</tr>
<tr>
<td>Admission features</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>STEMI presentation</td>
<td>3365 (52.7)</td>
<td>1933 (50.5)</td>
<td>0.034</td>
</tr>
<tr>
<td>Transfer from another acute-care facility</td>
<td>2639 (41.3)</td>
<td>1459 (38.1)</td>
<td>0.002</td>
</tr>
<tr>
<td>Cardiac arrest on presentation</td>
<td>212 (3.3)</td>
<td>117 (3.1)</td>
<td>0.440</td>
</tr>
<tr>
<td>Cardiogenic shock on presentation</td>
<td>135 (2.1)</td>
<td>75 (2.0)</td>
<td>0.569</td>
</tr>
<tr>
<td>HF within 2 wk</td>
<td>389 (6.1)</td>
<td>263 (6.9)</td>
<td>0.135</td>
</tr>
<tr>
<td>BMI</td>
<td>28.3 (25.9–33.4)</td>
<td>29.1 (25.8–33.3)</td>
<td>0.123</td>
</tr>
<tr>
<td>Systolic blood pressure</td>
<td>140 (121–158)</td>
<td>139 (121–158)</td>
<td>0.870</td>
</tr>
<tr>
<td>Preprocedure hemoglobin, g/dL</td>
<td>14.4 (13.2–15.5)</td>
<td>14.2 (12.9–15.3)</td>
<td>&lt;0.001</td>
</tr>
<tr>
<td>Preprocedure creatinine, mg/dL</td>
<td>1.0 (0.8–1.2)</td>
<td>1.0 (0.8–1.2)</td>
<td>0.111</td>
</tr>
</tbody>
</table>

Categorical variables are presented as number (frequency); continuous variables are expressed as median (25–75 percentiles). ADP indicates adenosine diphosphate inhibitor; BMI, body mass index; CABG, coronary artery bypass grafting; EQ-5D, EuroQol-5 dimension; GI/GU, gastrointestinal/genitourinary; HF, heart failure; MI, myocardial infarction; PCI, percutaneous coronary intervention; STEMI, ST-segment-elevation myocardial infarction; and TIA, transient ischemic attack.
received low-dose aspirin (81 mg) at discharge. There were substantial variations in aspirin dosing across hospitals, with the proportion of high-dose aspirin ranging from 0% to 100% (Figure II in the online-only Data Supplement). The median frequency of high-dose aspirin use was 70%, with an interquartile range from 50% to 80%.

Differences in baseline characteristics, in-hospital treatment strategies, discharge medications, and in-hospital events are illustrated in Tables 1 and 2. Because of the large sample size, some P values were statistically significant, but measured differences were small and unlikely to be clinically relevant. In comparison with patients on low-dose aspirin, patients prescribed high-dose aspirin at discharge were less likely to have a previous history of MI, PCI, coronary artery bypass graft, atrial fibrillation/flutter, cerebrovascular disease, diabetes mellitus, or already be on aspirin or oral anticoagulant before the index admission (Table 1). Patients discharged on high-dose aspirin were more likely to receive drug-eluting stents, glycoprotein IIb/IIIa inhibitor, clopidogrel, and less likely to receive radial artery access and bivalirudin during cardiac catheterization or receive ticagrelor and oral anticoagulant at discharge (Table 2). The unadjusted incidences of in-hospital MACE (high versus low: 2.1% versus 2.7%, P=0.065) and in-hospital major bleeding events (3.0% versus 3.4%, P=0.350) were not significantly different between groups.

Postdischarge Clinical Outcomes

The incidence of MACE was 8.2% in the high-dose aspirin group in comparison with 9.2% in the low-dose group by 6 months postdischarge (Table 3). After multivariable adjustment using IPW, there was no significant difference in MACE between high- and low-dose aspirin groups (adjusted hazard ratio, 0.99; 95% confidence interval, 0.85–1.17). The unadjusted rates of any BARC-defined bleeding events (24.2% versus 22.7%) and bleeding not requiring hospitalization (21.4% versus 19.5%) were higher in the high-dose aspirin group (Table 3). After IPW adjustment, patients prescribed high-dose aspirin were more likely to report any BARC-defined bleeding events (adjusted odds ratio, 1.19; 95% confidence interval, 1.06–1.33); this was mainly driven by an increased risk of minor BARC type 1 or 2 bleeding events not requiring hospitalization (21.4% versus 19.5%; adjusted odds ratio, 1.19; 95% confidence interval, 1.05–1.34). The risk of higher BARC bleeding types requiring hospitalization was not statistically significant (2.8% versus 3.2%; adjusted odds ratio, 1.22; 95% confidence interval, 0.87–1.70).

A total of 19.2% (1224) and 34.9% (2227) patients discharged on high-dose aspirin were switched to a lower dose by 6 weeks and 6 months postdischarge, respectively. In contrast, fewer patients who were discharged on low-dose aspirin were switched to high-dose aspirin at 6 weeks (7.8% [300]) or at 6 months (7.9% [304]). In a landmark analysis stratified by aspirin dose at 6 weeks post-MI, there were no statistically significant differences in MACE between the 2 groups (Figure 1). Again, we observed higher risk of any bleeding or minor BARC type 1 or 2 bleeding events among patients prescribed high-dose aspirin, but no significant difference in the risk of more severe bleeding requiring rehospitalization, in comparison with patients prescribed low-dose aspirin (Figure 2).

In subgroup analyses, there were no significant differences in MACE between high- and low-dose aspirin groups when stratified by age, sex, baseline aspirin use, and discharge ADP receptor inhibitor type (Figure 1). However, the higher risks of any BARC-defined and minor BARC bleeding events associated with high-dose aspirin were more prominent in younger patients, in male patients, in patients receiving aspirin before admission, or in those prescribed a higher-potency ADP receptor inhibitor (prasugrel or ticagrelor) at discharge (Figure 2).

**Discussion**

In this large nationwide study of contemporary MI patients treated with PCI and dual-antiplatelet therapy in...
In our study of >10,000 MI patients, we found no difference between high- and low-dose aspirin in the risk of MACE up to 6 months after discharge. However, high-dose aspirin was associated with higher risk of bleeding events, mainly driven by minor bleeding not requiring hospitalization. Similar trends were detected in subgroups based on age, sex, home aspirin use, and discharge ADP receptor inhibitor. Importantly, increased bleeding risks seem more

in cardiovascular events with similar or increased risk of bleeding associated with high- versus low-dose aspirin.5,8,10–12 Although these data generally favor low-dose aspirin, there are few comparative data evaluating aspirin dose and long-term outcomes among contemporary MI patients, especially those who are concurrently treated with more potent ADP receptor inhibitors such as prasugrel and ticagrelor. Exploratory analyses from the Platelet Inhibition and Patient Outcomes (PLATO) study suggested that higher doses of aspirin might have neutralized the benefit of more potent ticagrelor over clopidogrel.23 The Trial to Assess Improvement in Therapeutic Outcomes by Optimizing Platelet Inhibition With Prasugrel-Thrombolysis In Myocardial Infarction 38 (TRITON-TIMI 38) study demonstrated no effect modification of discharge aspirin dose on clinical outcomes observed with prasugrel versus clopidogrel, although a direct comparison between higher- and lower-dose aspirin was not made.6

Table 3. MACE and BARC Bleeding Within 6 Months According to Discharge Aspirin Dose Group: Primary Analysis

<table>
<thead>
<tr>
<th>End Point</th>
<th>Aspirin 325 mg n=6387 (%)</th>
<th>Aspirin 81 mg n=3826 (%)</th>
<th>Unadjusted (95% CI)</th>
<th>Adjusted (95% CI)</th>
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</thead>
<tbody>
<tr>
<td>MACE</td>
<td>522 (8.2)</td>
<td>352 (9.2)</td>
<td>0.89 (0.77–1.02)*</td>
<td>0.99 (0.85–1.17)*</td>
</tr>
<tr>
<td>Any BARC bleeding†</td>
<td>1547 (24.2)</td>
<td>870 (22.7)</td>
<td>1.09 (0.98–1.20)†</td>
<td>1.19 (1.06–1.33)†</td>
</tr>
<tr>
<td>Higher BARC bleeding§</td>
<td>178 (2.8)</td>
<td>124 (3.2)</td>
<td>0.88 (0.70–1.10)‡</td>
<td>1.22 (1.07–1.70)‡</td>
</tr>
<tr>
<td>Lower BARC bleeding║</td>
<td>1369 (21.4)</td>
<td>746 (19.5)</td>
<td>1.12 (1.01–1.25)‡</td>
<td>1.19 (1.05–1.34)‡</td>
</tr>
</tbody>
</table>

BARC indicates Bleeding Academic Research Consortium; CI, confidence interval; and MACE, major adverse cardiac event (a composite end point of death, myocardial infarction, stroke, or unplanned revascularization).

*Hazard ratio (high vs low)
†Any BARC bleeding (types 1–5).
‡Odds ratio (high vs low)
§Higher BARC requiring hospitalization (types 3, 4, 5, and some type 2).
║Lower BARC type not requiring hospitalization (type 1 and some type 2).

Figure 1. Major adverse cardiac events within 6 months according to discharge aspirin dose (325 mg vs 81 mg).
prominent among patients on higher potency ADP receptor inhibitors even after adjustment for observed differences in patient risk profiles. Notably, there were very few ticagrelor patients in the study, especially among those on high-dose aspirin. As a result, a direct comparison between high- and low-dose aspirin among patients on ticagrelor cannot be made. Nonetheless, our data suggest no added benefit and potential harm of bleeding events associated with high-dose aspirin, regardless of whether clopidogrel or a more potent ADP receptor inhibitor was used. In light of these results, low-dose aspirin appears to be a reasonable option for long-term maintenance therapy following PCI for all patients treated with clopidogrel, prasugrel, or ticagrelor.

Limitations
Our study had several limitations. First, our study is based on observational data and, therefore, includes all inherent limitations of such analyses. Importantly, aspirin doses were not randomly assigned. We were unable to determine the rationale for drug choice or treatment dosing. We included in the propensity model a comprehensive list of covariates, including baseline patient and clinical risk factors, bleeding history, and home medication use to minimize the impact of potential treatment selection on longitudinal clinical outcomes; nevertheless, treatment selection and unmeasured confounding may bias outcome comparisons. Second, although MACE and hospitalized bleeding events were independently validated via medical chart review, patient-reported bleeding events not requiring hospitalization could not be validated. This being said, there is no reason to believe patients would differentially report bleeding events based on aspirin dose. Third, there were relatively high rates of switching during follow-up. Although our study was able to account for aspirin-dosing changes at the 6-week landmark date, we could not exclude the possibility of switching throughout the entire follow-up period and the impact of switching on outcomes. Finally, TRANSLATE-ACS is a US study requiring written patient informed consent for longitudinal follow-up; therefore, the generalizability of our findings to nonparticipating centers/patients and to other regions of the world remains to be established.

In conclusion, we observed that high-dose aspirin (325 mg) was prescribed at discharge in the majority of PCI-treated MI patients in the United States. We found no evidence supporting the benefit of high-dose aspirin in comparison with low-dose aspirin (81 mg) in terms of MACE, but high-dose aspirin was associated with greater risk of minor bleeding events. These trends were similar in patients treated with clopidogrel, and in those treated with more potent ADP receptor inhibitors, as well. Collectively, our observational results support current guidelines for recommending low-dose aspirin as the preferred maintenance dose following MI.

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References
Aspirin has been a mainstay therapy for patients with coronary artery disease for decades, yet the optimal maintenance dose after percutaneous coronary intervention has been a matter of significant debate. The American Heart Association/American College of Cardiology revised the current recommendation patients with out-of-hospital cardiac arrest: a randomized, controlled study, to change the maintenance aspirin dose from high to low dose based on limited data from clinical trial and observational studies. We examined data from 10213 patients with myocardial infarction in the Treatment with ADP Receptor Inhibitors: Longitudinal Assessment of Treatment Patterns and Events after Acute Coronary Syndrome (TRANSLATE-ACS) study who underwent percutaneous coronary intervention and were discharged on dual-antiplatelet therapy at 228 hospitals in the United States. Despite changes in guideline recommendations, we continued to observe marked variation in discharge aspirin dosing, with more frequent use of high-dose (325 mg) aspirin in contemporary practice in the United States. Although it is commonly prescribed, we found that high-dose aspirin was not associated with a lower risk of major adverse cardiac events during follow-up. In contrast, high-dose aspirin was associated with an increased risk of minor bleeding events in comparison with low-dose aspirin (81 mg). The results noted were consistent regardless of age, sex, baseline home aspirin use, and discharge adenosine diphosphate receptor inhibitors. Collectively, our observational results support current guidelines for recommending low-dose aspirin as the preferred maintenance dose following percutaneous coronary intervention in the setting of myocardial infarction.
Association of Discharge Aspirin Dose With Outcomes After Acute Myocardial Infarction: Insights From the Treatment with ADP Receptor Inhibitors: Longitudinal Assessment of Treatment Patterns and Events after Acute Coronary Syndrome (TRANSLATE-ACS) Study

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Supplemental Figure Legends.

Figure 1. Balance of Covariates
Balance of covariates before (circle) and after (dot) inverse probability-weighting adjustment.

Figure 2. Distribution of Aspirin Dose
This figure displays the distribution of discharge aspirin dose in participating hospitals.

Pts indicates patients
Supplemental Figure 1

Balance of Categorical Variables Before (circle) and After (dot) IPW Adjustment

Balance of Continuous Variables Before (circle) and After (dot) IPW Adjustment

- Systolic BP
- Pre-proc hemoglobin (g/dL)
- EQSD index US pop
- Pre-procedure creatinine
- BMI
- age
Supplemental Figure 2