# Association of baseline hemoglobin A1c levels with bleeding in patients with non-ST-segment elevation acute coronary syndrome underwent percutaneous coronary intervention

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**Background:** The association between baseline hemoglobin A1c (HbA1c) levels before the percutaneous coronary intervention and bleeding is unclear in patients with non-ST-segment elevation acute coronary syndrome.
**Purpose:** To investigate the association between baseline HbA1c levels before the percutaneous coronary intervention and bleeding in patients with non-ST-segment elevation acute coronary syndrome.
**Methods:** This observational cohort study enrolled 6,283 consecutive patients with non-ST-segment elevation acute coronary syndrome, from 1 January 2010 to 31 December 2014. Based on baseline HbA1c levels, the patients were divided into the HbA1c <7% group (n=4,740) and the HbA1c ≥7% group (n=1,543). The primary outcomes are major bleeding events (BARC grades 3–5) and all-cause death during follow-up.
**Results:** Of the patients who were enrolled, 4,705 (74.9%) were male and 2,143 (34.1%) had a history of diabetes mellitus, with a mean (SD) age of 64.13 (10.32) years. Median follow-up duration was 3.21 years. Compared with HbA1c <7% patients, the risk of major bleeding events and all-cause was both higher in HbA1c ≥7% patients (major bleeding: adjusted hazard ratio, 1.62; 95% confidence interval, 1.04–2.53; P=0.032; all-cause death: adjusted hazard ratio, 1.26; 95% confidence interval, 1.03–1.55; P=0.027). The result of the subgroups analyses was consistent with the primary analyses.
**Conclusions:** Higher baseline HbA1c levels before percutaneous coronary intervention was associated with an increase in bleeding risk in non-ST-elevation acute coronary syndrome patients. This study suggests that the HbA1c levels should be taken into account for the prolonged antithrombotic strategies of non-ST-elevation acute coronary syndrome patients.

Multivariable analyses for outcomes

| Outcomes | Univariate analysis | | | Multivariate analysis | | |
|---|---|---|---|---|---|---|
| | Odds or Hazard ratio | 95% Confidence interval | P value | Odds or Hazard ratio | 95% Confidence interval | P value |
| In-hospital | | | | | | |
| All-cause death | 0.28 | 0.04–2.16 | 0.222 | 0.19 | 0.02–1.49 | 0.114 |
| Major bleeding (BARC grades 3–5) | 1.53 | 1.02–2.29 | 0.040 | 1.42 | 0.81–2.49 | 0.220 |
| Any bleeding (BARC grades 1–5) | 0.93 | 0.78–1.10 | 0.389 | 0.86 | 0.68–1.09 | 0.207 |
| Follow up | | | | | | |
| All-cause death | 1.34 | 1.09–1.64 | 0.006 | 1.26 | 1.03–1.55 | 0.027 |
| Major bleeding (BARC grades 3–5) | 1.61 | 1.17–2.22 | 0.004 | 1.62 | 1.04–2.53 | 0.032 |
| Any bleeding (BARC grades 1–5) | 0.98 | 0.86–1.12 | 0.772 | 1.02 | 0.86–1.21 | 0.831 |
| All-cause death or Major bleeding | 1.39 | 1.17–1.66 | <0.001 | 1.13 | 0.89–1.42 | 0.308 |

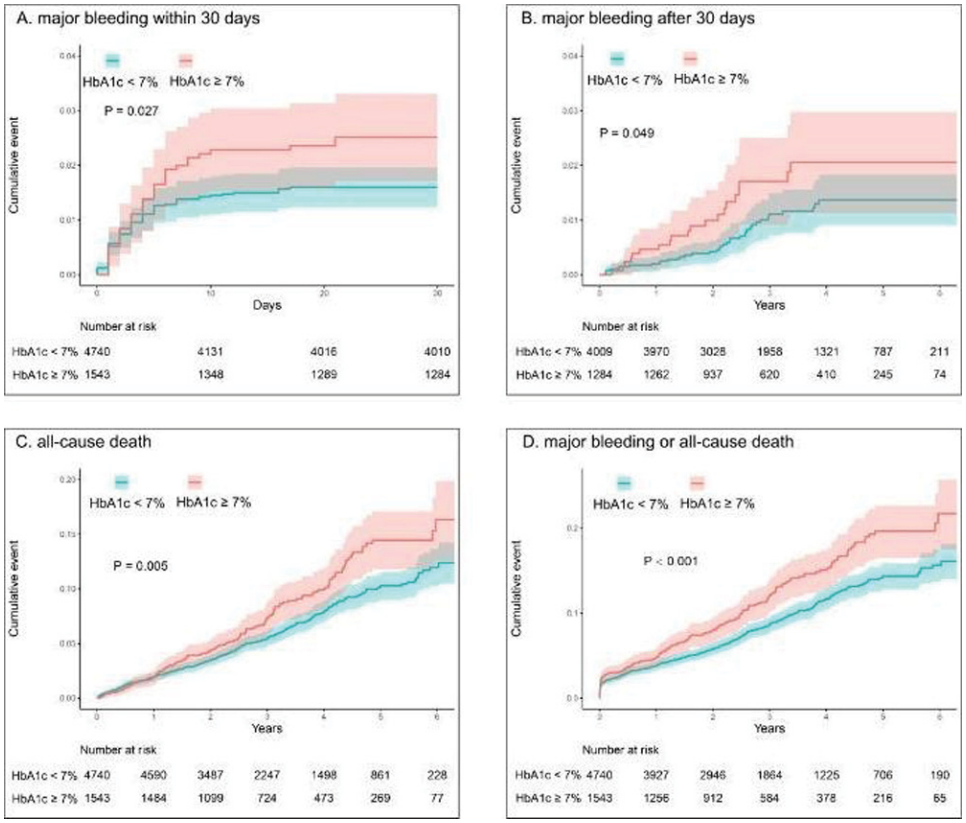


Figure 1. Kaplan-Meier Analysis for Outcomes