

## **One-year outcomes after hospital discharge from noncardiac surgery: the VISION prospective cohort study.**

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**Background:** Limited data inform outcomes after discharge from hospital up to one year after noncardiac surgery and associations between pre-discharge complications and death up to one year after surgery.

**Methods/Results:** Prospective cohort study of 38,898 patients >45 years from 28 hospitals in 14 countries who were discharged alive from hospital after inpatient noncardiac surgery between 2007 and 2013. The main exposures were pre-discharge complications including myocardial injury after noncardiac surgery (MINS, including myocardial infarction and isolated ischemic myocardial injury), major bleeding, sepsis, and infection without sepsis. The main outcome measure was the cumulative one-year post-discharge incidence of death (from any cause). We followed patients for up to one year after surgery (median 362 days after discharge from index hospitalization). We used flexible parametric survival models to estimate adjusted time-varying hazard ratios associating pre-discharge complications and death after discharge. The cumulative incidence of death (2,165 events) one year after discharge was 5.8% (95% confidence interval [CI], 5.5-6.0%); vascular death, 2.0% (1.9-2.2%); nonvascular death, 3.8% (3.6-4.0%); and hospital readmission, 24.7% (24.2-25.1%). Although each pre-discharge complication was associated with post-discharge death for the year overall, the adjusted hazard ratios for mortality changed over time from discharge for MINS that was myocardial infarction (30 days, 1.70; 95% CI [1.32-2.18]; 365 days, 1.00 [0.75-1.32]), MINS that was an isolated ischaemic myocardial injury (30 days, 1.49 [1.25-1.78]; 365 days, 1.19 [0.99-1.42]), sepsis (30 days, 1.62 [1.28-2.05]; 365 days, 1.16 [0.89-1.53]), infection without sepsis (30 days, 1.05 [0.80-1.37]; 365 days, 1.51 [1.17-1.94]), and major bleeding (30 days, 1.53 [1.30-1.81]; 365 days, 0.97 [0.81-1.15]). The attributable fractions (i.e., potential proportion of deaths attributable to pre-discharge complications) were 33.7% (95% CI, 27.2-40.2%) for death up to 30 days after discharge, 20.7% (17.2-24.2%) for death up to 180 days, and 15.0% (12.0-17.9%) for death up to one year. Among pre-discharge complications, MINS, sepsis, and major bleeding had the largest attributable fractions for death after discharge.

**Conclusions:** Approximately 1 in 18 patients 45 years and older who underwent inpatient noncardiac surgery died in the year after discharge and one quarter were readmitted to hospital. After discharge, one third of the deaths occurring in the first 30 days and one fifth occurring in the first six months were independently associated with MINS, sepsis, and major bleeding that occurred during the initial hospitalization. Further study of post-discharge complications may identify opportunities to prevent a larger proportion of deaths.