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# The Pathway to Low Outlier Status in Venous Thromboembolism Events: An Analysis of Pancreatic Surgery in ACS NSQIP

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SI Abstract – CTR Year 2

**Introduction:** Our institution's hepatopancreaticobiliary service (HPBS) is a high-volume pancreatic surgery service, which has demonstrated consistently low rates of symptomatic venous thromboembolism (VTE) compared to similar institutions as reported by NSQIP. We sought to determine if the HPBS's regimented multimodal VTE prophylaxis pathway plays a role in achieving consistently low VTE rates.

**Methods:** We queried the ACS NSQIP Participant User File and our institution's data from 2011-2016 for major pancreatic operations. We used Chi-squared analysis to compare the HPBS and national patient populations, and created a matched dataset based on preoperative patient factors. Univariate and multivariate analyses were performed on both the aggregate and matched data to determine independent risk factors for symptomatic VTE formation.

**Results:** Among 36,435 NSQIP patients, 850 (2.3%) received surgery by the HPBS. VTE rates were significantly lower for the HPBS (2.0%) compared to the national cohort (3.5%) ( $p=0.018$ ); this significance was seen in the matched cohort as well ( $p=0.040$ ). Upon multivariate analysis, having an operation performed by the HPBS independently conferred lower odds of VTE formation in both the aggregate (OR=0.572,  $p=0.024$ ) and matched (OR=0.530,  $p=0.041$ ) cohorts.

**Discussion:** The HPBS had statistically lower rates of symptomatic VTE compared to the national cohort as reported by NSQIP. We identified an independent protective effect of the HPBS on VTE formation, which we believe to be due, at least in part, to adherence to a high risk VTE prophylaxis pathway. This pathway could serve as a model for other institutions hoping to improve their VTE rates.