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Myocardial Infarction After Vascular Surgery: A Systematic Troponin Surveillance and a Uniform Definition Is Needed

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In Reply We read with great interest the letter by Polok et al regarding our article[1] and appreciate their insightful comments, which highlight several challenges in the use of retrospective databases for quality monitoring. However, several key factors deserve further consideration.

The initial question prompting our study was whether recent innovations in research and technology translated into actual improvements in patient outcomes from 2005 to 2014. To objectively answer this question, we used the largest longitudinally collected and validated surgical database in the United States, the American College of Surgeons National Surgical Quality Improvement Program.[2] However, as surgical practice has evolved over time, so too have methods of data collection. For example, our study covered trends from 2005 to 2014, during which time the definition of postoperative myocardial infarction was modified twice.[3] In our study,[1] definitions for events were standardized per National Surgical Quality Improvement Program registry definitions and protocols, which is itself constantly evolving to optimize modeling and adjust for complex patient and procedural risk profiles.[4] We acknowledge the challenges in maintaining consistency of myocardial infarction definition across the study period. Yet this point leads to one of our highlighted findings: the Myocardial Infarction and Cardiac Arrest calculator, initially developed and validated prior to the most recent revision of the myocardial infarction definition,[5]was found to consistently underestimate myocardial infarction risk.[1] We agree with Polok et al that higher-quality cohort data with uniform characterization of patient characteristics and adjudication of postoperative events would be ideal for developing and validating future risk assessment tools.

Polok et al alluded to the potential prognostic implications of minor troponin elevations. While recent studies may indicate an association between troponin elevations and mortality,[6] the specificity of this biomarker elevation remains an issue of contention. Other conditions, such as congestive heart failure, pulmonary embolism, myocarditis, and sepsis, have all been associatedwithelevatedtroponinlevels.[3]Currentlyavailableevidence does not support the

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routine use of high-sensitivity troponin panel in the postoperative period because it does not necessarily produce management-altering information.

In conclusion, shifting practice norms in our rapidly changing surgical environment inevitably lead to evolving disease definitions in clinical data repositories. This will continue to be an important consideration when evaluating evidence from retrospective studies. Nonetheless, in the whirlwind of disruptive technologies and publications, objectively collected outcomes data remain the best measure by which to evaluate whether actual progress is being made in the delivery of health care, the ultimate goal of all modern medicine.

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