Measure Abbreviation: CARD 02 (QCDR Measure ID: ASPIRE18)

Data Collection Method: This measure is calculated based on data extracted from the electronic medical record combined with administrative data sources such as professional fee and discharge diagnoses data. This measure is explicitly not based on provider self-attestation.

Description: Percentage of cases without elevated postoperative Troponin I levels (>0.60) or documentation of perioperative myocardial injury.

NQS Domain: Effective Clinical Care

Measure Type: Outcome

Measure Summary: CARD 02 is an outcome measure that identifies patients that had elevated troponin levels (Troponin I > 0.6) within 72 hours postoperatively. Troponin I levels are accurate markers of myocardial infarction.

Inclusions: All anesthetic cases.

Exclusions:

- ASA 5 and 6 cases.
- Outpatient cases.
- Troponin I ≥ 0.01 within 42 days prior to anesthesia start.*
- Pacemaker insertions (CPT: 00530)
- Cardiac Ablation (CPT: 00537)
- Cardiac surgery without pump (CPT: 00560)
- Cardiac surgery with pump and <1 year old (CPT: 00561)
- Cardiac surgery with pump and > 1 year old (CPT: 00562)
- Cardiac surgery with hypothermic arrest (CPT: 00563)
- CABG without pump (CPT: 00566)
- CABG with pump (CPT: 00567)
- Heart Transplant (CPT: 00580)
- Testing of cardioversion or defibrillator functions (CPT: 00534)
- Cardiac catheterization (CPT: 01920)

*Rationale for excluding patient with troponin elevation within 42 days prior to date of surgery is based upon ACC/AHA guidelines recommending a delay in elective surgery for 6 weeks following myocardial infarction.[4]

Other Measure Build Details:
If another case starts within 72 hours, then the time window ends at anesthesia start of the subsequent case.

Success:
In cases with a Troponin I value(s) available within 72 hours after anesthesia end, all values must be less than or equal to 0.6 for the case to pass.

If no Troponin I values are available within 72 hours after anesthesia end and there is no documentation of perioperative myocardial injury (MPOG Concepts: 90201, 90202), the case will pass.

Threshold: 95%.

Responsible Provider: Providers assigned to patient longest duration of case unless there are providers who failed BP 01 during case. In that case, BP 01 failure takes precedence over longest duration.

Method for determining Responsible Provider:
1) Provider(s) who failed BP 01. If not applicable,
2) Provider(s) signed into the case for the longest duration.

Risk Adjustment (for outcome measures):

To evaluate provider-level risk adjustment we will calculate the observed to expected outcomes ratio (O/E). The O/E is calculated using a logistic regression model and predicts (given a set list of dependent patient and hospital level variables) the expected probability of having an elevated Troponin I level. We adjust for surgery risk score, emergent procedures, ASA, gender, age, body mass index, laboratory values, and teaching versus private hospital. Patient specific comorbidities are evaluated as well.

References:
1. Thygesen K, Alpert JS, Jaffe AS, Simoons ML, Chaitman BR, White HD. Third universal definition of myocardial infarction. *Global Heart.* 2012;7(4):275-295.
2. Devereaux PJ, Xavier D, Pogue J, et al. Characteristics and short-term prognosis of perioperative myocardial infarction in patients undergoing noncardiac surgery: a cohort study. Annals of internal medicine. 2011;154(8):523-528.
3. Botto F, Alonso-Coello P, Chan MT, et al. Myocardial injury after noncardiac surgery: a large, international, prospective cohort study establishing diagnostic criteria, characteristics, predictors, and 30-day outcomes. *Anesthesiology.* 2014;120(3):564-578.
4. Fleisher LA, Fleischmann KE, Auerbach AD, et al. 2014 ACC/AHA guideline on perioperative cardiovascular evaluation and management of patients undergoing noncardiac surgery. *Journal of nuclear cardiology: official publication of the American Society of Nuclear Cardiology.* 2015;22(1):162-215.