2 Don't Break Their Hearts - Discharging Patients with Moderate Risk HEART Scores from the Emergency Department

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Learning Objectives: To undertake an ED focused quality improvement initiative to allow for resident education in the fundamentals of research inquiry and study design and to provide experience in drafting research proposals, IRB submissions, medical abstracts and final manuscripts.

Background: Identifying patients at low risk for clinically relevant adverse cardiac events (CRACE) has the potential to decrease unnecessary hospitalizations. Earlier studies have shown that patients discharged with non-ischemic ECG and modified HEART (History, ECG, Age, Risk Factors, Troponin) score ≤3 had no deaths, acute myocardial infarctions (MI), or coronary revascularization events at 30 days. New observational data suggest the rate of CRACE for patients classified as moderate-risk by HEART score of 4-6 may be similarly low.

Objective: To determine the incidence of CRACE in patients discharged with a moderate-risk HEART score.

Methods: We reviewed ED visits involving adults presenting to an urban teaching hospital in Washington, DC. A prior quality improvement project determined the low overall rate of CRACE in patients with 2 negative 4th generation troponins, allowing clinicians to discharge patients with a HEART score of 4-6. This study was an analysis of patients with inclusion criteria of: (1) primary diagnosis code of chest pain for either ED reason for visit or discharge, (2) HEART score of 4-6, and (3) discharge from December 1, 2019 to March 15th, 2020.

Outcomes: The primary outcome was the 30 day rate of CRACE, defined as all-cause mortality, STEMI, fatal arrhythmia, and cardiopulmonary arrest. Secondary outcome was the rate of NSTEMI within 30 days of ED visit.

Results: 298 patients with HEART score 4-6 were discharged. 296 of 298 patients were alive with no recorded events at 30 days. Two patients had no available follow up data. Overall, the CRACE rate was 0% and NSTEMI rate was 0.34% within 30 days of discharge. One discharged patient followed up with cardiology and prior to arranged stress testing, re-presented with worsening chest pain and was found to have NSTEMI.

Conclusion: CRACE and NSTEMI are exceedingly rare within 30 days of ED discharge for patients with a moderate risk HEART score.

Table 1. Class average RVUs/hour.

	Number of resident data points	Mean	SD
PGY1	10	1.97	0.26
PGY2	20	2.67	0.77
PGY3	30	3.35	0.36

Table 2. Longitudinal mean RVUs/hour per class.

	2020 – 2021	2021 – 2022 (YTD)
PGY 3 - will graduate 2022	1.85	2.28
PGY 2 - will graduate 2023	1.23	2.89

3 Emergency Medicine Resident RVU Trends at an Academic Medical Center

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Learning Objectives: To determine average RVUs per hour for emergency medicine residents at a tertiary-care, university-based academic medical center and to characterize change in mean RVUs per hour as residents advance in training.

Background: Physician productivity is often reported in relative value units (RVU). However, RVUs are infrequently reported during residency. Studying RVUs in varied training settings may better define benchmarks for progression of resident productivity.

Methods: This was a retrospective, observational study of PGY 1-3 residents at an academic, tertiary-care center. PGY2s and PGY3s were considered equivalent in shift scheduling and responsibilities. From 07/2019 to 09/2021, RVUs were extracted from the electronic health record (Epic) using E&M billing codes (excluding procedures, which were not tied to specific residents). In the PGY1 year and continuing longitudinally, residents received individual productivity reports. Individual metrics were de-identified, coded, and analyzed.

Results: The primary outcome was the measure of mean RVUs/hr per resident overall and by class. Secondary outcomes were the change in RVUs/hr between classes at the end of each year, as well as the change in RVUs/hr for the same class year to year. Descriptive statistics were reported in mean with standard deviations. One-way ANOVA was used to determine if PGY-level had a significant effect on RVUs generated; the remainder of comparisons were made with student's t-test. 60 RVU data points were obtained, representing 40 residents. Two classes were followed longitudinally (Table 2). Overall mean RVU/hr per resident was 2.89 RVU/hr (SD 0.89). Mean RVU/hr per resident for PGY1s, PGY2s, and PGY3s were 1.97 RVU/hr (SD 0.26), 2.67 (SD 0.77), and 3.35 (SD 0.36) respectively. Class year was predictive of RVUs generated ($p<0.001$). There was no significant difference in RVUs within a single class from PGY2 to PGY3 ($p=0.528$), but there was a significant increase from PGY1 to PGY2 ($p<0.001$).

Conclusion: Resident RVUs in our academic ED were associated with training year, but longitudinally, the only statistically significant increase was from PGY1 to PGY2.