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2.08). Patients who received an antipsychotic/sedative were more likely to be admitted to the hospital (37%, 95% CI 30-45%) compared to those who did not (21%, 95% CI 19-24%; $p < 0.001$).

Conclusion: Older ED patients were infrequently administered antipsychotic and sedative medications. Sedatives were more commonly administered than antipsychotics, despite being considered potentially inappropriate in older adults. Predictors of antipsychotic or sedative administration included dementia history and need to perform advanced imaging. Delirium diagnosis and nursing home residence were also associated with antipsychotic administration.

96 Impact of Patient Age, Presentation Time and Complaint on Door to EKG and Door to Balloon Times for ST-Elevation Myocardial Infarctions



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Study Objectives: Door-to-EKG (D2EKG) time has been used as an important emergency department (ED) quality metric to improve door-to-balloon times (D2B) for patients with ST-elevation myocardial infarctions (STEMI). Atypical presentations, patient demographics, and patient presentation time may affect D2EKG and D2B times. We examined these factors on D2EKG and D2B times.

Methods: Retrospective case-control study in a large integrated health care system with ~1 million ED visits from April 1, 2018 to February 29, 2020. The health care system includes PCI and non-PCI centers and a well-developed transfer protocol. All STEMI patients were included. D2EKG greater than 10 minutes and D2B greater than 90 minutes for PCI-centers and 120 minutes for non-PCI hospitals were categorized as delayed. Delays in D2EKG were examined by patient age and sex, atypical presentations (all non-chest pain, dyspnea or cardiac complaints), and presentation time, categorized as day (7:00 AM-2:59 PM) versus evening and night (3:00 PM-6:59 AM). Correlation between DEKG and D2B delays are also reported. Data was abstracted from the electronic medical record. Continuous measures (median [Q1, Q3]) and categorical variables (frequency) are reported. The difference between delayed and non-delayed encounters was analyzed with Pearson's Chi-square test for categorical variables while Mann-Whitney and ANOVA were used for continuous variables. Analysis used Minitab (v19). 95% CI and p-values are reported.

Results: 750 STEMI patients were identified. Median age was 62y, & 67.5% were male. Median age for D2EKG delay was not significantly different than no delay (62.5 v 62.0, $p = 0.391$); however, octogenarians (14.5%) and nonagenarians (14.3%) had a higher prevalence of delay than other age groups ($p = 0.083$). Females were more likely to be delayed (12.3% v 7.5%, $p = 0.032$). Atypical presentation had a significantly higher rate of D2EKG delay (33/153, 21.6%) than typical presentation (35/97, 5.9%) (15.7, 95% CI 9.5, 23.0; $p < 0.0001$). Presentation by time of day and delayed D2EKG was similar, 7.9% (evening, night) and 10.5 % (day) (2.8, 95% CI -2.6, 7.5; $p = 0.218$). D2EKG delays were not significantly increased on weekends (9.4% weekends v 8.3% non-weekend; 1.1, 95% CI -3.9, 5.17; $p = 0.656$). D2EKG delays were weakly correlated with delay to D2B at PCI sites ($r = 0.433$, $p = 0.019$) with median times of 69 min v 59 min ($p = 0.006$). D2EKG delays had a weak correlation with D2B times for non-PCI sites ($r = -0.05$, $p = 0.872$); median time (117.5min v 90min, $p = 0.002$).

Conclusions: In this case-control study, advanced age, female sex and atypical presentations were associated with a higher prevalence of delays in D2EKG. Day of week and time of presentation were not. Delays in D2EKG led to small delays in D2B times however within limit of current guidelines, with unclear clinical significance. Continuous improvement efforts should be directed to prompt recognition of atypical presentations and older patients to avoid delays in definitive STEMI care.

97 Evaluation of the Multifunction Cardiogram (MCG) for Low Risk Chest Pain Patients Presenting to the Emergency Department



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Study Objectives: Emergency physicians (EPs) world-wide could benefit from a non-invasive, cost-effective, and accurate tool to determine which patients with suspected acute coronary syndrome (ACS) have significant coronary obstruction. A

novel computerized, multiphase, resting electrocardiogram analysis device, the Multifunction Cardiogram (MCG), takes the traditional 12-lead ECG and combines it with mathematical modeling and functional measurements of the heart's electrical activity. Independent studies in patients with high risk coronary artery disease have shown the MCG to have a high correlation with coronary stenosis confirmed by angiography. The objective of this case series was to describe the application of the MCG to low risk chest pain patients with suspected ACS presenting to the ED and compare results to angiography.

Methods: This prospective study enrolled a convenience sample of adult patients presenting to a tertiary care academic teaching center with chest pain in whom the EP suspected low risk ACS. Patients with ECGs showing active ischemia (including STEMI and NSTEMI) and those unable to complete follow-up were excluded. After evaluation by the EP and obtaining informed consent, an MCG was performed. To obtain the MCG reading, data from two traditional ECG leads, lead II and V5, were collected for 82 seconds, and 3-5 tests were performed on each patient. MCG results were electronically transmitted to a central computer where the data was mathematically transformed and analyzed to identify distinct functional indices. A risk score ranging from 0 (minimal risk) to 20 (very high risk) was provided. The EP was blinded to the results of the MCG and the results did not change medical management. Outcome was based on the results of the coronary angiogram, either Coronary Computed Tomography Angiography (CCTA) or conventional angiography. Angiogram results were classified as no coronary artery disease (CAD), mild CAD, moderate CAD and severe CAD based on the degree of stenosis visualized by the cardiologist.

Results: There were 511 patients enrolled with a mean age was 52 (SD23) and 51% were female. 1% were Asian, 18% Hispanic, 33% African American and 47% White. Of these, 47 patients (9%) had an angiogram performed (63% CCTA): 23 (49%) had no CAD, (12) 26% had mild CAD, 7 (15%) had moderate CAD, and 5 (11%) had severe CAD. The mean MCG score for patients with no CAD was 2.3 (95% CI 1.0-3.1), mild 2.6 (95% CI 0.8-4.3), moderate 3.4 (95% CI 1.2-5.6) and severe 4.8 (95% CI 1.4-8.2). Angiogram results were dichotomized into severe and non-severe. Mean MCG scores in patients with severe CAD was 4.8 (95% CI 1.4-8.2) compared to non-severe CAD 2.4 (95% CI 1.6-3.2) ($p = 0.046$). The mean of the highest MCG score was 6.8 (95% CI 4.3-9.3) for severe CAD and 3.1 (95% CI 2.2-4.0) for non-severe CAD ($p = 0.006$). The area under the ROC curve (AUC) for predicting severe CAD was 0.76 (95% CI 0.57-0.95) using the average MCG score and 0.85 (95% CI 0.70-0.99) using the highest MCG score. The sensitivity of the highest MCG score for predicting severe disease using an index score of 4 or greater was 100% (95% CI 46-100%), specificity was 56% (95% CI 40-71%), negative predictive value 100% (95% CI 82-100) and likelihood ratio 2.3 (95% CI 1.6-3.2).

Conclusions: MCG scores increased with severity of coronary obstruction. This study introduces the MCG as a potential tool for assessing low risk chest pain patients with suspected ACS in the ED. A large prospective multicenter study is ongoing.

98 Rural Population at Risk of Delayed Percutaneous Coronary Intervention for ST-Elevation Myocardial Infarction in North Carolina



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Study Objectives: Emergent reperfusion by percutaneous coronary intervention (PCI) is indicated in patients with ST-elevation myocardial infarction (STEMI) and should be performed within 90-minutes of first medical contact (FMC), although long transport times make meeting this goal difficult in many parts of rural North Carolina (NC). Early fibrinolytic therapy is recommended in cases where PCI is not possible within 120-minutes of FMC and out-of-hospital fibrinolytics may improve outcomes in cases with long transport times. The objectives of this study were to determine the number of NC residents with prolonged transport times to the nearest 24/7 primary PCI (PPCI) center and to map this population.

Methods: We analyzed transport time to the nearest PPCI center using the ArcGIS Pro geographical information system (GIS). To identify those at risk of a >120-minute FMC-to-device time, a 60-minute transport time cutoff was selected. This cutoff is based on an estimated 15-minute scene time (national median in STEMI) and a 45-minute door-to-device time (NC median with EMS pre-arrival notification). US Census Data (2010) were used to cohort NC residents by time to PPCI. Counties with potential benefit from out-of-hospital fibrinolytics were identified as those with >10% of their population living >60 minutes from PPCI.