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Standardized Code Stroke Inpatient Activation Process Resulted in Consistent Acute Stroke Evaluation Times Regardless of Primary Problem or Patient Location

A Single Comprehensive Stroke Center Experience

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Background

- Inpatient strokes have a higher mortality risk and longer lengths of stay compared to community-onset strokes^{1,3}.
- The full spectrum inpatient stroke population is often not included in national registries. Stroke programs may elect to include only patients with primary or secondary diagnosis of stroke in their registries^{2,3}.
- Data on inpatient strokes is difficult to find and time consuming to abstract.

Purpose

- This study examines a hospital-wide standardized process for Code Stroke Inpatient Activations (CSIAs) at a Comprehensive Stroke Center where RRT (rapid response team nurse) is utilized for front-line triage.

Methods

- CSIA data was collected between September 2016-July 2018 from the Stroke Team pager and compared with our nationally standardized stroke registry data.
- False alarm activations where no head CT performed were excluded.
- Primary problems (PP) included the following categories: cardiac, post cardiac surgery, post TAVR, stroke and other (diagnostic cerebral angiogram, orthopedic, oncology, respiratory, other neuro).
- Outcomes included percentage of CSIAs by PP, patient location (PL), and final discharge diagnosis (FDD), as well as an overall treatment rate including both IV-alteplase (tPA) and thrombectomy (GP).
- Evaluation times of symptom discovery-to-stroke MD page (Sx-SMDP), symptom discovery-to-CT (Sx-CT), stroke MD page time-to-CT (SMDP-CT) were compared across PP and PL using one-way analysis of variance for log-transformed time with pairwise comparisons.
- Overall median times from symptom discovery-to-RRT paged (Sx-RRT), (Sx-SMDP), (Sx-CT), and (SMDP-CT) was examined.

Results

Figure 1: Percentage of Code Stroke Inpatient Activations by Primary Problem

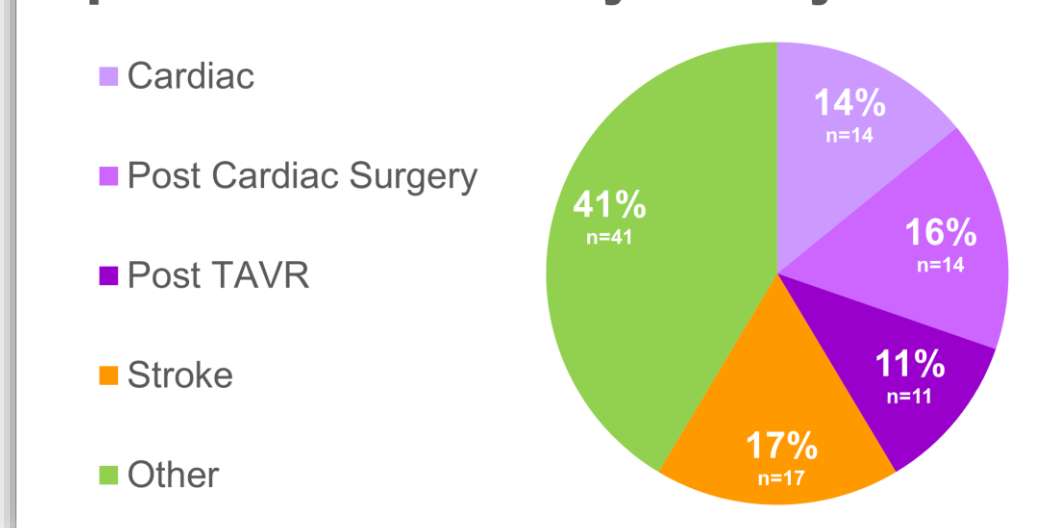


Figure 2: Percentage of Code Stroke Inpatient Activations by Unit Location

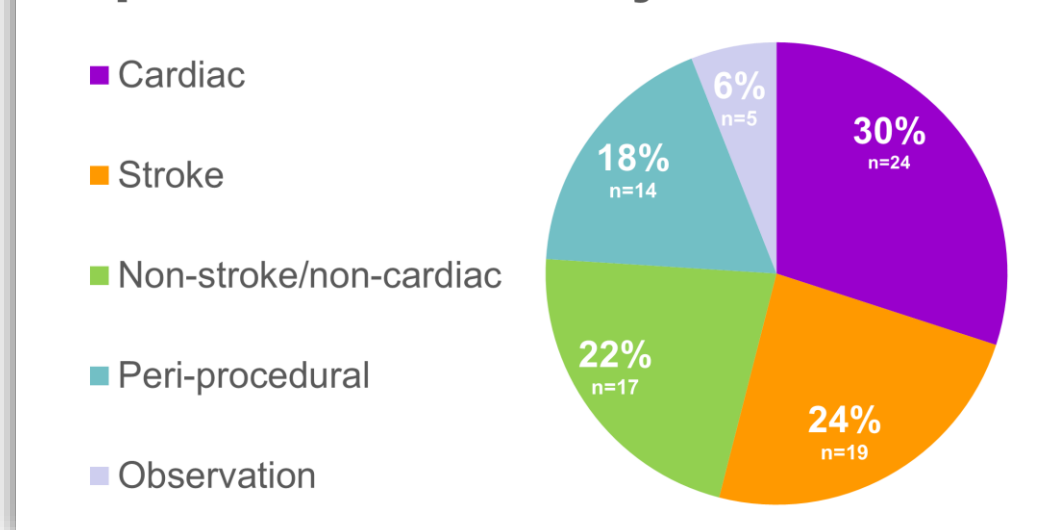


Figure 3: Median Code Stroke Inpatient Activation Care Times

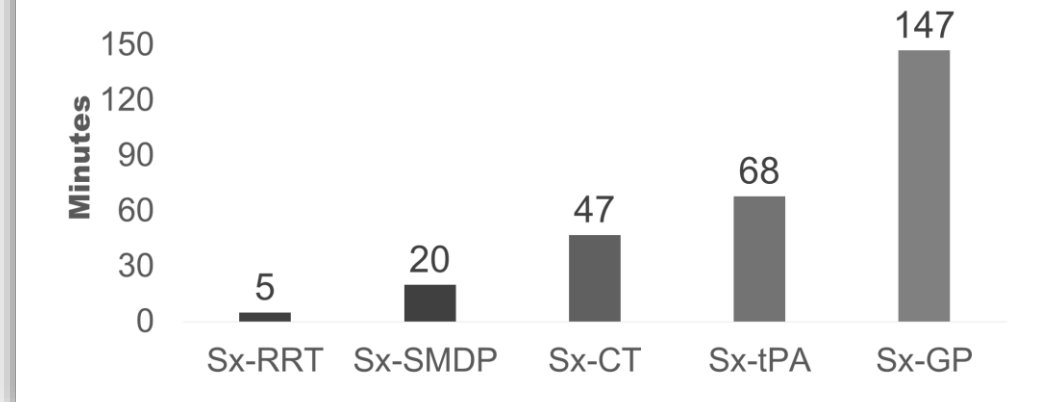


Figure 4: Percentage of Code Stroke Inpatient Activations by Discharge Diagnosis

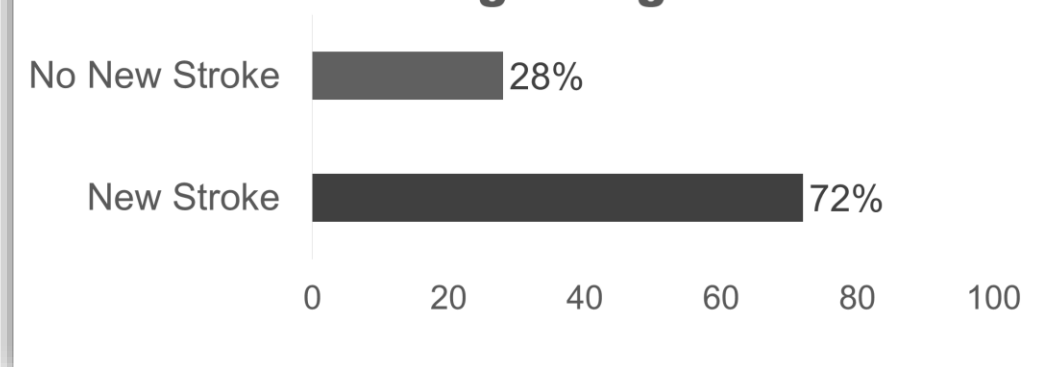
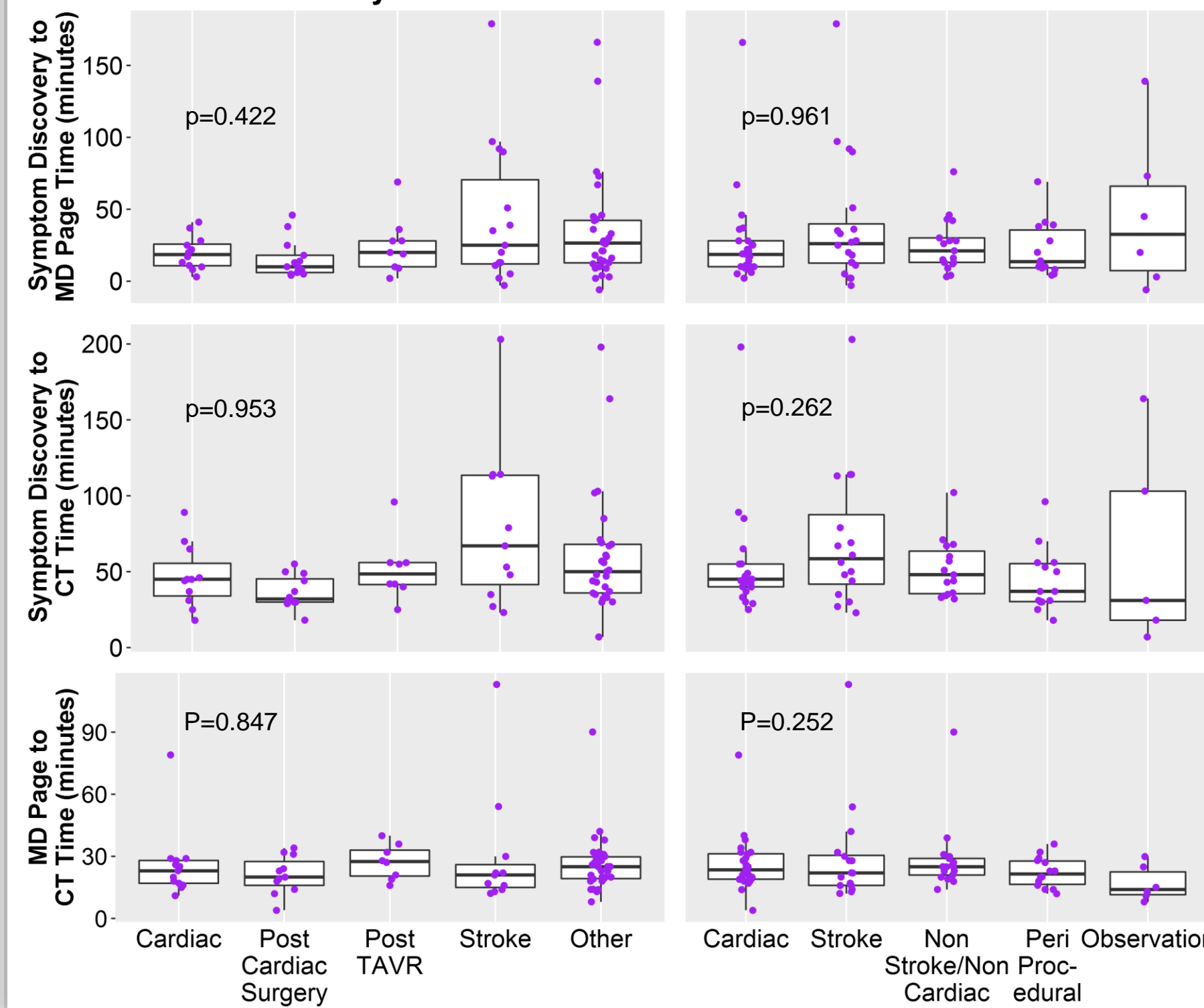


Figure 5: Code Stroke Inpatient Activations Care Times



- Among 101 CSIAs, 2 were excluded because of false alarms.
- Among 99 CSIAs, Cardiac patients (47%) comprised the greatest percentage of PP (Figure 1) and subsequently the greatest percentage of PL (30%) (Figure 2).
- Overall median times are reported in Figure 3.
- Overall treatment rate was 6.0%; tPA n=2; GP n=4.
- Among CSIAs with a new stroke diagnosis at discharge (Figure 4), only 11 (21.0%) were found in the stroke registry.
- No significant differences in Sx-SMDP, Sx-CT, or SMDP-CT by PL or PP were found (Figure 5).

Conclusions

- Standardized Code Stroke Inpatient Activation process resulted in consistent evaluation times regardless of primary problem or patient location in a Comprehensive Stroke Center with a standardized code stroke activation protocol.
- Code Stroke Inpatient Activations in the cardiac population need further examination and may reflect the presence of consolidated comprehensive cardiac surgical services at this particular hospital.
- The vulnerable inpatient stroke population should be considered when stroke centers determine which patients to include in national stroke registries, as many inpatient stroke cases are not accounted for using only primary and secondary diagnosis of stroke.

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