Teleneurology: Streamlining care of stroke patients in emergency rooms

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**Problem**

Patients in Emergency Departments (EDs) that are having a stroke now have an opportunity to receive endovascular therapy (EVT) for improved outcomes. Unfortunately, most hospitals cannot provide this care. There is variability and inconsistency in practice among providers creating a need to use tele-medicine to help streamline care of patients in EDs so that the treatment can be consistently faster to appropriate facilities.

**Design**

This project was developed by a focus group that created the tele-neurology team and disseminated the project to 21 hospitals to implement individually before a predetermined go live date. Stakeholder departments had small work groups that developed their plan of action with the implementation of tele-neurology.

**Setting**

- Urban level II trauma center
- Primary stroke center with 46 beds
- Average daily census 400+ people per day
- 30 stroke alerts each month
- Approximately 70-80 patients receive alteplase (t-PA) per year
- Beta site after a much smaller rural site.

**Implementation of Redesign Protocol**

Approximately 60 stroke simulations were completed in under a month to teach a department of 200 nurses leading up to the go live date. Also a small group of nurses helped to determine how best to implement this new process via several meetings. Interventions included a special t-PA checklist, a box that contains all necessary equipment, devoted portable monitoring and computers, and hyperlinks on the charting software that allow faster calculations and tracking.

**Results**

Door to needle (DNT) times prior to the project were a median of 43 minutes (min) on 58 patients in 11 months. After the go live date there was an 8 min decrease in median DNT compared to patients before (p < 0.0001) on 88 patients in 13 months.

**Implications**

This program when implemented by ER managers and performed by ER nurses can make significant decreases in DNT times which have been linked to better outcomes for patients and decreased length of stay.

**Participants**

All patients were included that presented to the ED that were experiencing stroke-like symptoms with a last known well time (LKWT) of less than 6 hours. This same RN would call the tele-neurologist and operator directly to activate a stroke alert. Another RN would assist the tele-neurologist and ED physician examining the patient, checking blood glucose, starting intravenous catheters (IVs), and vitals including a weight which he or she would then begin calculating the dose of the t-PA before the drug was even ordered. The calculated dose would then be entered into the IV pump which would be put on standby until the t-PA arrived from pharmacy. If t-PA was given the primary RN would begin post t-PA monitoring and help coordinate transport to comprehensive stroke center if necessary.