Implementation of Coordinated Telestroke Program in an Urban Setting Improves Acute Stroke Care

John Zurasky
Providence Stroke Center, Providence Health and Services, john.zurasky@providence.org

Leslie Corless
Providence Stroke Center, Providence Health and Services, leslie.corless@providence.org

Lindsay Lucas
Providence Stroke Center, Providence Health and Services

Elizabeth Baraban
Providence Stroke Center, Providence Health and Services, elizabeth.baraban@providence.org

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Recommended Citation
Zurasky, John; Corless, Leslie; Lucas, Lindsay; and Baraban, Elizabeth, "Implementation of Coordinated Telestroke Program in an Urban Setting Improves Acute Stroke Care" (2019). Books, Presentations, Posters, Etc.. 73.
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Influence of Initiation of a Telestroke Network on Acute Stroke Care in an Urban Setting

John Zurasky, MD, Leslie Corless, MPH, Lindsay Lucas, MS, Elizabeth Baraban, PhD
Providence Stroke Center, Providence Health and Services

Results

Background

- Telestroke has been shown to improve acute ischemic stroke (AIS) care in rural settings 1.
- Few studies have examined the impact of telestroke in an urban setting 2,3.
- There was a planned transition from an outpatient-based acute stroke providers to a centralized telehealth team of neurovascular and neurocritical care providers in an urban setting.
- The impact of this change was assessed by comparing patient outcomes during three telehealth implementation time periods: pre-initiation (PRE), transition after initiation (TRAN) and post-transition (POST).

Methods

- Data for AIS patients 18 and older from five urban hospitals were used.
- Outcomes included IV-alteplase or thrombectomy treatment rates and for those treated with IV-alteplase, hospital length of stay (LOS), door-to-needle time (DTN) <45 and <60 minutes, an IV-alteplase-related complication, and discharge to home or rehabilitation.
- Outcomes were compared between the three time periods: PRE (June 2015 - June 2016), TRAN (July 2016 – December 2016) and POST (January 2017 – March 2018).
- Chi-squared tests were used to compare treatment rates, Fisher’s exact test for complication rates, Cox proportional hazards model for LOS, and generalized linear models for DTN<45, DTN<60, and discharged to home/IRF.
- Models were adjusted for arrival mode, gender, admission NIHSS, age, and Last Known Well (LKW)-to-arrival time. For discharged to home/IRF, DTN was also added as a covariate.

Conclusions

- A transition to a specialty stroke care through a telestroke network showed improvements in IV alteplase and thrombectomy treatment rates and percentage of patients with a DTN < 60 minutes.
- Similar to results seen in rural areas, patients in urban hospitals can also benefit from telehealth services.

Table 1. Patient Characteristics

<table>
<thead>
<tr>
<th></th>
<th>PRE (n=1,468)</th>
<th>TRAN (n=819)</th>
<th>POST (n=1,463)</th>
<th>p-value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mode of Arrival, %</td>
<td></td>
<td></td>
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<td></td>
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<tr>
<td>EMS</td>
<td>63.4 (930)</td>
<td>63.1 (517)</td>
<td>65.5 (958)</td>
<td>0.385</td>
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<tr>
<td>Private care</td>
<td>36.3 (538)</td>
<td>36.9 (302)</td>
<td>34.5 (505)</td>
<td></td>
</tr>
<tr>
<td>Sex, % (n)</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Male</td>
<td>51.7 (759)</td>
<td>46.4 (380)</td>
<td>49.6 (726)</td>
<td>0.052</td>
</tr>
<tr>
<td>Female</td>
<td>48.3 (709)</td>
<td>53.6 (439)</td>
<td>50.4 (737)</td>
<td></td>
</tr>
<tr>
<td>Age, years median [IQR]</td>
<td>73 [61, 84]</td>
<td>75 [64, 85]</td>
<td>75 [63, 85]</td>
<td>0.008</td>
</tr>
<tr>
<td>LKW-to-arrival time (min), median [IQR]</td>
<td>323 [83, 349]</td>
<td>289 [71,1094]</td>
<td>312 [78,1075]</td>
<td>0.258</td>
</tr>
<tr>
<td>DTN (min), median [IQR]</td>
<td>57 [41,82]</td>
<td>54 [40,72]</td>
<td>49 [36,66]</td>
<td>&lt;0.001</td>
</tr>
</tbody>
</table>

References


Figure 1. IV-alteplase and thrombectomy treatment rates

Figure 2. Adjusted Outcomes for IV-alteplase treated patients

Figure 3. Median LOS in Days

Figure 4. Percentage of patients discharged to Home/IRF

*For DTN<45, DTN<60, and discharged to Home/IRF, estimated marginal means with 95% confidence intervals are plotted.
**For all plots, p-values reflect overall effect of time period on outcome.