Impact of Telehealth:
Tele-Emergency and Stroke Care
Presenter

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Telehealth: Focus on the Team

- Extend Specialists to Communities
- Recruit and Retain Workforce
- Provide Back-up Support
- Share Resources and Education
- Collaborative Teamwork
Learning Objectives:

1. Describe the benefits of Telehealth for Emergency Departments

2. Discuss use cases for a Tele-stroke program
Virtual Emergency Care
Telehealth in the Emergency Department

Instant access to specialty support during difficult or multiple emergency cases

• Assist in intubating patients, managing ventilators and airway protocols
Research: Timeliness of Care

In 28% of telehealth emergency cases, the hub physician was available prior to the local physician. In these cases, the hub physician was available an average of 21 minutes sooner than the local physician.

Cardiac Example of Faster Care

Aspirin Compliance: 2 times better
Door to ECG: 33%
Door to TNK: 18 Min
Door In – Door Out: 36 Min

Faster Care

Source: https://www.ruralhealthinfo.org/project-examples/749
Door-to-Door Provider Time by Facility

The dark green bars show the median hospital-specific, door-to-door provider time in cases where telemedicine is consulted. The light gray bars indicate the median hospital-specific, door-to-door provider time in cases where telemedicine was not consulted.

(Mohr, Young et al. 2018)
Cardiac Study

- A statistically significant improvement in median time to ECG from 12 minutes to 8 minutes.
- 100% compliance with aspirin administration. Patients were 2.19 times as likely to receive aspirin.
- An 18 minute improvement in door to t-PA for eligible patients
- A 36 minute improvement in mean door-in, door-out time (time to transfer)

 Improvement in Door to Discharge for AMI

Source:
Telehealth’s impact on patient transfers

13% avoided transfers = $4.5 million in savings

1,175 of 9,048 telemedicine cases were identified as avoidable transfers attributed to tele-emergency over a 3.5 year period in 85 rural hospitals across seven states. Analysis was based on examining the rates of avoided transfers in rural emergency departments that adopted tele-emergency applications and by estimating the costs and benefits of using tele-emergency to avoid transfers.

Overall, results show that tele-emergency has the potential to result in a net savings of $3,823 per avoided transfer, calculated by figuring in tele-emergency costs, hospital revenues and patient-associated savings.

The 1,175 avoidable transfers equates to an estimated cost savings of $4.5 million for patients and hospitals.

Reference: Using Tele-Emergency to Avoid Patient Transfers in Rural Emergency Departments: An Assessment of Costs and Benefits
RESULTS:
Physicians indicated **1,175 avoided transfers** were attributed to tele-emergency.
- $5,563 in avoided transportation and indirect patient costs
- $1,739 in tele-emergency costs per avoided transfer
- **$3,824 in net savings**

**Table 3.** Estimated patient transportation cost savings associated with avoided patient transfers.

<table>
<thead>
<tr>
<th>Transfer method</th>
<th>%</th>
<th>Base-case (1175 avoided transfers)</th>
<th></th>
<th>Worst-case scenario (683 avoided transfers)</th>
<th></th>
<th>Best-case scenario (1667 avoided transfers)</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>Transfers</td>
<td>Mileage</td>
<td>Costs (US$)</td>
<td>Transfers</td>
<td>Mileage</td>
<td>Costs (US$)</td>
</tr>
<tr>
<td>Ground ambulance</td>
<td>45%</td>
<td>529</td>
<td>59,585</td>
<td>673,710</td>
<td>307</td>
<td>33,735</td>
<td>381,842</td>
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<tr>
<td>Rotary wing</td>
<td>35%</td>
<td>411</td>
<td>32,720</td>
<td>2,696,961</td>
<td>239</td>
<td>19,058</td>
<td>1,567,611</td>
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<tr>
<td>Fixed wing</td>
<td>15%</td>
<td>176</td>
<td>23,784</td>
<td>1,136,136</td>
<td>102</td>
<td>14,279</td>
<td>675,008</td>
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<tr>
<td>Private automobile</td>
<td>5%</td>
<td>59</td>
<td>5288</td>
<td>3041</td>
<td>34</td>
<td>3240</td>
<td>1863</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td>100%</td>
<td>1175</td>
<td>121,377</td>
<td>4,509,848</td>
<td>683</td>
<td>70,312</td>
<td>2,626,324</td>
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</tbody>
</table>
Emergency Department Telemedicine Shortens Rural Time-to-Provider and Emergency Department Transfer Times

**Purpose**: To measure the impact of ED-based telemedicine on timeliness of care in participating rural hospitals.

**Results**: Of 127,928 qualifying ED encounters, 2,857 consulted telemedicine and were matched with non-telemedicine controls. Door-to-provider time was shorter in telemedicine patients by 6.0 min (95% confidence interval [CI] 4.3–7.8 min). The first provider seeing the patient was a telemedicine provider in 41.7% of telemedicine encounters, and in these cases, telemedicine was 14.7 min earlier than local providers. ED LOS was 22.1 min shorter (95% CI 3.1–41.2) among transferred patients, but total ED LOS was longer (40.2 min, 95% CI 30.8–49.6 min) for all telemedicine patients.

**Conclusion**: Telemedicine decreases ED door-to-provider time, most commonly because the telemedicine provider was the first provider seeing a patient. Among transferred patients, ED LOS at the first hospital was shorter in patients who had telemedicine consulted.
Tele-Stroke: How it Works

- Telehealth gives originating sites immediate access to neurologists for acute stroke patients and neurological emergencies.

1. **Patient enters local ER exhibiting stroke symptoms, initiates telehealth encounter**

2. **Screen the patient: NIH and VAN assessment**

3. **Telehealth Hub engages on-call neurologist**

4. **Complete neurological assessment to determine if the patient is tPA candidate**

5. **tPA is administered & telehealth staff coordinates transfer arrangements**

6. **Telehealth staff coordinates transfer arrangements**
Tele-Stroke: Benefits

24/7/365 video access to neurologist via telehealth for stroke consults

Access to specialty consultation for ischemic strokes, TIAs, and stroke mimics

Decreased door-to-neurologist time, increasing chances that eligible patients will fall within the window for tPA administration

Avoids unnecessary transfers
Telemedicine is Associated with Faster Diagnostic Imaging in Stroke Patients: A Cohort Study (2019)

- Telemedicine activation resulted in faster transfer of care to next available provider for MI patients
- Telemedicine use increased the proportion of eligible patients that received fibrinolysis
- Telemedicine activation resulted in faster CT interpretation
Quality Initiatives for Timeliness of Care

- Accurate determination of Last Known Well
- CT order time
- CT interpretation time
- Neuro Consult time
- Accurate Inclusion / Exclusion criteria review
- Improving Door-to-Needle time
- Decision to transfer time to appropriate Stroke Center (LVO to Intervention)
Tele-Stroke Patient Testimonial
Tele-Stroke
Tele-Stroke
Tele-Stroke
Tele-Stroke
Tele-Strok
Tele-Stroke
Thank You
Bibliography