IMPROVING TELESTROKE CARE: DECREASING “DOOR-IN–DOOR-OUT” TIMES (DIDO)

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DISCLOSURES

- No presenter or team member has a financial disclosure or conflict of interest.

- Special thanks to our telestroke sites for providing the data, participating in discussion, and being excellent partners.
DOOR IN, DOOR OUT IMPROVEMENT PROJECT

Reduce Door-In-Door-Out Times because...

• It’s patient oriented.
• It’s a critical metric associated with clinical outcomes.
• It’s a statewide effort led by Utah Stroke Task Force.
• Recommendation of transfers < 75 minutes.
BACKGROUND

UUHC Comprehensive Stroke Center

Certification
Meets standards for
Comprehensive Stroke Center

Stroke Receiving

Critical Access
Simplified Process Map

EMS pre-notification

Patient arrives in ER

Teleconsult

Assessment & decision making

Departure

DIDO Time
DIDO - THE NEED FOR SPEED

Why is this so important?

Tissue reperfusion within 150 min of Last Known Well carries a ~91% probability of regaining functional independence. (Curr Atheroscler Rep (2017) 19:52)

Note: Reprinted from Time to Treatment With Endovascular Thrombectomy and Outcomes From Ischemic Stroke: A Meta-analysis by JL Saver, 2016.
UTAH STROKE TASKFORCE RECOMMENDS A GOAL OF 75 MIN!

Baseline DIDO Times for UUHC Network

January ‘17 – March ‘18

DIDO Average: 158.6 minutes!
OUR 5 SELECTED SITES STATEWIDE
Root Cause Analysis

**Method**
- Long Door to Call Times
  - Breakdown in communication process
    - Long tPA to transfer
      - Delayed EMS activation
      - Delayed Brain Attack activation
  - tPA mixing
    - Draw back excess medication before departure

**People**
- Limited night staff
  - Unspecialized staff
    - Needs to be called in
    - Nurse to fill in for pharmacist etc.
  - Staff turnover
    - Inadequate training/skills
    - Forgetful

**Equipment**
- Hospital pumps are not FDA approved for flight
- Limited or no access to ALS crews
- Booting up CT scanner

**Material**
- UUHC on critical census (divert)
- Weather
- Distance

**Environment**
- Measurement
  - Triage stroke vs mimic may skew the times
  - Time increments are self-reported
    - Hospitals have different capacities (receiving vs critical access)
Targeted Root Causes

Why wait before activating a BA?

Why wait to call a tele consult?

Why wait before activating EMS?

What we have.

3 Why’s?

Empower nursing staff to drive activations.

Encourage ER physician to call before having all the answers.

Activate EMS as soon as transfer is decided or tPA is given.

What we want.

3 How’s?

What we have.
### RESULTS (SELECTED SITES)

**Immediate Results**

- **Jan - Mar '18**
- **Apr - Jun '18**

<table>
<thead>
<tr>
<th>Minutes</th>
<th>Jan'17-Mar'18</th>
<th>Apr'18-July'19</th>
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</thead>
<tbody>
<tr>
<td>Mean</td>
<td>148.5 min</td>
<td>115.9 min</td>
</tr>
<tr>
<td>Median</td>
<td>123 min</td>
<td>99.5 min</td>
</tr>
<tr>
<td>25% Quartile</td>
<td>102 min</td>
<td>81.25 min</td>
</tr>
<tr>
<td>75% Quartile</td>
<td>176 min</td>
<td>139.5 min</td>
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<tr>
<td>Two-tailed p-value</td>
<td><strong>0.0024</strong></td>
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</table>
Survey Results for DIDO

Results for DIDO Delay Mar '18

- Weather
- UUMC on divert
- EMS Availability
- Stroke Recognition
- Complications in Care

Results for DIDO Success Jun '18

- Other (staff education, activation protocol change, etc.)
- Care Team Process improved
- Stroke Recognition
- EMS Availability
- Early Telestroke Activation
DISCUSSION

What were our 5 sites doing differently?

They targeted barriers that could be easily changed while still yielding a high return.

- ED Physicians felt more comfortable activating a tele consult.
- Nurses were empowered to activate BA’s in triage.
- They improved communication with EMS & activated crews sooner.
What were we (UUHC) doing differently?

<table>
<thead>
<tr>
<th>Metric</th>
<th>Goal</th>
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</thead>
<tbody>
<tr>
<td>Door to CT</td>
<td>15 min</td>
</tr>
<tr>
<td>Door to Call</td>
<td>15 min</td>
</tr>
<tr>
<td>Door to Camera</td>
<td>30 min</td>
</tr>
<tr>
<td>Call to Camera</td>
<td>10 min</td>
</tr>
<tr>
<td>Door to Bolus</td>
<td>60 min</td>
</tr>
<tr>
<td>DIDO</td>
<td>75 min</td>
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</table>

We conducted visits together with EMS to each facility.

We provided physician driven, individualized education on site.

We followed up via surveys, newsletters, and phone calls.

We tracked and recognized best DIDO times each month.
Take Away Key Points

• Foster relationships
• Set explicit DIDO goal
• Standardize Brain Attack protocols
• Provide visible support
• Data Feedback and Recognition
• Stay persistent
THANK YOU!