Effectiveness of Nurse Practitioners/Physician's Assistants in Triage

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Effectiveness of NPs/PAs in Triage
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Background
- The number of visits to Emergency Departments (EDs) in the United States continues to increase, while the EDs has decreased. (Wiler et al., 2010)
- Medicare reimbursement linked to throughput measures in Q4 2015 (Galarraga & Pines, 2014)
- Wait Time (Door-to-Provider)
- Length of Stay
- Left Without Being Seen (LWBS)
- EDs face pressure to increase efficiency.
- Improving “front end” processes, including Triage has previously been shown to improve throughput measures (Wiler et al., 2010)
- Provider-in-Triage can perform Medical Screening Exam, order tests, and discharge patients with simple complaints
- Provider-in-Triage can be physician, but Nurse Practitioners/Physician’s Assistants (NPs/PAs) are more cost-effective
- No literature exists on effect of Provider-in-Triage, NP/PA or otherwise, on disposition mix
- Including substitution of LWBS for Elopement

Objectives
1. Contribute to literature on effectiveness of NPs and PAs in Provider-in-Triage models compared to the traditional sole-RN-in-triage model on standardized metrics of ED throughput.
2. Determine the extent to which NPs and PAs in triage convert LWBS into elopements

Methods
- Retrospective Pre/Post Analysis
- Disposition types analyzed via \( \chi^2 \) test
- Length of Stay and Wait Time analyzed via General Linear Model
- Log-transformed with Box-Cox
- Magnitude (Cramer’s V) and direction (A)
- Significant association further analyzed with Mean Differences and t-test

Results

**Effects on Categorical Variables**
- For disposition type – low frequency events removed
- Significant difference pre/post
- \( \chi^2(5) = 49.42, p < .001 \)
- Weak association, no directionality
- Cramer’s V = .07
- \( \lambda = .02 \) (SE = .004), \( z = 1.13, p = .26 \)

**Disposition Before and After Introduction of NPs/PAs, Ordered by Frequency, Rare Events Excluded**

<table>
<thead>
<tr>
<th>Disposition</th>
<th>Before Non-Definitive Consideration</th>
<th>After Non-Definitive Consideration</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Discharged</td>
<td>467</td>
<td>287</td>
<td>754</td>
</tr>
<tr>
<td>Admitted</td>
<td>603</td>
<td>635</td>
<td>1238</td>
</tr>
<tr>
<td>Transferred</td>
<td>151</td>
<td>180</td>
<td>331</td>
</tr>
<tr>
<td>Elopement</td>
<td>58</td>
<td>154</td>
<td>212</td>
</tr>
<tr>
<td>LWBS</td>
<td>34</td>
<td>50</td>
<td>84</td>
</tr>
<tr>
<td>AMA</td>
<td>35</td>
<td>56</td>
<td>91</td>
</tr>
<tr>
<td>Overall</td>
<td>4090</td>
<td>4091</td>
<td>8181</td>
</tr>
</tbody>
</table>

NPs/PAs introduction:
- Discharge: 49.97 < .0001
- Admitted: 3.59 < .01
- Elopement: 3.3 < .0001
- LWBS: 1.61 < .0002

**Eloped versus LWBS Before/After Intervention**

<table>
<thead>
<tr>
<th>NPs/PAs Introduction</th>
<th>Before</th>
<th>After</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Elopement</td>
<td>18</td>
<td>34</td>
<td>52</td>
</tr>
<tr>
<td>LWBS</td>
<td>154</td>
<td>50</td>
<td>204</td>
</tr>
<tr>
<td>Total</td>
<td>213</td>
<td>84</td>
<td>296</td>
</tr>
</tbody>
</table>

Cox \( \lambda = .02 \) (SE = .004), \( z = 1.13, p = .26 \)

**Effects on Temporal Variables**
- Length of Stay – No interaction with intervention, or with intervention and disposition type
- Interaction with disposition type, but known and expected
- Wait Time – Significant interaction with Disposition and intervention (p < .0001)
- Explored in table below
- Wait Time shorter with NPs/PAs (p < .0001)
- Mean 12.7 minute improvement
- Also effect of Disposition type, but better explored in interaction with the intervention

**Discharge Time Changed by Significant Disposition Type**
- Discharge: 239.97 < .0001
- Admitted: 5.99 < .01
- Elopement: 3.3 < .0001
- LWBS: 1.61 < .0002

**Practice Implications**
- NPs and PAs in triage
- Can mitigate some risk by providing the first interaction between patient and a provider sooner
- Other interventions need to be implemented to see improvements in overall throughput

References