Safety of Telephone Treatment Protocols in a Primary Care Practice

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Telephone Treatment Protocols

Need to prioritize office visits

• Decreasing resources
  • Primary care shortage

• Increasing demand on practices
  • Obesity
  • Aging population
  • Medically complex patients
Telephone Treatment Protocols

- Telephone triage has been used informally and formally
- Use is likely to continue and increase
- Available technology
- Patient preference – expedited yet safe care
- Information regarding safety is scarce
Aim

To determine safety of telephone treatment protocols for four conditions commonly seen in primary care practice
Conditions Appropriate for Treatment by Telephone Triage

- Uncomplicated
- Common
- Diagnosed without physical examination or laboratory tests
- Standardized, safe, and simple treatments are available
Conditions

- Sinusitis
- Yeast vaginitis
- Pharyngitis
- Uncomplicated urinary tract infection (UTI)
ExpertRN

- Proprietary telephone triage software
- Handled by registered nurses trained in telephone triage
- Symptom algorithms
- Pertinent positives and negatives
- Clinical decision support
- Specific treatment protocols
- Entered into EMR
Possible Recommendations

- Home care without prescription or office visit
- Prescription medication without office visit
- Urgent visit (within 4 hours)
- Acute visit (within 24 hours)
- Routine appointment (> 24 hours)
- Emergency department
- Provider available to provide input if needed
- Allows for nurse and patient override
Methods

- Retrospective analysis
- Identified calls related to 4 conditions of interest from all symptom calls from 2008-2010
- Triage details were obtained from Electronic Medical Record (EMR)
- For those advised treatment without office visit, 30-day outcomes were obtained from claims data.
- EMR was examined to confirm if hospitalization was related to call-related symptom
Study Population

Inclusion Criteria
- Patient on the panel of a provider in primary care
- Mayo Clinic registration number
- Insurance through employee health plan

Exclusion Criteria
- Denied research consent
30-Day Outcomes

- Death
- Emergency department (ED) visit
- Hospitalization - inpatient and observation
- Outpatient visit
Analysis Steps

Prescription or Home care without Office Visit

Any Claims in 30 days?

ED visit
Outpatient visit
Hospitalization
Death

Related
Unrelated
Related
Unrelated
## Demographics

<table>
<thead>
<tr>
<th>Protocol</th>
<th>Age (Years)</th>
<th>Male(N)</th>
<th>Female (N)</th>
</tr>
</thead>
<tbody>
<tr>
<td>UTI</td>
<td>40.6 ± 13 (16 - 66)</td>
<td>0</td>
<td>3835</td>
</tr>
<tr>
<td>Pharyngitis</td>
<td>21.9 ± 15.5 (3 - 76)</td>
<td>1779</td>
<td>2758</td>
</tr>
<tr>
<td>Vaginitis</td>
<td>37.3 ± 9.9 (19 - 64)</td>
<td>0</td>
<td>147</td>
</tr>
<tr>
<td>Sinusitis</td>
<td>43.0 ± 11.9 (16-76)</td>
<td>854</td>
<td>2774</td>
</tr>
</tbody>
</table>
Results

• 86,131 symptom related calls from study population
• 12,147 calls related to the 4 conditions
• 8,066 patients prescribed medications without office visit
• 410 advised home care without office visit
• 70% (8,476) of the 12,147 patients meeting criteria were treated without office visit
## Results: Expert RN Triage

<table>
<thead>
<tr>
<th>Protocol</th>
<th>Total</th>
<th>Home Care</th>
<th>Prescription</th>
<th>Urgent Visit</th>
<th>Acute Visit</th>
<th>Routine Visit</th>
<th>Provider Advice/other</th>
<th>Emergency Department</th>
</tr>
</thead>
<tbody>
<tr>
<td>UTI</td>
<td>3,835</td>
<td>0</td>
<td>2,135</td>
<td>104</td>
<td>935</td>
<td>6</td>
<td>654</td>
<td>1</td>
</tr>
<tr>
<td>Sinusitis</td>
<td>3,628</td>
<td>409</td>
<td>1,955</td>
<td>170</td>
<td>185</td>
<td>94</td>
<td>814</td>
<td>1</td>
</tr>
<tr>
<td>Vaginitis</td>
<td>147</td>
<td>1</td>
<td>103</td>
<td>0</td>
<td>37</td>
<td>0</td>
<td>6</td>
<td>0</td>
</tr>
<tr>
<td>Pharyngitis</td>
<td>4,537</td>
<td>0</td>
<td>3,873</td>
<td>65</td>
<td>414</td>
<td>3</td>
<td>164</td>
<td>18</td>
</tr>
<tr>
<td>Total</td>
<td>12,147</td>
<td>410</td>
<td>8,066</td>
<td>339</td>
<td>1,571</td>
<td>103</td>
<td>1,638</td>
<td>20</td>
</tr>
</tbody>
</table>
## 30-Day Outcomes

<table>
<thead>
<tr>
<th>Protocol</th>
<th>Total</th>
<th>Death</th>
<th>Outpatient Visit</th>
<th>ED Visit</th>
<th>Observation</th>
<th>Hospital</th>
</tr>
</thead>
<tbody>
<tr>
<td>UTI</td>
<td>2,135</td>
<td>1</td>
<td>954</td>
<td>63</td>
<td>75</td>
<td>10</td>
</tr>
<tr>
<td>Sinusitis</td>
<td>2,364</td>
<td>0</td>
<td>1,013</td>
<td>49</td>
<td>48</td>
<td>10</td>
</tr>
<tr>
<td>Vaginitis</td>
<td>104</td>
<td>0</td>
<td>48</td>
<td>5</td>
<td>6</td>
<td>2</td>
</tr>
<tr>
<td>Pharyngitis</td>
<td>3,873</td>
<td>0</td>
<td>3,707</td>
<td>116</td>
<td>62</td>
<td>4</td>
</tr>
<tr>
<td>Total</td>
<td>8,476</td>
<td>1</td>
<td>5,712</td>
<td>233</td>
<td>191</td>
<td>26</td>
</tr>
</tbody>
</table>
UTI: 30-Day Outcomes

Total calls 3835

Telephone Treatment
2135 (55.7%)

- Death - 1
- Outpatient Visit - 44.26%
- ED - 2.9%
- Observation - 3.5%
- Inpatient - 0.5%
- None - 48%
Yeast Vaginitis: 30-Day Outcomes

Total calls 147

Telephone Treatment 104 (70.7%)

- Outpatient - 45.2%
- ED - 4.8%
- Observation - 5.76%
- Inpatient - 1.9%
- None - 41.3%
Sinusitis: 30-Day Outcomes

Total Calls 3628

Telephone Treatment 2364 (65%)

Outpatient - 42.8%
ED - 2.07%
Observation - 2.03%
Inpatient - 0.42%
None - 52.6%
Pharyngitis: 30-Day Outcomes

Total calls 4537

Telephone Treatment 3873 (85.4%)

*Majority of outpatient visits reflect visit with RN to obtain throat swab for Streptococcal testing by rapid PCR

- Outpatient - 95.7%
- ED - 3%
- Observation - 1.6%
- Inpatient - 0.1%

3707*
## Hospitalization: Relationship to Call Symptom

<table>
<thead>
<tr>
<th>Protocol</th>
<th>Related</th>
<th>Unrelated</th>
<th>Undetermined</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>UTI</td>
<td>5</td>
<td>71</td>
<td>9</td>
<td>85</td>
</tr>
<tr>
<td>Sinusitis</td>
<td>2</td>
<td>52</td>
<td>4</td>
<td>58</td>
</tr>
<tr>
<td>Pharyngitis</td>
<td>1</td>
<td>57</td>
<td>8</td>
<td>66</td>
</tr>
<tr>
<td>Vaginitis</td>
<td>0</td>
<td>8</td>
<td>0</td>
<td>8</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>8</strong></td>
<td><strong>188</strong></td>
<td><strong>21</strong></td>
<td><strong>217</strong></td>
</tr>
</tbody>
</table>
Summary

• 70 % (8476) of 12,147 patients that met criteria were treated without office visit

• 2.6 % (217/8476) required hospitalization in the 30 days

• 0.09 % (8/8476) of these hospitalizations could possibly be related to call symptom

• There were no deaths related to the call symptom
Strengths

• Claims data have been used successfully to study triage by our group

• Primary care practice at Mayo Clinic is distinct from the tertiary care practice and thus our results could be applicable to similar primary care practices

Limitations

• Administrative data

• Did not capture patient adherence

• Confined to Mayo system and would not capture care elsewhere
Features of Treatment Protocols

• Computerized decision support
• Stringent inclusion and exclusion criteria.
• RN with added training and experience in telephone triage
• Flexibility to allow for override
• Provider available to provide input if needed
• Familiar with patient’s medical history
• EMR available for review at time of decision making if needed
Conclusion

- Telephone treatment protocols provided efficient and timely triage and treatment for 4 common conditions seen in primary care practice.
- Most patients meeting criteria were managed without need for an office visit.
- Number of hospitalizations and ED visits following telephonic treatment was low.