2015 myRESEARCH™

Science Internship Program: Applied Medicine

Civic Education
Office of Government and Community Relations
Lyndsi Powell
Science Internship Program: Applied Medicine
A Comparison of Patient Characteristics Presenting to Different Types of Emergency Departments in the Cleveland Clinic Health System.

Lyndsi Powell
Baruch Fertel, MD, MPA
Abstract

• Admission rates vary depending on the hospital’s location, type, and resources.
• Cutting down Emergency Department (ED) volume is important in preserving time, money, and resources.
• Most patients who present to the ED, whether they’re discharged or admitted, ultimately complain and are diagnosed with abdominal pain and chest pain.
Background

• When presented with other options, those with low-acuity diagnoses visit the ED less than others.
  – Chief complaint has also been linked to the willingness to accept alternative modes of transportation.

• 22% of non-urgent ED patients do not seek care from a primary care physician due to perception of need.

• The top national diagnoses from hospital staff (not ED staff) that resulted in admittances to the same hospital in 2011 were…
  – Acute bronchitis, asthma, mood disorders, septicemia, and congestive heart failure (non-hypertensive).
Problem/Purpose

- Often patients who visit the ED could receive care elsewhere and, thus, contribute to overcrowding.
- By focusing on the chief complaints and diagnoses that result in admissions and discharges, physicians and patients can begin to predict what issues are truly emergent.
Hypothesis

• Based on the national statistical briefs of ED visits in 2011, admission rates for hospitals will fall between $13.48\%$ and $16.93\%$. 
Methodology

- Referenced data from all Cleveland Clinic (CC) ED’s.
  - Free standing hospitals were omitted.
  - The Main Campus ED is counted as its own location because it is a tertiary hospital.
- Used the diagnoses from the ED staff.
- Analyzed 4 categories:
  - Chief complaints that resulted in discharges.
  - Diagnoses that resulted in discharges.
  - Chief complaints that resulted in admittances.
  - Diagnoses that resulted in admittances.
Limitations

- It is unclear if the “Discharge” data solely reflects the discharged patients or includes those who were transferred as well.
## Data

<table>
<thead>
<tr>
<th>Cleveland Clinic Hospitals</th>
<th>Total Admitted 2014</th>
<th>Total Discharged 2014</th>
<th>Total 2014</th>
</tr>
</thead>
<tbody>
<tr>
<td>Euclid</td>
<td>3,233 (8.84%)</td>
<td>33,323 (91.16%)</td>
<td>36,556</td>
</tr>
<tr>
<td>Fairview</td>
<td>11,263 (14.11%)</td>
<td>68,535 (85.89%)</td>
<td>79,798</td>
</tr>
<tr>
<td>Hillcrest</td>
<td>11,730 (19.56%)</td>
<td>48,241 (80.44%)</td>
<td>59,971</td>
</tr>
<tr>
<td>Lakewood</td>
<td>3,982 (12.19%)</td>
<td>28,677 (87.81%)</td>
<td>32,659</td>
</tr>
<tr>
<td>Lutheran</td>
<td>3,584 (13.51%)</td>
<td>22,947 (86.49%)</td>
<td>26,531</td>
</tr>
<tr>
<td>Marymount</td>
<td>6,279 (15.40%)</td>
<td>34,484 (84.60%)</td>
<td>40,763</td>
</tr>
<tr>
<td>Medina</td>
<td>3,439 (14.17%)</td>
<td>20,835 (85.83%)</td>
<td>24,274</td>
</tr>
<tr>
<td>South Pointe</td>
<td>5,003 (14.84%)</td>
<td>28,710 (85.16%)</td>
<td>33,713</td>
</tr>
</tbody>
</table>
Data (cont.)

Top 5 Chief Complaints of the Discharged at All CCF Hospitals

- Abdominal Pain: [Data]
- Cough: [Data]
- Chest Pain: [Data]
- Headache: [Data]
- Fever: [Data]

Top 5 Diagnoses of the Discharged at All CCF Hospitals

- Abdominal Pain: [Data]
- Chest Pain: [Data]
- Headache: [Data]
- Nausea/Vomiting: [Data]
- Back Pain: [Data]

Top 5 Chief Complaints of the Admitted at All CCF Hospitals

- Shortness of Breath: [Data]
- Chest Pain: [Data]
- Abdominal Pain: [Data]
- Nausea/Vomiting: [Data]
- Dizziness: [Data]

Top 5 Diagnoses of the Admitted at All CCF Hospitals

- Chest Pain: [Data]
- Abdominal Pain: [Data]
- Pneumonia: [Data]
- Syncope: [Data]
- Shortness of Breath: [Data]
The Main Campus ED’s top 5 diagnoses for admittance (of all patients) were as follows:

- Abdominal Pain (0.94%)
- Chest Pain (0.68%)
- Fever (0.37%)
- Acute Kidney Injury (0.34%)
- Shortness of Breath (0.34%)

<table>
<thead>
<tr>
<th>Cleveland Clinic Tertiary Hospital</th>
<th>Total Admitted 2014</th>
<th>Total Discharged 2014</th>
<th>Total 2014</th>
</tr>
</thead>
<tbody>
<tr>
<td>Main Campus</td>
<td>13,257 (21.09%)</td>
<td>49,600 (78.91%)</td>
<td>62,857</td>
</tr>
</tbody>
</table>
Results

• Fever was the 3rd highest diagnosis for admittance for the Main Campus.
  – This could be due to the possible causes of fever in the population that surrounds Main Campus, such as post-op complications or neutropenic fever.

• Abdominal pain and chest pain were both in the top 5 for all 4 categories at both locations.

• Only 5 out of the 8 hospitals fell within the admission range hypothesized (13.48% and 16.93%).
Conclusions

• 62.50% of the CCF hospitals correspond with the national brief hypothesized.
  – Main campus’s admission percentage was much larger than that of the national brief’s range, suggesting more local resources influence admissions.

• Patients may be suffering from medical issues whose pain presents itself as one of the top 5 complaints, but originates elsewhere, explaining the difference among diagnosis top 5 and chief complaint top 5.
Recommendations

• Obtain the transfer information from free standing ED’s to include them in the study.

• Conduct a study to determine whether or not patients’ levels of pain correlate with their ultimate outcome in admission or discharge.

• Determine which features of the chief complaints determine admission.
  – Use this to aid in triage.
References


References (cont.)


Special Thanks

- Baruch Fertel, MD, MPA, my primary mentor who has continued to mentor me over several summers while still teaching me something new every day.
- The Cleveland Clinic Main Campus Emergency Department Staff who have acted as the village it takes to raise a future physician.
- Nedra Starling, MA, MPH, ABD/DrPH.
- The Office of Government and Community Relations’ Civic Education Department.