Clinically Abstracted Reasons for 30-Day Trauma Readmissions
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Introduction

Unplanned hospital readmissions within 30 days of discharge are common across specialties, are resource intensive, and occur in approximately 20% of Medicare admissions (Copperetto et al., 2015). Policy makers have directed further focus on hospital readmissions, encouraging quality improvement initiatives that improve readmission prevention measures (Petrey et al., 2014). Trauma literature speculates the eventual public disclosure of trauma readmission rates, suggesting future imposition of financial penalties due to trauma readmissions (Olufajo et al., 2016). Due to this, it is imperative that trauma programs identify clinically abstracted reasons for hospital readmissions, design targeted interventions for at risk populations, and prioritize the reduction of 30-day trauma hospital readmissions.

The use of large administrative data sources is common across literature, yet lacks clinical granularity (Merkow et al., 2015). Administrative data does not provide clear clinical insight into the reason for hospital readmission (Gonzalez et al., 2014). Transforming readmission data into clinically significant data points provides a more comprehensive evaluation of the underlying factors associated with trauma readmissions. This study details a structured methodology for 30-day trauma hospital readmission reviews. The goal is to describe the trauma patient’s readmission with clinically meaningful variables, as opposed to administrative data codes. This study hypothesizes a significant difference between the clinically abstracted and administrative variables documented as reason for 30-day trauma readmission.

Methods

• Retrospective cohort study at a level 1 trauma center
• Readmissions spanned over 2014-2016
• Analysis of 18,998 trauma patients
• Inclusion: Patients greater than 15 years of age
• Exclusion: deaths during index hospitalization, acute care surgery admissions, transfers to another facility, and isolated hip fractures

A systematic methodology was developed for abstracting the clinically significant reason for readmission. This methodology was developed based upon the combination of readmission themes within trauma and acute care surgery literature, as well as the American College of Surgeons National Trauma Data Bank and Trauma Quality Improvement Program. Clinical diagnoses were obtained directly from imaging reports, laboratory results, and clinical documentation including that of nursing, consultant services, and ancillary staff. Where documentation was lacking, the reviewing clinician inferred the diagnosis.

Clinically Abstracted vs. Administrative Data

<table>
<thead>
<tr>
<th>Complication</th>
<th>Clinically Abstracted</th>
<th>Administrative Data</th>
<th>SfM/HC/OS</th>
<th>Medicare Agreement</th>
</tr>
</thead>
<tbody>
<tr>
<td>Deep surgical site infections</td>
<td>121 (40%)</td>
<td>181 (39%)</td>
<td>0.61</td>
<td>134 (79%)</td>
</tr>
<tr>
<td>Venous thromboembolism/Pulmonary embolism</td>
<td>15 (5.2%)</td>
<td>36 (9%)</td>
<td>0.001</td>
<td>27 (75%)</td>
</tr>
<tr>
<td>Pierced wounds</td>
<td>15 (6.2%)</td>
<td>13 (6.2%)</td>
<td>0.995</td>
<td>23 (62%)</td>
</tr>
<tr>
<td>Organ surgical site infections</td>
<td>12 (6.6%)</td>
<td>84 (32%)</td>
<td>0.001</td>
<td>8 (18%)</td>
</tr>
<tr>
<td>Urinary tract infections</td>
<td>13 (6.2%)</td>
<td>31 (11%)</td>
<td>0.001</td>
<td>8 (18%)</td>
</tr>
<tr>
<td>Non-surgical wounds</td>
<td>10 (5.5%)</td>
<td>0 (0%)</td>
<td>0.001</td>
<td>0 (0%)</td>
</tr>
<tr>
<td>Superficial surgical site infections</td>
<td>4 (2.2%)</td>
<td>10 (3.5%)</td>
<td>0.001</td>
<td>0 (0%)</td>
</tr>
<tr>
<td>Infection/Complication</td>
<td>4 (2.2%)</td>
<td>0 (0%)</td>
<td>0.001</td>
<td>0 (0%)</td>
</tr>
<tr>
<td>Infection/Other</td>
<td>0 (0%)</td>
<td>0 (0%)</td>
<td>0.001</td>
<td>0 (0%)</td>
</tr>
</tbody>
</table>

Discussion

The results of this study show a significant difference between the reason for 30-day trauma readmission, when comparing clinically abstracted and administrative data. The granular dissection of readmission charts can help isolate clinically significant variables of at risk populations, providing clarity into the reason behind their subsequent presentation. For example, registry data revealed a patient documented as being readmitted secondary to a splenic laceration. In actuality, the solid organ injury was stable and the patient simply required education around the care of a pelvic drain. If determined solely by the administrative coding, the direction of preventative strategies may be misguided.

In our subjects, we found that the patient most likely to be readmitted within 30 days of hospital discharge is:
• a young white male,
• moderately injured after sustaining penetrating trauma,
• disposition destination to home,
• presents with an infectious complication, and
• readmits prior to his scheduled follow-up appointment.

Future investigation into subgroups should focus attention on those readmitted after penetrating trauma and those suspected at high risk for complications. While our results agree with existing trauma literature as complications dominating as reason for readmission (Olufajo, Vachon, Junior, & Moore), the data obtained by these studies are from administrative sources. Our study shows that administrative data queries do lack clinical clarity, often conflicting with the data abstracted by a clinician. Administrative data is only as reliable as clinical documentation. An abstractor with a clinical background has the advantage of the ability to interpret clinical data, inferring a diagnosis where documentation is lacking.

Conclusion

The accurate identification of at-risk populations through clinical data abstraction and subsequent development of targeted interventions is recommended for the reduction of readmission rates. Data obtained from this study has assisted in the structuring of process improvement initiatives, clinical guideline creation, and early proactive outpatient follow-up strategies ultimately aimed at quality patient care and readmission reduction. Further research into the development of predictive models using clinically abstracted data for trauma patient readmission and the prospective use of their are used for, preventative intervention and allocation of resources prior to hospital discharge.

References


