Do Attending EPs Change Their Head CT Ordering Practices After Reviewing Their Head CT Utilization Data?

Permalink
https://escholarship.org/uc/item/33m0n07m

Journal
Western Journal of Emergency Medicine: Integrating Emergency Care with Population Health, 18(5.1)

ISSN
1936-900X

Authors
Miller, D
Moubarek, M
Vakkalanka, P
et al.

Publication Date
2017

License
CC BY 4.0
**Background:** CMS proposed OP-15 as an efficiency measure of whether head CT (HCT) scans ordered in the ED were indicated. We instituted a modified OP-15 as a quality assurance (QA) effort.

**Objectives:** Did HCT ordering decrease after Emergency Physicians (EPs) reviewed data on their imaging practice, and was any observed change correlated with a change in the rate of missed diagnosis or death?

**Methods:** This was an observational retrospective study conducted at a tertiary referral center comparing attending EP’s rates of HCT during pre-intervention (PI) (April-Aug 2012), post-education (PE) (Dec 2013-March 2014), and post-review periods (PR) (April -Aug 2014). For each phase of the study we collected the most recent ten headache visits seen by each EP. In April 2013 we educated EP’s on appropriate HCT ordering through a series of lectures, discussions and emails. Over Jan-Feb 2014 all EPs individually reviewed their HCT ordering metrics during annual performance reviews. In the summer of 2016 we queried the EMR for all patients sampled during the QA effort and reviewed all notes from ED, Primary Care, Neurology, Neurosurgery, and Radiology for the 21.5 month periods following each index ED visit to determine whether: significant intracranial conditions not known during the initial visit were later diagnosed or if death from any cause occurred. We excluded transfer patients and those with a history of ventriculoperitoneal shunt.

**Results:** We reviewed a total of 598 medical records and observed a head CT rate of 36% in both the PI and PE periods vs 26% in the PR period (p = 0.036). We observed a total of 12 deaths (3 in PI, 5 in PE, and 4 in PR) and 29 intracranial conditions diagnosed after the index ED visit. An attending EP reviewed each of these charts and found that only six of the subsequently diagnosed intracranial conditions may have been diagnosable at the index visit (2 in PI, 3 in PE and 1 in PR). No deaths appeared related to missed diagnoses. There were no statistically significant differences in death or missed diagnosis between periods.

**Conclusions:** We did not observe a difference in physician head CT ordering practices after educational intervention, but after all physicians reviewed their individual performance data we observed a decrease in head CT utilization of 10%. This was not associated with a change in rate of missed diagnosis or death.

**Table 1. Outcome rates by epoch.**

<table>
<thead>
<tr>
<th>Epoch (number of patients)</th>
<th>Pre-intervention (188)</th>
<th>Post-education (231)</th>
<th>Post-review (200)</th>
</tr>
</thead>
<tbody>
<tr>
<td>CT ordering rate percentage</td>
<td>36%</td>
<td>36%</td>
<td>26%</td>
</tr>
<tr>
<td>Death after ED visit (%)</td>
<td>3 (1.6%)</td>
<td>5 (2.3%)</td>
<td>4 (2.0%)</td>
</tr>
<tr>
<td>Missed diagnoses (%)</td>
<td>2 (1.1%)</td>
<td>3 (1.4%)</td>
<td>1 (0.5%)</td>
</tr>
</tbody>
</table>