VALIDITY OF CODE-BASED RECORDING OF ALCOHOL INTOXICATION AMONG STUDENTS PRESENTING TO A UNIVERSITY HOSPITAL EMERGENCY DEPARTMENT

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BACKGROUND AND METHODS

• This study evaluated the accuracy and completeness of diagnostic codes in recording ED visits due to alcohol intoxication among college students presenting to an ED

• The ED electronic medical records from 6 academic years 2010 to 2015 were queried for student visits

• 600 clinical records of student visits were randomly selected (100 records each year) for chart review to identify visits with alcohol intoxication

• Results were then compared with ICD-9 diagnostic codes indicating alcohol intoxication (30500, 30052, and 3030)

• Sensitivity, specificity, positive/negative predictive values, and accuracy were calculated using the chart review as the ‘gold standard’.
KEY FINDINGS

- There were 9,616 student visits (48% males) to ED with 1,001 (10.4%) visits due to alcohol intoxication.

- Two thirds of ED visits with alcohol intoxication had a co-occurring diagnosis with injuries (24%) being the most common condition.

- In the sample reviewed, the use of ICD-9 diagnostic codes identified 64 visits (10.6%) with alcohol intoxication, while the chart review identified 96 visits (16%) with alcohol intoxication.

- Sensitivity was 65%, indicating that ICD-9 diagnostic codes only captured 65% of the total ED visits with alcohol intoxication in the review sample.

- The specificity, positive predictive value, negative predictive value, and accuracy were 99%, 94%, 94%, and 94%, respectively.

- There were 41 visits which involved both alcohol intoxication and injury or trauma, of which alcohol intoxication diagnostic codes were provided in only 18 visits (44%).
VALIDITY AND ACCURACY OF ICD-9 CODES

<table>
<thead>
<tr>
<th>Measure</th>
<th>Percent</th>
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<tbody>
<tr>
<td>Sensitivity</td>
<td>60</td>
</tr>
<tr>
<td>Specificity</td>
<td>100</td>
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<tr>
<td>PPV</td>
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<td>NPV</td>
<td>90</td>
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<tr>
<td>Accuracy</td>
<td>100</td>
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NUMBER AND PERCENT OF ED VISITS WITH ALCOHOL INTOXICATION IN THE STUDY POPULATION


Number of visits with alcohol intoxication:
- 2009-2010: 150
- 2010-2011: 120
- 2011-2012: 210
- 2012-2013: 180
- 2013-2014: 250
- 2014-2015: 220

Percent of visits with alcohol intoxication:
- 2009-2010: 10%
- 2010-2011: 12%
- 2011-2012: 15%
- 2012-2013: 14%
- 2013-2014: 16%
- 2014-2015: 14%
PERCENT OF ALCOHOL INTOXICATION IN THE REVIEWED SAMPLE

![Graph showing percent of visits with alcohol intoxication by academic year and method of diagnosis.]

- **By ICD-9 code**
- **By chart review**

The graph illustrates the percentage of visits with alcohol intoxication from 2009-10 to 2014-15, differentiated by the method of diagnosis.
DISCUSSION AND CONCLUSION

- Code-based recording of student ED visits due to alcohol intoxication had a high level of accuracy, but over one third of ED visits due to alcohol intoxication were not captured by diagnostic codes.

- When the visit also involved injury or trauma, only less than half were given a diagnostic code for alcohol intoxication.

- The rising trend in percent in alcohol intoxication identified by ICD-9 is consistent with the trend identified from the chart review, indicating that code-based assessment is valid in evaluating the trend over time.

- A declining trend in percent of injuries suggests that compared to past years, more student ED visits with alcohol intoxication were actually given a diagnostic code for alcohol intoxication and/or more intoxicated students without an injury were presenting to the ED.

- ED electronic datasets can be a reliable information source for evaluating the burden of alcohol intoxication among students; however, these datasets could be improved with more complete ICD coding by ED physicians.