Incorporation of Electronic Health Record Patient Cases to Address the Pharmacists’ Patient Care Process

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BACKGROUND
Electronic Health Records (EHR) in Pharmaceutical Care
• As of 2015, 97.5% of hospitals in the U.S. have a partially or completely implemented an EHR system.1
• The 2016 ACP-E Patient Care Process highlights the incorporation of health informatics in didactic doctorate of pharmacy curricula.2
• The use of healthcare technology is a central theme in the 2015 Center for the Advancement of Pharmacy Education (CAPSE) Outcomes.3
• ACP-E Core Entrustable Professional Activities for New Pharmacy Graduates suggests that entry-level pharmacists should be able to “Collect information and identify a patient’s medication-related problems and health-related needs.”4
• The Pharmacists’ Patient Care Process (PPCP) highlights the importance of proper documentation of pharmaceutical care plans (Figure 4)5

EDUCATIONAL EHR USE IN PHARMACY EDUCATION
• Educational EHRs are associated with improved student confidence, enhanced ability to navigate an EHR, increased student engagement, and improved documentation performance.4,6
• To date, the effect of using an educational EHR on student confidence and performance in relation to components of the PPCP has not been evaluated.

OBJECTIVES
• Assess student perceptions of and confidence in various components of the PPCP after utilizing an educational EHR to write SOAP and FARM notes.
• Assess student performance in various components of the PPCP between cases provided on paper and those provided through an educational electronic health record.
• Compare overall grades on clinical documentation notes between cases provided on paper and those provided through an educational EHR.

METHODS
SPRING 2017
• Students in Capstone Course completed seven patient care plans:
  • Three notes using educational EHR
  • Four notes provided on paper
• De-identified student performance data compared between written cases provided on paper and those provided through an educational EHR.

May 2017
• Students asked to complete Student Perceptions of Utilizing an Educational EHR Survey using Qualtrics.
  • SOAP and FARM rubric elements mapped to components of PPCP
  • IRB-approval and informed consent obtained prior to survey participation

2017-2018
• Statistical analysis performed in SPSS v 24.0
• University approval
• Students asked to complete Student Perceptions of Utilizing an Educational EHR Survey using Qualtrics
• SOAP and FARM rubric elements mapped to components of PPCP
• De-identified student performance data compared between written cases provided on paper and those provided through an educational EHR.

RESULTS

Table 1. Demographics

<table>
<thead>
<tr>
<th>Demographic Parameter</th>
<th>Gender</th>
<th>Age (years)</th>
<th>Previous EHR experience</th>
<th>Timing of experience</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Male</td>
<td>Female</td>
<td>Years of EHR experience</td>
<td>P1 year</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>50</td>
<td>29.2 (7)</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>50 (12)</td>
<td>P2 year</td>
</tr>
</tbody>
</table>


Table 2. Student perception of effectiveness of training for PPCP components

<table>
<thead>
<tr>
<th>PPCP Step or Process</th>
<th>Written Cases*</th>
<th>EHR Cases*</th>
<th>Significance (p = 0.03)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Collect</td>
<td>5 (2 - 6)</td>
<td>6 (6 - 6)</td>
<td>0.034</td>
</tr>
<tr>
<td>Assess</td>
<td>6 (4 - 6)</td>
<td>6 (6 - 6)</td>
<td>0.566</td>
</tr>
<tr>
<td>Plan</td>
<td>6 (6 - 6)</td>
<td>6 (6 - 6)</td>
<td>0.272</td>
</tr>
<tr>
<td>Implement</td>
<td>6 (6 - 6)</td>
<td>6 (6 - 6)</td>
<td>0.715</td>
</tr>
<tr>
<td>Monitor / Evaluate</td>
<td>6 (6 - 6)</td>
<td>6 (6 - 6)</td>
<td>0.427</td>
</tr>
<tr>
<td>Collaborate</td>
<td>5 (4 - 6)</td>
<td>5 (4 - 6)</td>
<td>0.189</td>
</tr>
<tr>
<td>Communicate and Document</td>
<td>5 (5 - 6)</td>
<td>5 (4 - 6)</td>
<td>0.671</td>
</tr>
</tbody>
</table>

Figure 1. Using the educational EHR to prepare SOAP and FARM notes has effectively trained me for practice.

Figure 2. Which do you feel prepared you more effectively for practice?

Figure 3. Comparison of mean scores for EHR and written cases based on PPCP component

DISCUSSION AND CONCLUSIONS

Conclusions
• Utilizing an EHR to create patient care plans in a Capstone course may better prepare students for practice.
• Students are more confident in their ability to collect information with the use of an educational EHR.
• EHR-based patient care plans are a useful method for assessing student performance in various components of the PPCP.

Discussion
• The EHR case data included two FARM notes, while the written case data included only one FARM note. This may have biased grading results as FARM notes focus on one patient care problem per case.

Limitations
• Data from one small cohort
• EHR and paper cases may differ in scope and difficulty
• Potential bias due to opinions of involved faculty regarding EHR use
• Potential bias due to student interest in the EHR

Future Implications
• Consider re-administering survey after completion of APPE rotations to assess changes in perceptions.
• Research on the educational use of EHRs should continue as uptake of technology progresses in pharmacy practice settings.

REFERENCES

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