An Innovative Electronic Health Record Based Teaching Intervention is Effective for Achieving Interprofessional Education Competencies in Geriatrics: A Pilot Study

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Background

- Complex aging patients require an interprofessional (IP) team approach for optimal care\(^1,2\)

- Electronic health records (EHRs) are increasingly a primary form of communication between IP team members

- Education initiatives focused on teaching the skills of IP communication and coordination within the unique EHR environment are limited

Purpose

• To develop and pilot test the impact of an education intervention for achieving IP education competencies for students caring for a virtual geriatrics patient in an EHR environment.
Methods

• Students from the medicine, physical therapy, physician assistant and clinical nutrition programs were placed into IP teams composed of one student per discipline.

• IP teams were randomly assigned to control or education intervention groups.
Intervention Group

- Team 1
- Team 2
- Team 3
- Team 4

Educational Intervention

- Pre Test EHR Module

Control Group

- Team 5
- Team 6
- Team 7
- Team 8

No Intervention

- Pre Test

EPIC

Post Test

32 Total Students

- Medical
- Physical Therapy
- Physician Assistant
- Clinical Nutrition
Moodle-Online Learning Platform

Intervention Group

Team 1
Team 2
Team 3
Team 4

Educational Intervention
Pre Test EHR Module

Control Group

Team 5
Team 6
Team 7
Team 8

No Intervention
Pre Test

EPIC

32 Total Students

Medical
Physical Therapy
Physician Assistant
Clinical Nutrition

Post Test
Post Test
Methods: Intervention

• The intervention group completed an interactive module which focused on:
  • Communication: writing skills, professionalism
  • Interprofessional Roles: understanding the scope of other professional roles
  • Teamwork: integrating information from other professionals into treatment plan and documentation

• The control group participated in a truncated module.
Effective Interprofessional Practice in the Electronic Health Record (EHR)

START HERE: Read the course instructions before you begin.

Course Instructions

TOPIC 1
PRE-TEST
Begin the course with this brief pre-test

Pre-test

TOPIC 2
COMMUNICATION

Introduction

It takes a team of health professionals to treat a patient. Healthcare providers must effectively communicate with each other to give the best care. The majority of communication between healthcare providers is written, remote, asynchronous, and via electronic health records (EHR).

EHR systems, such as Epic, have become standard in health care delivery. The EHR allows for healthcare team members to use automated text entries, use free text progress notes, write patient instructions, write staff messages, and write consults to other members of a healthcare team.

Writing Skills

Reading Assignment

Writing Skills Guidelines in an EHR

Exercises

Exercise: Health Professional to Health Professional
Exercise: Health Professional to Patient

Professionalism

Reading Assignment

Professionalism Guidelines in an EHR

Exercises

Exercise: Professionalism
32 Total Students

Intervention Group
- Team 1
- Team 2
- Team 3
- Team 4

Educational Intervention
- Pre Test EHR Module

Control Group
- Team 5
- Team 6
- Team 7
- Team 8

No Intervention
- Pre Test

Post Test

Electronic Health Record Training Playground
Methods

- Control and intervention groups participated in caring for a virtual hospitalized older adult in the EHR training playground (EPIC).
  - The virtual patient in this exercise was an elderly gentleman admitted for an acute stroke and experiences an inpatient fall on day 3 of his hospitalization.
  - Identical patients were created for each IP team to document within a single assigned chart.

- Students were responsible for the following daily tasks during the one week exercise:
  - Logging into EPIC
  - Checking their inbox for staff messages and appropriately responding
  - Reviewing documentation entered by other team members
  - Charting based on clinical information provided about the virtual patient
Assessment

• **Primary outcome**: student team performance via rubric
  • Rubric was developed based on nationally published multisociety IP education competencies\(^1\) that included the following domains:
    1. Interprofessional Communication
    2. Roles/Responsibilities
    3. Teams and Teamwork

• Charts were reviewed independently by two faculty members using the rubric to assess team performance

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<table>
<thead>
<tr>
<th></th>
<th>Minimal</th>
<th>Developing</th>
<th>Competent</th>
<th>Mastery</th>
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<tbody>
<tr>
<td><strong>Communication</strong></td>
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<tr>
<td><strong>Writing Skills</strong></td>
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<tr>
<td>Concise- keeps sentences active and short</td>
<td>never</td>
<td>occasionally</td>
<td>frequently</td>
<td>consistently</td>
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<tr>
<td>Simple- avoids use of jargon and abbreviations</td>
<td>never</td>
<td>occasionally</td>
<td>frequently</td>
<td>consistently</td>
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<tr>
<td>Well organized</td>
<td>never</td>
<td>occasionally</td>
<td>frequently</td>
<td>consistently</td>
</tr>
<tr>
<td>Accurate-spelling, facts</td>
<td>never</td>
<td>occasionally</td>
<td>frequently</td>
<td>consistently</td>
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<tr>
<td>Considerate-appropriate for intended reader (to other providers, to patients)</td>
<td>never</td>
<td>occasionally</td>
<td>frequently</td>
<td>consistently</td>
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<tr>
<td><strong>Professionalism</strong></td>
<td></td>
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<tr>
<td>Respectful Tone- no use of condescending language, no unnecessary quotations or capitalizations</td>
<td>never</td>
<td>occasionally</td>
<td>frequently</td>
<td>consistently</td>
</tr>
<tr>
<td>Addressing Conflict- appropriately avoids documenting blame/ accountability</td>
<td>never</td>
<td>occasionally</td>
<td>frequently</td>
<td>consistently</td>
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<tr>
<td><strong>Interprofessional Roles</strong></td>
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<tr>
<td>Recognizes the roles and responsibilities of other professionals- adequately documents reference to other providers involved</td>
<td>never</td>
<td>occasionally</td>
<td>frequently</td>
<td>consistently</td>
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<tr>
<td><strong>Teamwork</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Integrates information from others in planning and providing patient care</td>
<td>never</td>
<td>occasionally</td>
<td>frequently</td>
<td>consistently</td>
</tr>
</tbody>
</table>
Assessment

- **Secondary Outcomes**: qualitative measures of student learner satisfaction and self efficacy
Results

- 32 students participated in the study
- Equal distribution among professions
- Equal gender distribution between the groups and predominately female (72%)
Results: Student Performance via Rubric

• The intervention group scored higher than the control group across all IP domains measured by the rubric.

• The median overall rubric score for the intervention group was 76% (range 62, 82) compared with 49.5% (range 32, 54) for the control group (p=.0067).
<table>
<thead>
<tr>
<th></th>
<th><strong>Control, n= 4 teams</strong></th>
<th><strong>Intervention, n=4 teams</strong></th>
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<tbody>
<tr>
<td></td>
<td>Score median (%)* (range)</td>
<td>Score median (%)* (range)</td>
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<tr>
<td><strong>Written Communication Skills</strong></td>
<td></td>
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</tr>
<tr>
<td>Concise</td>
<td>65 (38, 88)</td>
<td>78.5 (86, 100)</td>
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<tr>
<td>Simple</td>
<td>62 (43, 64)</td>
<td>71 (64, 75)</td>
</tr>
<tr>
<td>Organized</td>
<td>51.5 (43, 71)</td>
<td>83 (50, 100)</td>
</tr>
<tr>
<td>Accurate</td>
<td>33.5 (20,50)</td>
<td>76 (58, 83)</td>
</tr>
<tr>
<td>Considerate to the intended audience</td>
<td>30 (15, 43)</td>
<td>81.5 (50,100)</td>
</tr>
<tr>
<td><strong>Professionalism</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Respectful Tone</td>
<td>47.5 (33, 91)</td>
<td>78 (73, 91)</td>
</tr>
<tr>
<td>Addressing Conflict</td>
<td>67 (0, 100)</td>
<td>100 (100, 100)</td>
</tr>
<tr>
<td><strong>Interprofessional Roles</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Recognizes other professional roles</td>
<td>38 (33, 38)</td>
<td>55.5 (17, 88)</td>
</tr>
<tr>
<td><strong>Teamwork</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Integrates information from other professionals</td>
<td>26 (10, 33)</td>
<td>41.5 (33, 57)</td>
</tr>
<tr>
<td><strong>Overall</strong></td>
<td><strong>49.5 (32, 54)</strong></td>
<td><strong>76 (62, 82)</strong></td>
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*incomplete charts were considered missing data and were not included in calculation
Results: Self-efficacy

• Despite differences in performance, both groups answered positively at the end of the program regarding self-efficacy for IP skills within the EHR.

• In the intervention group, 100% of students agreed or strongly agreed to the statement “I possess the skills to communicate as part of a team in the electronic health record.”
Results: Learner Satisfaction

- Students in the intervention group gave mixed responses when asked whether the teaching module was clear and easy to follow (overall average 3.6 on a 5-point scale 1=strongly disagree, 5=strongly agree).

- Twenty-three students provided additional comments and suggestions for the overall curriculum.
Representative Comments and Suggestions from Student Evaluations

<table>
<thead>
<tr>
<th>Regarding Education Intervention</th>
<th>Regarding EHR training environment experience</th>
<th>Regarding timing of the program</th>
</tr>
</thead>
<tbody>
<tr>
<td>“…the modules at the beginning of the course did bring to light some things that need to be kept in mind when writing notes and communicating in the EMR.”</td>
<td>“I appreciate the view into EPIC and the challenges of inter-professional communication provided by this course.”</td>
<td>“Being a trial pilot study one week was good, but it might be interesting to perform over a longer period and with a couple of patients.”</td>
</tr>
<tr>
<td>“I suggest finding out a way to integrate the EPIC playground and the moodle coursework into one platform. It was confusing to move back and forth between the citrix platform (EPIC playground) and moodle and have separate instructions for both platforms.”</td>
<td>“The technical glitches seemed to be the only problem with this exercise…but I do feel a bit better about working with Epic in the next few weeks, and definitely better about communicating with other staff using Epic.”</td>
<td>“The general idea of this course is intriguing. However, this exercise would be best served during the Summer or the Fall semesters before students go out on rotations.”</td>
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</table>
Conclusions

- Educational intervention resulted in improved performance for students in achieving IP competencies caring for a complex older patient within an EHR environment.

- Pilot study supports a benefit for instituting curriculum focused specifically on teaching IP geriatric practice within the EHR.
Special thanks to…

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Department of Clinical Nutrition

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Department of Physician Assistant Studies

Lynne Kirk, MD; Amit Shah, MD; Craig Rubin, MD
Department of Medicine, Section of Geriatrics
Questions?
Example #1 of Intervention Writing Exercise on Communication

• This example is modified from real documentation of a consult request to psychiatry by a Physician Assistant (PA) wound care specialist in Epic:

  • “Reason for Consult: 49 year old with non-compliance of medical instructions as outpatient and post-operatively--ambulating immediately after having extensive surgery on right foot plantar skin graft and on left foot x 3 for delayed primary closure of lateral foot wound despite explicit repetitive instructions for non-weight bearing, jeopardizing surgical site and potentially entire foot. Frustrating, obnoxious non-compliant patient who doesn’t listen and repeatedly expresses medical providers as etiology of his current issues.”
Example #1 of Intervention Writing Exercise on Communication (continued)

Please check yes or no on whether this documentation demonstrates the following principles:

- Concise (keeps information short and simple)?
- Simple (no jargon, extraneous information omitted)?
- Accurate (facts and spelling correct)?
- Clear (organized and easy to understand)?
- Considerate (intention is conveyed to the reader)?
- Professional (formal tone)?
Example #1 of Intervention Writing Exercise on Communication (continued)

• Answer Key:
  1. No. Information is long-winded an unnecessarily complex
  2. No. Extensive discipline-specific jargon is present with information that would be considered extraneous to a psychiatrist (such as details of surgery)
  3. Yes.
  4. No. Difficult to follow organization, unstructured
  5. No. Although a “reason for consult” is listed, a specific consult question is never defined
  6. No. “frustrating, obnoxious” does not belong in the medical chart
Example #2 of Intervention Writing Exercise on Communication

• This example is modified from real documentation by a Resident Physician in Epic, the hospital EHR system. These discharge instructions are intended for a patient being released from the hospital. Please list problems that you identify in this communication to the patient.

“DISCHARGE INSTRUCTIONS: You have been treated for SBO during this admission.
Activity: activity as tolerated
Diet: start with liquids/broths only. You can advance diet when bowel function returns.
Community Hospice will care for him at home and adjust or add medications as needed. If his bowel function has not improved he will not receive any more chemotherapy.
Please present to the nearest ED or your PCP should you experience severe pain that hospice is unable to control.”
Example #2 of Intervention Writing Exercise on Communication (continued)

• Answer Key:
  • The provider used many abbreviations such as “SBO,” “ED” and “PCP” which may not be familiar to a non-health care provider.
  • The provider used medical jargon such as “activity as tolerated” and “advance diet when bowel function returns” which is clearly above 5th grade level clarity and will not likely convey a meaningful message to the patient.
  • The provider initially addressed the patient in the first person and then switches to third person, therefore being inconsiderate of who the reader is and the intent of the communication.
  • The message is not well organized.
Electronic Health Record Skills:

8. I possess the skills to communicate as part of a team in the electronic health record.

- Pre control
- Pre intervention
- Post control
- Post intervention

<table>
<thead>
<tr>
<th></th>
<th>Strongly disagree</th>
<th>Disagree</th>
<th>Neutral</th>
<th>Agree</th>
<th>Strongly agree</th>
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<tbody>
<tr>
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<td>5</td>
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<td>2</td>
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<tr>
<td>Post control</td>
<td>0</td>
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<td>3</td>
<td>7</td>
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<tr>
<td>Post intervention</td>
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<td>1</td>
<td>2</td>
<td>9</td>
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</table>

12  5  7  9  4