



## Student Training in Electronic Health Records

### Overview

When medical students transition from medical school to their postgraduate residency training programs, they must be able to use electronic health records (EHR) to document patient interactions and order medical interventions and tests. Although most medical schools provide some level of training in EHR use, it is unclear whether the training is robust enough to meet the needs of postgraduate programs. To further explore the depth and breadth of training, the American College of Physicians Education and Publication Committee—with collaboration from the Internal Medicine Education Advisory Board (IMEAB) of the Alliance for Academic Internal Medicine (AAIM)—conducted a survey of U.S. allopathic and osteopathic accredited medical school curriculum deans.

The results of this survey are intended for scholarly and informational purposes only. The contents of this document do not purport to represent the views of the Board of Regents of the American College of Physicians or the Alliance for Academic Internal Medicine Board of Directors, Councils, or members of the Internal Medicine Education Advisory Board. This document may not be redistributed for commercial or non-educational use without written consent from the American College of Physicians and the Alliance for Academic Internal Medicine.

The survey methods for this study—including response rates—are documented on **page four** of this document.

This study was declared exempt from full human subjects research review by Michigan State University: IRB Number: x17-1081e; i054728.

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## List of Tables

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### Methodology and Timeframe

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Q1. Beyond technical training in how to use a specific electronic health record (EHR), does your school have formal coursework or a curriculum dedicated to use of the EHR?

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Q2a. How was this coursework/curriculum developed?

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Q2a. How was this coursework/curriculum developed?: Other

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Q2b. What is the structure of this coursework/curriculum?

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Q2b. What is the structure of this coursework/curriculum?: Other

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Q3. When does this coursework/curriculum primarily take place?

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Q3. When does this coursework/curriculum primarily take place?: Other

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Q4. What topics are covered in this coursework/curriculum?

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Q4. What topics are covered in this coursework/curriculum?: Other

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Q5. Does the EHR coursework/curriculum include simulation activities?

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Q6. Are students assessed in their use of the EHR before being able to access a functioning clinical information system?

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Q7. At what proportion of your teaching sites are students allowed to access the EHR during their core clinical rotations (i.e., clerkships)?

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Q8. What limits are placed on this access?

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Q8. What limits are placed on this access?: Text

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Q9. What is the reason(s) for these restrictions on access?

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Q9. What is the reason(s) for these restrictions on access?: Text

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Q10. What type(s) of access is available to students?

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Q10. What type(s) of access is available to students?: Other

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Q11. Are your students allowed to document in the EHR during their core (i.e., clerkships) clinical rotations at your primary teaching institution?

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Q12. How can students document in the EHR during their core clinical rotations; at your primary teaching institution?

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Q12. How can students document in the EHR during their core clinical rotations; at your primary teaching institution?: Other

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Q13. Can student documentation in the EHR be modified or corrected by faculty?

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Q14. Are students routinely provided feedback on their documentation in the EHR by faculty?

---

Q15. What type of feedback is given to students regarding their documentation in the EHR?

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Q16. Are students permitted to enter and pend orders into the EHR during their core clinical rotations?

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Q17a. Does student access and ability to use the EHR increase over the course of training at your primary teaching institution

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Q17b. Please describe these additional privileges:

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Q18. If there are significant limitations on access or use of the EHR by students in your institution, please indicate the reason(s) you have been told these restrictions apply.

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Q19. Do your students rotate at other clinical training sites that use a different EHR than the one at your primary teaching institution?

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Q20. Are you aware of the specific training and privileges students are given in the use of the EHR at each training site?

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Q21. Approximately how many different EHR systems are your students required to interact with in the course of their clinical training in medical school?

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Q22. How would you best describe the educational impact related to the use of multiple EHR systems during the course of medical school training?

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As currently structured at my institution, student contributions to the EHR add meaningfully to the patient care process.

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As currently structured at my institution, student use of the EHR provides an educationally meaningful way of teaching this aspect of patient care.

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Q24. Please indicate any specific change(s) to student use of the EHR at your institution that would make this interaction more educationally and clinically meaningful for students.

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Q25. Is the ability of students to effectively use the EHR a specific component of their overall medical school evaluation?

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Q26. Is demonstration or attestation of competency in using an EHR a requirement for graduation?

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Q27. To what degree do you believe that training students in use of the EHR system (as currently structured in your institution) adequately prepares them to assume the duties of a postgraduate trainee?

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Q28. If you have any further comments about this survey subject or about the survey itself, please include them below.

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<b>Methodology and Timeframe</b>			
<b>Distribution channels</b>	<b>Number of Recipients</b>	<b>Number of Valid Responses</b>	<b>Approximate Response Rate</b>
Anonymous survey URLs disseminated to:			
1. All U.S. osteopathic medical school deans as of October 2017, instructing them to provide the URL to the most appropriate person to complete the survey	34	19	55.9%
2. Curriculum deans at all U.S. LCME-accredited medical schools as of October 2017	147	53	36.1%
<b>Total</b>	<b>181</b>	<b>72</b>	<b>39.8%</b>
<b>Launch:</b> October 2017. <b>Closure:</b> January 2018.			
<b>One email reminder</b> sent to each group.			
<b>Survey administered online</b> via <i>QuestionPro</i> survey software; data analysis performed in <i>Stata SE 14.2</i> .			
<b>Survey Instrument</b>			
1. Developed by the American College of Physicians Education and Publication Committee with collaboration from the Internal Medicine Education Advisory Board.			
2. 28 questions and sub-questions; multiple-choice; multiple-choice select all; five-point Likert scale questions; open-ended text fields for “other” responses and general comments; logical skip and display patterns.			
<b>IRB approval for exemption</b> from full human subjects research protections review by Michigan State University: IRB Number: x17-1081e; i054728.			
<b>Notes</b>			
1. Three responses were partially complete, but sufficient enough to include in the results.			
2. Initially, the same anonymous survey URL was provided to both groups (allopathic and osteopathic); however, it was possible to determine the number of respondents from each group, due to dissemination of the URL to each group at different points. Subsequently--in the interest of ensuring which group had responded--the URL was disabled and both groups were provided a new URL (specific to them) when the first/only reminder was sent to them. Thus, results from the first “combined” survey were merged with the allopathic- and osteopathic-specific survey datasets, such that it was possible to distinguish both groups.			
3. Data are not weighted to adjust for survey nonresponse.			
4. Statistical tests for group-based testing or goodness-of-fit set a $p \leq .05$ mostly using Fisher’s Exact Test, due to smaller cell sizes; Pearson Chi-Square Test with Sidak-adjusted p-values to account for confounding factors: $Pr = p\text{-value}$ ; $\chi^2(n) = \text{Chi-Square (number of degrees of freedom)}$ .			

<b>Q1. Beyond technical training in how to use a specific electronic health record (EHR), does your school have formal coursework or a curriculum dedicated to use of the EHR?</b>			
	<b>Medical School Type</b>		
	<b>Allopathic</b>	<b>Osteopathic</b>	<b>Total</b>
Yes	17	4	21
<i>Percent</i>	<i>32.1</i>	<i>21.1</i>	<i>29.2</i>
No	36	15	51
<i>Percent</i>	<i>67.9</i>	<i>79.0</i>	<i>70.8</i>
<b>Total</b>	<b>53</b>	<b>19</b>	<b>72</b>
<i>Percent</i>	<i>100.0</i>	<i>100.0</i>	<i>100.0</i>
Pearson chi2(1) = 0.8225 Pr = 0.364 Fisher's exact = 0.557 1 sided Fisher's exact = 0.275			

<b>Q2a. How was this coursework/curriculum developed?</b>				
	<b>Medical School Type</b>			
	<b>Allopathic</b>	<b>Osteopathic</b>	<b>Total</b>	<b>chi2/p*</b>
At your local institution	16	4	20	0.247
<i>Percent</i>	<i>94.1</i>	<i>100.0</i>	<i>95.2</i>	<i>0.945</i>
Through a commercial EHR training product	1	0	1	0.247
<i>Percent</i>	<i>5.9</i>	<i>--</i>	<i>4.8</i>	<i>0.945</i>
Other (please specify):	2	0	2	0.520
<i>Percent</i>	<i>11.8</i>	<i>--</i>	<i>9.5</i>	<i>0.852</i>
<b>Total Responses</b>	<b>19</b>	<b>4</b>	<b>23</b>	
<i>Percent</i>	<i>111.8</i>	<i>100.0</i>	<i>109.5</i>	
<b>Total Respondents</b>	<b>17</b>	<b>4</b>	<b>21</b>	
* Pearson chi2(1) / Sidak-adjusted p-values				
Note: For 21 respondents who reported "Yes" to Q1.				
Multiple responses allowed: Percentages will exceed 100.				

<b>Q2a. How was this coursework/curriculum developed?: Other</b>
it is part of the biomedical informatics longitudinal curricular theme at the college of medicine. This theme includes other topics as well such as clinical decision support, population health and risk stratification, patient portals, etc.
Through the AMA consortium

<b>Q2b. What is the structure of this coursework/curriculum?</b>			
	Medical School Type		Total
	Allopathic	Osteopathic	
A component of other curricular content (such as an Introduction to Clinical Medicine or Doctoring course)	13	3	16
<i>Percent</i>	<i>76.5</i>	<i>75.0</i>	<i>76.2</i>
Other (please specify):	4	1	5
<i>Percent</i>	<i>23.5</i>	<i>25.0</i>	<i>23.8</i>
<b>Total</b>	<b>17</b>	<b>4</b>	<b>21</b>
<i>Percent</i>	<i>100.0</i>	<i>100.0</i>	<i>100.0</i>
Pearson chi2(1) = 0.0039 Pr = 0.950 Fisher's exact = <b>1.000</b> 1 sided Fisher's exact = 0.696			
Note: For 21 respondents who reported "Yes" to Q1.			

<b>Q2b. What is the structure of this coursework/curriculum?: Other</b>
Clerkship orientation
Curricular thread throughout the entire curriculum
Informatics is a curricular thread across many courses
Integrated in several courses using a virtual EHR
longitudinal curricular theme

<b>Q3. When does this coursework/curriculum primarily take place?</b>			
	Medical School Type		Total
	Allopathic	Osteopathic	
During preclinical training	7	2	9
<i>Percent</i>	<i>41.2</i>	<i>50.0</i>	<i>42.9</i>
Immediately before beginning the start of clinical training	3	1	4
<i>Percent</i>	<i>17.7</i>	<i>25.0</i>	<i>19.1</i>
Other (please specify):	7	1	8
<i>Percent</i>	<i>41.2</i>	<i>25.0</i>	<i>38.1</i>
<b>Total</b>	<b>17</b>	<b>4</b>	<b>21</b>
<i>Percent</i>	<i>100.0</i>	<i>100.0</i>	<i>100.0</i>
Pearson chi2(2) = 0.3732 Pr = 0.830 Fisher's exact = <b>1.000</b>			
Note: For 21 respondents who reported "Yes" to Q1.			

<b>Q3. When does this coursework/curriculum primarily take place?: Other</b>
<i>No responses provided.</i>

<b>Q4. What topics are covered in this coursework/curriculum?</b>				
	<b>Medical School Type</b>		<b>Total</b>	<b>chi2/p*</b>
	<b>Allopathic</b>	<b>Osteopathic</b>		
Technical use of the EHR at your primary teaching institution (e.g., how to log on, enter documentation and orders, etc.)	12	4	16	1.544
<i>Percent</i>	<i>70.6</i>	<i>100.0</i>	<i>76.2</i>	<i>0.886</i>
How to document appropriately in the medical record (i.e., what information and in what form it should be entered)	15	4	19	0.520
<i>Percent</i>	<i>88.2</i>	<i>100.0</i>	<i>90.5</i>	<i>0.997</i>
Appropriate use of documentation and editing tools (such as use of templates, “cut-and-paste” capabilities and carrying previous notes forward)	7	3	10	1.485
<i>Percent</i>	<i>41.2</i>	<i>75.0</i>	<i>47.6</i>	<i>0.897</i>
Confidentiality and ethical issues associated with EHR use	17	4	21	--
<i>Percent</i>	<i>100.0</i>	<i>100.0</i>	<i>100.0</i>	<i>--</i>
Communicating with colleagues (and patients, if applicable) through the EHR	9	1	10	1.014
<i>Percent</i>	<i>52.9</i>	<i>25.0</i>	<i>47.6</i>	<i>0.966</i>
Documentation of specific diagnoses and levels of service for billing documentation	4	1	5	0.004
<i>Percent</i>	<i>23.5</i>	<i>25.0</i>	<i>23.8</i>	<i>1.000</i>
How to use other functions of the EHR, such as clinical decision aids (e.g., UptoDate), patient instructions and educational materials, etc., as applicable	10	3	13	0.359
<i>Percent</i>	<i>58.8</i>	<i>75.0</i>	<i>61.9</i>	<i>0.999</i>
Medication reconciliation	9	3	12	0.643
<i>Percent</i>	<i>52.9</i>	<i>75.0</i>	<i>57.1</i>	<i>0.993</i>
Population health/quality activities using EHR data	10	1	11	1.485
<i>Percent</i>	<i>58.8</i>	<i>25.0</i>	<i>52.4</i>	<i>0.897</i>
Other (please specify)	4	0	4	1.163
<i>Percent</i>	<i>23.5</i>	<i>--</i>	<i>19.1</i>	<i>0.949</i>
<b>Total Responses</b>	<b>97</b>	<b>24</b>	<b>121</b>	
<i>Percent</i>	<i>570.6</i>	<i>600.0</i>	<i>576.2</i>	
<b>Total Respondents</b>	<b>17</b>	<b>4</b>	<b>21</b>	
* Pearson chi2(1) / Sidak-adjusted p-values				
Note: For 21 respondents who reported “Yes” to Q1.				
Multiple responses allowed: Percentages will exceed 100.				

<b>Q4. What topics are covered in this coursework/curriculum?: Other</b>
order placement
Some additional ones above (currently unchecked) would be taught throughout the day on the clerkships
use of social media in the practice of medicine

**Q4. What topics are covered in this coursework/curriculum?: Other**

We have authored a paper on informatics competencies that goes well beyond the EMR

**Q5. Does the EHR coursework/curriculum include simulation activities?**

	Medical School Type		Total
	Allopathic	Osteopathic	
Yes	12	2	14
<i>Percent</i>	70.6	50.0	66.7
No	5	2	7
<i>Percent</i>	29.4	50.0	33.3
<b>Total</b>	<b>17</b>	<b>4</b>	<b>21</b>
<i>Percent</i>	<b>100.0</b>	<b>100.0</b>	<b>100.0</b>

Pearson  $\chi^2(1) = 0.6176$  Pr = 0.432

**Fisher's exact = 0.574**

1 sided Fisher's exact = 0.407

Note: For 21 respondents who reported "Yes" to Q1.

**Q6. Are students assessed in their use of the EHR before being able to access a functioning clinical information system?**

	Medical School Type		Total
	Allopathic	Osteopathic	
Yes	9	1	10
<i>Percent</i>	52.9	33.3	50.0
No	8	2	10
<i>Percent</i>	47.1	66.7	50.0
<b>Total</b>	<b>17</b>	<b>3</b>	<b>20</b>
<i>Percent</i>	<b>100.0</b>	<b>100.0</b>	<b>100.0</b>

Pearson  $\chi^2(1) = 0.3922$  Pr = 0.531

**Fisher's exact = 1.000**

1 sided Fisher's exact = 0.500

Note: For 20 of 21 respondents who reported "Yes" to Q1.



<b>Q7. At what proportion of your teaching sites are students allowed to access the EHR during their core clinical rotations (i.e., clerkships)?</b>			
	<b>Medical School Type</b>		
	<b>Allopathic</b>	<b>Osteopathic</b>	<b>Total</b>
All of them	39	4	43
<i>Percent</i>	<i>73.6</i>	<i>21.1</i>	<i>59.7</i>
Some of them	14	14	28
<i>Percent</i>	<i>26.4</i>	<i>73.7</i>	<i>38.9</i>
None of them	0	1	1
<i>Percent</i>	<i>--</i>	<i>5.3</i>	<i>1.4</i>
<b>Total</b>	<b>53</b>	<b>19</b>	<b>72</b>
<i>Percent</i>	<i>100.0</i>	<i>100.0</i>	<i>100.0</i>
Pearson chi2(2) = 17.2879 Pr = 0.000 <b>Fisher's exact = 0.000</b>			

<b>Q8. What limits are placed on this access?</b>			
	<b>Medical School Type</b>		
	<b>Allopathic</b>	<b>Osteopathic</b>	<b>Total</b>
None: Universal access is allowed across all clinical rotations	24	0	24
<i>Percent</i>	<i>45.3</i>	<i>--</i>	<i>33.3</i>
Access is limited by specific rotation and terminates at the end of that rotation	20	18	38
<i>Percent</i>	<i>37.7</i>	<i>94.7</i>	<i>52.8</i>
Other (please specify)	9	1	10
<i>Percent</i>	<i>17.0</i>	<i>5.3</i>	<i>13.9</i>
<b>Total</b>	<b>53</b>	<b>19</b>	<b>72</b>
<i>Percent</i>	<i>100.0</i>	<i>100.0</i>	<i>100.0</i>
Pearson chi2(2) = 18.5966 Pr = 0.000 <b>Fisher's exact = 0.000</b>			

<b>Q8. What limits are placed on this access?: Text</b>
Access is limited depending on the site (some hospitals allow view only, some allow writing, some allow writing and proposing orders in the senior year only, there is wide variability that is 'beyond the school's tight control' though we advocate for inclusion)
Access limitations are site specific and not rotation specific
Access may be limited by site
Depends on the healthcare system
limited by specific rotation, terminates at the end of the rotation, specific medical student views
not applicable, we are new school with OMS 1 students only
variable by EMR
varies
Varies by site. Some allow a 1 yr access, others by rotation only.
We have so many sites that rules are different at different locations

<b>Q9. What is the reason(s) for these restrictions on access?</b>				
	<b>Medical School Type</b>			
	<b>Allopathic</b>	<b>Osteopathic</b>	<b>Total</b>	<b>chi2/p*</b>
Administrative/technical complexities of providing student access	13	10	23	0.365
<i>Percent</i>	46.4	55.6	50.0	0.981
Medicolegal concerns with student documentation in the medical record	20	15	35	0.853
<i>Percent</i>	71.4	83.3	76.1	0.889
Patient privacy/HIPAA compliance concerns	11	6	17	0.167
<i>Percent</i>	39.3	33.3	37.0	0.997
Potential billing documentation compliance liability	8	9	17	2.159
<i>Percent</i>	28.6	50.0	37.0	0.534
Other (please specify):	4	3	7	0.048
<i>Percent</i>	14.3	16.7	15.2	1.000
<b>Total Responses</b>	<b>56</b>	<b>43</b>	<b>99</b>	
<i>Percent</i>	<b>200.0</b>	<b>238.9</b>	<b>215.2</b>	
<b>Total Respondents</b>	<b>28</b>	<b>18</b>	<b>46</b>	
* Pearson chi2(1) / Sidak-adjusted p-values				
Note: For 46 of 48 respondents who reported any option other than "None" to Q8.				
Multiple responses allowed: Percentages will exceed 100.				

<b>Q9. What is the reason(s) for these restrictions on access?: Text</b>
Determined by the policy of institutions hosting students for clinical rotations
Individual affiliated institutional policy
no students in this year
not sure
students able to pend orders but not sign orders. Some ease-of-use templates are not given to students for learning purposes
Usually students will move to a different training site and have a different tEHR
Varies by specific rotation

<b>Q10. What type(s) of access is available to students?</b>				
	<b>Medical School Type</b>		<b>Total</b>	<b>chi2/p*</b>
	<b>Allopathic</b>	<b>Osteopathic</b>		
Read-only	15	8	23	0.302
<i>Percent</i>	55.6	47.1	52.3	0.927
Access to only specific areas of the EHR	15	12	27	0.994
<i>Percent</i>	55.6	70.6	61.4	0.684
Other (please specify):	14	7	21	0.477
<i>Percent</i>	51.9	41.2	47.7	0.867
<b>Total Responses</b>	<b>44</b>	<b>27</b>	<b>71</b>	
<i>Percent</i>	<b>163.0</b>	<b>158.8</b>	<b>161.4</b>	
<b>Total Respondents</b>	<b>27</b>	<b>17</b>	<b>44</b>	
* Pearson chi2(1) / Sidak-adjusted p-values				
Note: For 44 of 48 respondents who reported any option other than "None" to Q8.				
Multiple responses allowed: Percentages will exceed 100.				

<b>Q10. What type(s) of access is available to students?: Other</b>
dependent upon the hospital. some are read only and some allow student documentation
Full access
Full access but identifiable as student
no restrictions on what they can do, just which system and when it occurs
not applicable no students in this year
parallell documentation system for training purposes
read and write in a secure student note area
Read only, access to specific areas and full access
restricted in orders and certain templates
separate student chart
Some hospitals allow our students read only, some allow note writing. Some allow proposing orders in the 4th year. It unfortunately varies.
Some of our core rotation sites have read only access while others do allow for documentation to be done by students, however it is noted as a medical student note. An attending must also provide his or her full documentation in the note for medical legal and billing purposes.
Some sites are read only. others have a student platform. We using clinical sites that have different EHRs
student note preparation and otherwise unrestricted
Students are allowed to compose progress notes
usually complete
Variable access depending on clinical site ranging from no access to read only, to limited access with student shadow chart
Varies buy site
varies by hospital
Varies by specific rotation
varies from hospital to hospital and faculty member to faculty member

<b>Q11. Are your students allowed to document in the EHR during their core (i.e., clerkships) clinical rotations at your primary teaching institution?</b>			
	<b>Medical School Type</b>		
	<b>Allopathic</b>	<b>Osteopathic</b>	<b>Total</b>
Yes	42	13	55
<i>Percent</i>	<i>79.3</i>	<i>68.4</i>	<i>76.4</i>
No	11	6	17
<i>Percent</i>	<i>20.8</i>	<i>31.6</i>	<i>23.6</i>
<b>Total</b>	<b>53</b>	<b>19</b>	<b>72</b>
<i>Percent</i>	<i>100.0</i>	<i>100.0</i>	<i>100.0</i>
Pearson chi2(1) = 0.9085 Pr = 0.341 <b>Fisher's exact = 0.359</b> 1 sided Fisher's exact = 0.257			

<b>Q12. How can students document in the EHR during their core clinical rotations; at your primary teaching institution?</b>			
	<b>Medical School Type</b>		
	<b>Allopathic</b>	<b>Osteopathic</b>	<b>Total</b>
In a separate student section that is not a permanent part of the EHR (i.e., for educational purposes only)	8	5	13
<i>Percent</i>	<i>19.1</i>	<i>41.7</i>	<i>24.1</i>
In a separate student section that is a permanent part of the EHR	15	1	16
<i>Percent</i>	<i>35.7</i>	<i>8.3</i>	<i>29.6</i>
Directly in the active EHR (along with residents and attendings)	15	1	16
<i>Percent</i>	<i>35.7</i>	<i>8.3</i>	<i>29.6</i>
Other (please specify):	4	5	9
<i>Percent</i>	<i>9.5</i>	<i>41.7</i>	<i>16.7</i>
<b>Total</b>	<b>42</b>	<b>12</b>	<b>54</b>
<i>Percent</i>	<i>100.0</i>	<i>100.0</i>	<i>100.0</i>
Pearson chi2(3) = 12.4924 Pr = 0.006 <b>Fisher's exact = 0.004</b>			
<b>Note:</b> For 54 of 55 respondents who reported "Yes" to Q11.			

<b>Q12. How can students document in the EHR during their core clinical rotations; at your primary teaching institution?: Other</b>
all of above dependant on facility and faculty
directly in the active EHR----student notes are clearly marked within the EHR and I believe are not considered part of the permanent record
In our clinic, it is active and in the hospitals some are active and some are read only
mixed
nhot applicable
They document in the EHR along with residents and attendings but this is then deleted after discharge.
varies by hospital
We have an EHR where the patient's name is the students name, so it can be graded. There is no identifying patient information.
WE have mutple teaching hospitals and EHRs. Some allow access to active EHR, others place student documents in a student section

<b>Q13. Can student documentation in the EHR be modified or corrected by faculty?</b>			
	<b>Medical School Type</b>		
	<b>Allopathic</b>	<b>Osteopathic</b>	<b>Total</b>
Yes	36	10	46
<i>Percent</i>	<i>85.7</i>	<i>83.3</i>	<i>85.2</i>
No	6	2	8
<i>Percent</i>	<i>14.3</i>	<i>16.7</i>	<i>14.8</i>
<b>Total</b>	<b>42</b>	<b>12</b>	<b>54</b>
<i>Percent</i>	<i>100.0</i>	<i>100.0</i>	<i>100.0</i>
Pearson chi2(1) = 0.0419 Pr = 0.838			
<b>Fisher's exact = 1.000</b>			
1 sided Fisher's exact = 0.575			
<b>Note:</b> For 54 of 55 respondents who reported "Yes" to Q11.			

<b>Q14. Are students routinely provided feedback on their documentation in the EHR by faculty?</b>			
	<b>Medical School Type</b>		
	<b>Allopathic</b>	<b>Osteopathic</b>	<b>Total</b>
Yes	31	10	41
<i>Percent</i>	<i>73.8</i>	<i>83.3</i>	<i>75.9</i>
No	11	2	13
<i>Percent</i>	<i>26.2</i>	<i>16.7</i>	<i>24.1</i>
<b>Total</b>	<b>42</b>	<b>12</b>	<b>54</b>
<i>Percent</i>	<i>100.0</i>	<i>100.0</i>	<i>100.0</i>
Pearson chi2(1) = 0.4631 Pr = 0.496 <b>Fisher's exact = 0.708</b> 1 sided Fisher's exact = 0.398			
<b>Note:</b> For 54 of 55 respondents who reported "Yes" to Q11.			

<b>Q15. What type of feedback is given to students regarding their documentation in the EHR?</b>			
	<b>Medical School Type</b>		
	<b>Allopathic</b>	<b>Osteopathic</b>	<b>Total</b>
Formative (e.g., early on, as students begin to document in the EHR)	17	5	22
<i>Percent</i>	<i>54.8</i>	<i>50.0</i>	<i>53.7</i>
Formative AND Summative (e.g., after students have completed a rotation)	14	5	19
<i>Percent</i>	<i>45.2</i>	<i>50.0</i>	<i>46.3</i>
<b>Total</b>	<b>31</b>	<b>10</b>	<b>41</b>
<i>Percent</i>	<i>100.0</i>	<i>100.0</i>	<i>100.0</i>
Pearson chi2(1) = 0.0712 Pr = 0.790 <b>Fisher's exact = 1.000</b> 1 sided Fisher's exact = 0.537			
<b>Note:</b> For 41 respondents who reported "Yes" to Q14.			

<b>Q16. Are students permitted to enter and pend orders into the EHR during their core clinical rotations?</b>			
	<b>Medical School Type</b>		
	<b>Allopathic</b>	<b>Osteopathic</b>	<b>Total</b>
Yes	26	2	28
<i>Percent</i>	<i>51.0</i>	<i>11.8</i>	<i>41.2</i>
No	25	15	40
<i>Percent</i>	<i>49.0</i>	<i>88.2</i>	<i>58.8</i>
<b>Total</b>	<b>51</b>	<b>17</b>	<b>68</b>
<i>Percent</i>	<i>100.0</i>	<i>100.0</i>	<i>100.0</i>
Pearson chi2(1) = 8.0952 Pr = 0.004 <b>Fisher's exact = 0.005</b> 1 sided Fisher's exact = 0.004 <b>Note:</b> Four nonrespondents.			

<b>Q17a. Does student access and ability to use the EHR increase over the course of training at your primary teaching institution (e.g., students in advanced courses such as an acting/subinternship are allowed more EHR privileges than core clerkship students)?</b>			
	<b>Medical School Type</b>		
	<b>Allopathic</b>	<b>Osteopathic</b>	<b>Total</b>
Yes	19	1	20
<i>Percent</i>	<i>38.0</i>	<i>6.3</i>	<i>30.3</i>
No	31	15	46
<i>Percent</i>	<i>62.0</i>	<i>93.8</i>	<i>69.7</i>
<b>Total</b>	<b>50</b>	<b>16</b>	<b>66</b>
<i>Percent</i>	<i>100.0</i>	<i>100.0</i>	<i>100.0</i>
Pearson chi2(1) = 5.7854 Pr = 0.016 <b>Fisher's exact = 0.026</b> 1 sided Fisher's exact = 0.013 <b>Note:</b> Six nonrespondents.			

<b>Q17b. Please describe these additional privileges:</b>
able to order and pend during subinternships but not always in core rotations
Access is the same in M3 and M4, but expectations as to what the student will do in the care of the patient and hence use of the EHR, increases in M4 Subinternships. It is more dictated by the expectations of the rotation.
Allow to enter preliminary orders during their Acting Internship
Allowed to document and order during AIs
As AIs they can propose orders as well. The above two answers I stated 'no' but it varies by site. Our Children's Hospital allows writing in the note, our main adult hospital currently does not, but it used to, and we are working very hard to re-allow student access (working with the hospital IT, the hospital exec committee, working with the EMR company to get the 'medical student note' role acceptable). We've had huge set backs over the past year but see a light ahead for re-inclusion of the third years.
M1 and M2 students have view only. M3 and M4 can add to the record and pend orders.
Order placement which will need supervisor signature
Some sites allow notewriting privileges and entrance of orders.
Soon our acting interns will be writing discharge summaries.
Students do not usually pend orders until during their acting internships
students have more access when on their sub-internships
sub I's have additional privileges
Subinternship students allowed to enter orders which must be reviewed and then signed by resident or attending
they can write discharge notes and orders as 4th years on their acting internship
While not approved working to have students on their AI be able to add orders with direct supervision/countersignature by the attending.
Year 4 students can write the discharge summary.



<b>Q18. If there are significant limitations on access or use of the EHR by students in your institution, please indicate the reason(s) you have been told these restrictions apply.</b>
Access is determined by and limited by our hospital compliance department. Students document their note in a separate tab in the EHR which is 'for educational use only' and is not considered part of the true patient care record. It remains with the record but is not part of the resident or attending note section. The concept of a shared note was proposed but the concept was not accepted due to the inability to attribute authorship in a shared note system.
Diversity of systems being used, concerns about liability
It is cost-prohibitive in the first and second years. In third and fourth years, it is due to medical legal issues and reimbursement issues.
It's more of a cultural issue (e.g., emergency medicine residents don't want to be slowed down) then a political, legal or technical issue
Legal concerns of documentation.
Medical-legal issues predominate. AAMC 'white paper' on subject killed any chance of changing this.
Medicolegal and billing
medicolegal at some sites
medico-legal concerns
Medicolegal concerns is primary
No
None
One system had an outpt EHR NexGen and inpt EHR Sorian. Neither have a platform for student activity. At this site students had read only access. Even at sites where the EHR has a student platform, getting the system to allow students to participate in care by utilizing it can be a time consuming proposition.
our school is new and we have no students in this academic year
Our students were not allowed in the EHR until about 5 years ago, but we had new leadership who realized that students would not magically be able to write notes/orders, etc on July 1 of their internship if they haven't done this in medical school (and many of our students stay here for residency), so that was the convincing argument, and now we have good student access
Our system is different in that it is a full EHR license, but it is not used for actual patient care. So students do enter orders, look up results etc during their clerkships to evaluate the students during rotations- I answered no but we do have students doing this
Problems with how to set up access to make it work for students

<p><b>Q18. If there are significant limitations on access or use of the EHR by students in your institution, please indicate the reason(s) you have been told these restrictions apply.</b></p>
<p>SEE ABOVE: We are working very hard to re-allow student access (working with the hospital IT, the hospital exec committee, working with the EMR company to get the 'medical student note' role acceptable). We've had huge set backs over the past year but see a light ahead for re-inclusion of the third years. REASONS our main hospital dis-allowed third year student note writing: billing compliance is the leading reason, then comes medical-legal concerns, then workflow. NEAR FUTURE: we have worked with the hospital to build a medical student note role, and we believe that the third years will be re-allowed to write in the note, in the near future (by end of 2017), though we've lost about 1+ years of third year participation (they are presently at view/read only) until we overcome this hurdle.</p>
<p>Some portions of system/Children's Hospital/make read only access or eliminate access at end of rotation; medicolegal concerns cited.</p>
<p>Some residents have asked students not to input orders because it slows the residents down</p>
<p>Technical difficulties related to tracking authorship of EHR entries.</p>
<p>They can read only. If they enter anything, it is in a student portal and rarely if ever reviewed by anyone.</p>
<p>Training resources are limited. Medicolegal concerns.</p>
<p>Unlike the allopathic medical schools, the osteopathic medical schools do not have a true 'primary' teaching institution during years 3 and 4. The various healthcare organizations at which the students train during these clinical clerkship rotations have varying policies regarding allowing students any access to the EHR -- almost always 'restricted' or completely denied access. The primary reasons appear to be that medical students are no longer allowed to be on the patient records that go to receive medical insurance reimbursements and also for medico-legal reasons.</p>
<p>varies by hospital</p>
<p>We are pleased with the 4th year participation, note writing, and proposing orders.</p>
<p>We have a regional campus medical school so access is varied by local health system rules.</p>

<b>Q19. Do your students rotate at other clinical training sites that use a different EHR than the one at your primary teaching institution?</b>			
	<b>Medical School Type</b>		
	<b>Allopathic</b>	<b>Osteopathic</b>	<b>Total</b>
Yes	51	17	68
<i>Percent</i>	<i>98.1</i>	<i>94.4</i>	<i>97.1</i>
No	1	1	2
<i>Percent</i>	<i>1.9</i>	<i>5.6</i>	<i>2.9</i>
<b>Total</b>	<b>52</b>	<b>18</b>	<b>70</b>
<i>Percent</i>	<i>100.0</i>	<i>100.0</i>	<i>100.0</i>
Pearson chi2(1) = 0.6357 Pr = 0.425 <b>Fisher's exact = 0.451</b> 1 sided Fisher's exact = 0.451			
<b>Note:</b> Two nonrespondents.			

<b>Q20. Are you aware of the specific training and privileges students are given in the use of the EHR at each training site?</b>			
	<b>Medical School Type</b>		
	<b>Allopathic</b>	<b>Osteopathic</b>	<b>Total</b>
Yes	40	12	52
<i>Percent</i>	<i>78.4</i>	<i>70.6</i>	<i>76.5</i>
No	11	5	16
<i>Percent</i>	<i>21.6</i>	<i>29.4</i>	<i>23.5</i>
<b>Total</b>	<b>51</b>	<b>17</b>	<b>68</b>
<i>Percent</i>	<i>100.0</i>	<i>100.0</i>	<i>100.0</i>
Pearson chi2(1) = 0.4359 Pr = 0.509 <b>Fisher's exact = 0.523</b> 1 sided Fisher's exact = 0.361			
<b>Note:</b> For 68 respondents who reported "Yes" to Q19.			

<b>Q21. Approximately how many different EHR systems are your students required to interact with in the course of their clinical training in medical school?</b>			
	<b>Medical School Type</b>		
	<b>Allopathic</b>	<b>Osteopathic</b>	<b>Total</b>
Two	14	2	16
<i>Percent</i>	<i>27.5</i>	<i>12.5</i>	<i>23.9</i>
Three	22	2	24
<i>Percent</i>	<i>43.1</i>	<i>12.5</i>	<i>35.8</i>
Four	3	5	8
<i>Percent</i>	<i>5.9</i>	<i>31.3</i>	<i>11.9</i>
Five or more	12	7	19
<i>Percent</i>	<i>23.5</i>	<i>43.8</i>	<i>28.4</i>
<b>Total</b>	<b>51</b>	<b>16</b>	<b>67</b>
<i>Percent</i>	<i>100.0</i>	<i>100.0</i>	<i>100.0</i>
Pearson chi2(3) = 12.6513 Pr = 0.005 <b>Fisher's exact = 0.006</b>			
<b>Note:</b> For 67 of 68 respondents who reported "Yes" to Q19.			

<b>Q22. How would you best describe the educational impact related to the use of multiple EHR systems during the course of medical school training?</b>			
	<b>Medical School Type</b>		
	<b>Allopathic</b>	<b>Osteopathic</b>	<b>Total</b>
Very positive	2	3	5
<i>Percent</i>	<i>3.9</i>	<i>18.8</i>	<i>7.5</i>
Positive	10	5	15
<i>Percent</i>	<i>19.6</i>	<i>31.3</i>	<i>22.4</i>
Neutral	28	6	34
<i>Percent</i>	<i>54.9</i>	<i>37.5</i>	<i>50.8</i>
Negative	10	2	12
<i>Percent</i>	<i>19.6</i>	<i>12.5</i>	<i>17.9</i>
Very negative	1	0	1
<i>Percent</i>	<i>2.0</i>	<i>--</i>	<i>1.5</i>
<b>Total</b>	<b>51</b>	<b>16</b>	<b>67</b>
<i>Percent</i>	<i>100.0</i>	<i>100.0</i>	<i>100.0</i>
Pearson chi2(4) = 5.7099 Pr = 0.222 <b>Fisher's exact = 0.201</b>			
<b>Note:</b> For 67 of 68 respondents who reported "Yes" to Q19.			

<b><i>As currently structured at my institution, student contributions to the EHR add meaningfully to the patient care process.</i></b>			
	<b>Medical School Type</b>		
	<b>Allopathic</b>	<b>Osteopathic</b>	<b>Total</b>
Strongly disagree	9	2	11
<i>Percent</i>	<i>17.3</i>	<i>11.8</i>	<i>15.9</i>
Disagree	17	5	22
<i>Percent</i>	<i>32.7</i>	<i>29.4</i>	<i>31.9</i>
Neutral	16	7	23
<i>Percent</i>	<i>30.8</i>	<i>41.2</i>	<i>33.3</i>
Agree	7	3	10
<i>Percent</i>	<i>13.5</i>	<i>17.7</i>	<i>14.5</i>
Strongly agree	3	0	3
<i>Percent</i>	<i>5.8</i>	<i>--</i>	<i>4.4</i>
<b>Total</b>	<b>52</b>	<b>17</b>	<b>69</b>
<i>Percent</i>	<i>100.0</i>	<i>100.0</i>	<i>100.0</i>
Pearson chi2(4) = 1.8421 Pr = 0.765 <b>Fisher's exact = 0.879</b>			
<b>Note:</b> Three nonrespondents.			

<b><i>As currently structured at my institution, student use of the EHR provides an educationally meaningful way of teaching this aspect of patient care.</i></b>			
	<b>Medical School Type</b>		
	<b>Allopathic</b>	<b>Osteopathic</b>	<b>Total</b>
Strongly disagree	4	1	5
<i>Percent</i>	<i>7.8</i>	<i>5.9</i>	<i>7.4</i>
Disagree	12	4	16
<i>Percent</i>	<i>23.5</i>	<i>23.5</i>	<i>23.5</i>
Neutral	9	4	13
<i>Percent</i>	<i>17.7</i>	<i>23.5</i>	<i>19.1</i>
Agree	21	8	29
<i>Percent</i>	<i>41.2</i>	<i>47.1</i>	<i>42.7</i>
Strongly agree	5	0	5
<i>Percent</i>	<i>9.8</i>	<i>--</i>	<i>7.4</i>
<b>Total</b>	<b>51</b>	<b>17</b>	<b>68</b>
<i>Percent</i>	<i>100.0</i>	<i>100.0</i>	<i>100.0</i>
Pearson chi2(4) = 2.0676 Pr = 0.723 <b>Fisher's exact = 0.829</b>			
<b>Note:</b> Four nonrespondents.			

<p><b>Q24. Please indicate any specific change(s) to student use of the EHR at your institution that would make this interaction more educationally and clinically meaningful for students.</b></p>
<p>1. Having a 'track changes' feature, making clear distinctions between student-generated entries and reviewers' edits/changes.</p>
<p>2. Denoting student entries as 'non-discoverable'</p>
<p>Actual documentation curriculum would be meaningful and beneficial.</p>
<p>Adapting our virtual EHR in pre-clerkship courses for other uses.</p>
<p>Allowing full access and entry into the EHR, including entering permanent notes and order entry.</p>
<p>Allowing student notes to be "billable"?- this is a billing and coding issue that makes student notes count "less"</p>
<p>As noted above, the answer to the above two agree/disagree questions varies:</p> <p>A) the contributions at the pediatric sites allows for positive interactions.</p> <p>B) the contributions at the main adult hospital is terribly poor at present because students have view only. If they could write, it would add meaning. We are going to have them regain access as soon as the 'medical student role' can be rebuilt.</p> <p>C) the contributions at the VA is fine but there are admin hurdles.</p> <p>D) the contributions of the 4th years students on their Acting Internships add great meaning and facilitate teaching &amp; learning.</p>
<p>Better system for educating students. Better integration of student documentation into the work of the team. Better system for feedback to the students about documentation that was part of the work flow of the clinical team.</p>
<p>Change in CMS guidelines to allow more appropriate and supervised student documentation to be referred to for billing by preceptor</p>
<p>Currently in process of incorporating early EHR introduction and use in Simulation center. Our clinical sites are also undergoing EHR conversions. fortunately they tend to be in the direction of those WITH student platforms. Next, we need to continue to educate the administrations of these clinical sites regarding what AAMC recommends student contributions to a medical record may include.</p>
<p>Find a way for students to have access to EHR and to get the insurance reimbursing organizations to allow this. Also, change the medico-legal environment so that medical students can be allowed to 'write' (that is, enter) the patient note into the formal medical record.</p>
<p>I wish that we were able to access a 'dummy' system during the preclinical years for students to document SP encounters and learn the use of the EHR</p>
<p>If attending were allowed to bill directly of the student record directly, it will cut crack unnecessarily on patient care.</p>

<b>Q24. Please indicate any specific change(s) to student use of the EHR at your institution that would make this interaction more educationally and clinically meaningful for students.</b>
If students had both access and could enter notes, orders (all with supervision and sign off), then there would be enormous educational benefit plus be of help to the clinical team and patient care.
If we want students to be prepared to enter residency training, they need to have access to documenting patient encounters in the EHR. Otherwise, they will be starting residency with full access and no training of any kind.
More structured and consistently provided formative feedback
More structured curriculum in the first 2 years
our legal and compliance teams have recently endorsed a policy that has dramatically improved how students can contribute
Return to full access and full documentation including orders but with documented editing by and cosigned by the supervising physician.
Since we have no students at this level, we cannot answer
some attendings feel compelled to make the resident write a full note for documentation to be signed for an acting intern/4th year student's patients, making it less likely the senior resident will assign the 4th year student many patients, so the resident doesn't have to write the note. Ideally, the attending would tie in as appropriate to the student note but write a fuller note on the 4th year students patients, so the student is acting more like an intern, rather than a 3rd year student
Student notes being utilized as more meaningful.
Students should be able to have read only access to entire chart AND be able to document in an area that requires supervisory feedback
use of EHR for population management
varies by hospital
We are developing a specific curriculum based on both simulated and real EHR systems to ensure that students are sufficiently prepared for residency applications
We are hoping to institute a simulated EHR program into the 2nd and 3rd year to train students on the benefits, limitations, nuances of EHRs. It is currently not a part of our curriculum.
We are working on changes with implementation of a new system to engage students in participation and minimize the concerns re medicolegal issues
We are working to develop a standardized curriculum within the EHR environment to support interactive education in medical informatics.
We currently do not have an assessment after the initial 'EHR bootcamp', which includes a relationship enhancing use of the EHR, prior to accessing and using actual EHR's. Faculty do not always give feedback on notes. Correcting these two aspects would make this interaction more meaningful.
Would like students to get practical EHR experience.

<b>Q25. Is the ability of students to effectively use the EHR a specific component of their overall medical school evaluation?</b>			
	<b>Medical School Type</b>		
	<b>Allopathic</b>	<b>Osteopathic</b>	<b>Total</b>
Yes	21	3	24
<i>Percent</i>	<i>41.2</i>	<i>17.7</i>	<i>35.3</i>
No	30	14	44
<i>Percent</i>	<i>58.8</i>	<i>82.4</i>	<i>64.7</i>
<b>Total</b>	<b>51</b>	<b>17</b>	<b>68</b>
<i>Percent</i>	<i>100.0</i>	<i>100.0</i>	<i>100.0</i>
Pearson chi2(1) = 3.0909 Pr = 0.079 <b>Fisher's exact = 0.141</b> 1 sided Fisher's exact = 0.068 <b>Note:</b> Four nonrespondents.			

<b>Q26. Is demonstration or attestation of competency in using an EHR a requirement for graduation?</b>			
	<b>Medical School Type</b>		
	<b>Allopathic</b>	<b>Osteopathic</b>	<b>Total</b>
Yes	6	2	8
<i>Percent</i>	<i>12.0</i>	<i>11.8</i>	<i>11.9</i>
No	44	15	59
<i>Percent</i>	<i>88.0</i>	<i>88.2</i>	<i>88.1</i>
<b>Total</b>	<b>50</b>	<b>17</b>	<b>67</b>
<i>Percent</i>	<i>100.0</i>	<i>100.0</i>	<i>100.0</i>
Pearson chi2(1) = 0.0007 Pr = 0.979 <b>Fisher's exact = 1.000</b> 1 sided Fisher's exact = 0.674 <b>Note:</b> Five nonrespondents.			



<b>Q27. To what degree do you believe that training students in use of the EHR system (as currently structured in your institution) adequately prepares them to assume the duties of a postgraduate trainee?</b>			
	<b>Medical School Type</b>		
	<b>Allopathic</b>	<b>Osteopathic</b>	<b>Total</b>
To a very high degree	5	1	6
<i>Percent</i>	<i>9.8</i>	<i>5.9</i>	<i>8.8</i>
To a high degree	9	2	11
<i>Percent</i>	<i>17.7</i>	<i>11.8</i>	<i>16.2</i>
To a moderate degree	24	9	33
<i>Percent</i>	<i>47.1</i>	<i>52.9</i>	<i>48.5</i>
To a small degree	12	4	16
<i>Percent</i>	<i>23.5</i>	<i>23.5</i>	<i>23.5</i>
To no degree	1	1	2
<i>Percent</i>	<i>2.0</i>	<i>5.9</i>	<i>2.9</i>
<b>Total</b>	<b>51</b>	<b>17</b>	<b>68</b>
<i>Percent</i>	<i>100.0</i>	<i>100.0</i>	<i>100.0</i>
Pearson chi2(4) = 1.2525 Pr = 0.869			
<b>Fisher's exact = 0.863</b>			
<b>Note:</b> Four nonrespondents.			

**Q28. If you have any further comments about this survey subject or about the survey itself, please include them below.**

Again, we have plans to grow our exposure for our students. All students in our volunteer free clinic get exposure to an EHR, and they get exposure to multiple EHRs at our various regional hospital sites - but this is not part of the formal curricula.

Clearly, the medico-legal environment must change to allow medical student inputs into the patients' medical records. This will help the medical student to be more fully involved in the medical management of the patients -- whether the patients are seen in the hospital as an inpatient or as an ambulatory patient or in an outpatient clinic.

i look forward to the results of this survey! We are doing a pitiful job in preparing our students in the use of the EHR from both the perspective of navigating the fields, but more importantly, engaging the patient while using it.

If you can leverage CMS to change its rules, it would help tremendously. Compliance offices at every hospital make up their own rules because CMS has been so vague on this for medical students.

I'm at XXXXX and we have created and published informatics competencies for all medical students. Here is the citation:

[Redacted for anonymity]

Important topic. The EHR system is more a barrier to adequate medical documentation and informatics education due to necessary but limiting policies that are designed to addressing billing, compliance, and HIPAA.

Our school (like many) has various sites, and so it was hard to answer the questions, despite the school being passionate about the educational and patient care role of medical students participating in the record. We are also in transition, i.e. we had a huge setback at our major hospital with regard to students and the EHR and are still awaiting and advocating for improvements.

Thanks for the survey.

Our students report feeling confident in navigating any EHR and have reported being able to assist preceptors when they are unsure what to do in their own system.

The most important step forward would be for CMS to change guidelines re documentation. [Redacted for anonymity] recently adopted this resolution:

1 WHEREAS, current CMS standards do not allow teaching physicians to use a medical student's

2 documentation of the history or physical exam findings, or medical decision making; and

3

4 WHEREAS, repeating a medical student's documentation places an unnecessary administrative

5 and regulatory burden on teaching physicians, and presents a barrier to physicians' willingness

6 to teach medical students in their practices; and

7

8 WHEREAS, these restrictions impair medical students' preparation for independent practice;

9 THEREFORE BE IT

10

11 RESOLVED, that the [Redacted] support and the [Redacted] AMA delegation propose an AMA

12 resolution for CMS to revise Medicare Claims Processing Instructions Regarding E/M

13 Documentation Provided by Students to allow the teaching physician to refer to all parts of

14 student documentation for billing purposes, without re-documentation. As with resident

15 physician documentation, the teaching physician must attest that he or she has performed a

16 history, physical exam, is responsible for the medical decision making, and has verified the

17 accuracy of the student documentation. (Directive to Take Action)

this is essentially in training from the beginning of school.

Using a community training model with approximately 30 different hospitals means the experience in use of EHR is extremely varied and we have no 'primary training site.'

We are a new school, and have only OMS 1 students; this is our 9th week of school. Most of your survey questions are not applicable to the school at this time.

we are looking at purchasing a simulated EHR to use throughout all 4 years