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## **Pre-survey**

We would like to collect some information about you and your experience with electronic health records (EHRs) and technology in general.

Please complete Part 1 of the COM-PHX Baseline Survey below. (You will be asked to complete Part 2 at the end of your EHR training session.)

Thank you!

### **Study Introduction**

The following information is provided to inform you about our research project and your participation in it. Please read this form carefully and feel free to ask any questions you may have about this study and the information given below by contacting study researchers, Dr. Xian Ho (xian.ho@vanderbilt.edu) or Dr. Cindy Gadd (cindy.gadd@vanderbilt.edu).

You are being asked to participate in a research study because you are a COM-PHX medical student. Your participation in this research study is voluntary. You are also free to withdraw from this study at any time by contacting the study researchers listed above and the data collected from you will be excluded from analyses and subsequent reporting.

The purpose of the study is to evaluate and assess the impact of the biomedical informatics (BMI) instruction that has been in place for over 3 years at The University of Arizona College of Medicine - Phoenix (COM-PHX). Using data collected from your regularly scheduled COM-PHX curricular activities—Electronic Health Record (EHR) training session and Doctoring sessions—we will compare and assess the integration of an EHR ergonomics component in the BMI curriculum, which can be used to inform future BMI curriculum development.

You will be asked to complete an online Baseline Survey after reviewing this consent documentation. The baseline survey should take less than 10 minutes to complete and will consist of questions regarding demographics, familiarity with technology, and experience with EHRs. Then, as part of COM-PHX's pilot BMI curriculum, you may receive EHR ergonomic instruction during part of your regularly scheduled Doctoring sessions and may be instructed to use an EHR system during your Standardized Patient (SP) encounters. We will obtain data normally collected from the Doctoring sessions (i.e., video footage, self-assessment surveys, SP checklists, and faculty checklists). And at the end of the semester, you will be asked to complete a short survey that we will use to assess your impressions of your experience with the BMI curriculum. All data received by the study researchers will be deidentified using a one-way transform so that your responses will not be connected with your identity. Any data collected for this study will not be used to determine any of your grades in any way.

Your information may be shared with Vanderbilt, such as the Vanderbilt University Institutional Review Board, if requested. If you choose not to participate, this will not affect your grades in any way or the implementation of the EHR ergonomic training and use in Doctoring sessions being piloted at COM-PHX.

Do you agree to participate in this study?

\* must provide value

☐ Yes ☐ No

[reset](#)

<b>Please enter the last 4 digits of your student ID:</b> <small>* must provide value</small>	<input type="text"/> <small>for research purposes only</small>
<b>Please reenter the last 4 digits of your student ID:</b> <small>* must provide value</small>	<input type="text"/> <small>for research purposes only</small>
<b>A. Demographic Information</b>	
<b>What is your age?</b> <small>* must provide value</small>	<input type="text"/>
<b>Gender</b> <small>* must provide value</small>	<input type="text"/> <input type="checkbox"/> Male <input type="checkbox"/> Female <a href="#">reset</a>
<b>What race do you consider yourself?</b>	<input type="text"/> White or Caucasian Black or African American Asian American Indian or Alaska Native Native Hawaiian or Pacific Islander Other <a href="#">reset</a>
<b>Are you Hispanic or Latino?</b>	<input type="text"/> NOT Hispanic or Latino Yes, Hispanic or Latino <a href="#">reset</a>
<b>What is your expected medical school graduation year?</b> <small>* must provide value</small>	<input type="text"/> <input type="checkbox"/> 2012 <input type="checkbox"/> 2013 <input type="checkbox"/> 2014 <input type="checkbox"/> 2015 <a href="#">reset</a>
<b>B. Electronic Health Record (EHR) Experience</b>	
<b>Have you observed an EHR in practice?</b> <small>* must provide value</small>	<input type="text"/> <input type="checkbox"/> Yes <input type="checkbox"/> No <a href="#">reset</a>

Have you personally used an EHR?

\* must provide value

 ☐ Yes ☐ No

[reset](#)

### C. EHR Self-Assessment

*For each of the following statements, please select the response that best reflects how you feel about your comfort with EHR use during a patient encounter. (If you have never used an EHR, please choose a response that would best reflect how you would feel.)*

**I am able to use the EHR effectively to engage with the patient.**

 ☐ Strongly disagree ☐ Disagree ☐ Neither agree nor disagree ☐ Agree

Strongly agree

[reset](#)

**I am able to articulate to my patients the benefits of using the EHR during the patient encounter.**

\* must provide value

 ☐ Strongly disagree ☐ Disagree ☐ Neither agree nor disagree ☐ Agree

Strongly agree

[reset](#)

**I am able to address patient concerns and questions about confidentiality of the EHR.**

\* must provide value

 ☐ Strongly disagree ☐ Disagree ☐ Neither agree nor disagree ☐ Agree

Strongly agree

[reset](#)

**I am able to appropriately position the EHR device (e.g., laptop) for effective use in the patient encounter.**

\* must provide value

 ☐ Strongly disagree ☐ Disagree ☐ Neither agree nor disagree ☐ Agree

Strongly agree

[reset](#)

**I am able to effectively integrate the EHR into the patient encounter such that the patient is actively involved in viewing and reviewing his/her information in the EHR.**

\* must provide value

 ☐ Strongly disagree ☐ Disagree ☐ Neither agree nor disagree ☐ Agree

Strongly agree

[reset](#)

### D. Familiarity With Technology

**In a typical week, how many hours on average do you personally use a computer hands-on for any purpose?**

\* must provide value

On the whole, how sophisticated a computer user do you consider yourself?

\* must provide value

- Very unsophisticated
- Unsophisticated
- Neither unsophisticated nor sophisticated
- Sophisticated
- Very sophisticated

[reset](#)

Please indicate all of the following Web 2.0 technologies that you use:

- Podcasting
- Instant messaging
- Blogs
- Wikis
- Social bookmarking (e.g., tagging)
- Media sharing
- Social networking sites (e.g., Facebook, Twitter)
- RSS feeds

### E. Interpersonal Communication

*Please select the choice that best reflects how you feel about each of the following statements as they apply to your experience or anticipated experience interacting with patients during a patient encounter.*

***I demonstrate professional appearance/role.*** I wear professional clothing (i.e. white coat, no revealing shirts or skirts), introduce myself to patient as a medical student using first and last name, confirm patient's first and last name, and wash my hands.

\* must provide value



Disagree Strongly



Disagree



Agree



Agree Strongly

[reset](#)

***I choose appropriate language.*** I ask open ended questions, maintain an even pace and tone of voice, allow patient to speak without interruption, ask non-leading questions, ask a limited number of questions at a time and use appropriate language (i.e. no slang or medical jargon).

\* must provide value



Disagree Strongly



Disagree



Agree



Agree Strongly

[reset](#)

***I practice active listening. I listen to the patient while exhibiting engaged body language including: eye contact, nodding head, posture, personal space, gestures. I allow important silences (i.e. remain silent after giving bad news).***

\* must provide value

☐ Disagree Strongly ☐ Disagree ☐ Agree ☐ Agree Strongly

[reset](#)

***I understand patient perspective. I acknowledge, explore, empathize with, validate and address the patient's emotional concern(s).***

\* must provide value

☐ Disagree Strongly ☐ Disagree ☐ Agree ☐ Agree Strongly

[reset](#)

***I explore case specific communication issue(s). I demonstrate authentic display of compassion by asking a relevant follow up question regarding patient's emotional concern expressed in NURS.***

\* must provide value

☐ Disagree Strongly ☐ Disagree ☐ Agree ☐ Agree Strongly

[reset](#)

***I gather/share information. I ask the patient about his/her as a person, provide dialogue during the physical exam, share information about my medical problem including next steps, ask if I have questions at any point during the encounter.***

\* must provide value

☐ Disagree Strongly ☐ Disagree ☐ Agree ☐ Agree Strongly

[reset](#)

***I feel that patients are satisfied with me. Would a patient return to you for care?***

\* must provide value

☐ Disagree Strongly ☐ Disagree ☐ Agree ☐ Agree Strongly

[reset](#)

Submit

## **Post-survey**

We would like to collect some information about your recent experience with an EHR system (i.e., EPIC) at this time.

Please enter your 4-digit student ID (the same ID entered in Part 1 of this Baseline Survey) below and then continue to complete this short survey.

Thank you!

Please enter the last **4 digits** of your student ID:

\* must provide value

for research purposes only

Please reenter the last **4 digits** of your student ID:

\* must provide value

for research purposes only

### **E. System Usability Scale (SUS)**

*Please select the choice that best reflects how you feel about each of the following statements regarding the EHR system that you just used during this training session.*

**I think that I would like to use this EHR system frequently.**

\* must provide value



Strongly disagree



Disagree



Neither disagree nor agree



Agree



Strongly agree

reset

**I found this EHR system unnecessarily complex.**

\* must provide value



Strongly disagree



Disagree



Neither disagree nor agree



Agree



Strongly agree

reset

**I think this EHR system was easy to use.**

\* must provide value



Strongly disagree



Disagree



Neither disagree nor agree



Agree



Strongly agree

reset

**I think that I would need the support of a technical person to be able to use this EHR system.**

\* must provide value



Strongly disagree



Disagree



Neither disagree nor agree



Agree



Strongly agree

reset

**I found the various functions in this EHR system were well integrated.**

\* must provide value

☐ Strongly disagree

☐ Disagree

☐ Neither disagree nor agree

☐ Agree

Strongly agree

reset

**I thought there will be too much inconsistency in this EHR system.**

\* must provide value

☐ Strongly disagree

☐ Disagree

☐ Neither disagree nor agree

☐ Agree

Strongly agree

reset

**I imagine that most people would learn to use this EHR system very quickly.**

\* must provide value

☐ Strongly disagree

☐ Disagree

☐ Neither disagree nor agree

☐ Agree

Strongly agree

reset

**I found this EHR system very awkward to use.**

\* must provide value

☐ Strongly disagree

☐ Disagree

☐ Neither disagree nor agree

☐ Agree

Strongly agree

reset

**I felt very confident using this EHR system.**

\* must provide value

☐ Strongly disagree

☐ Disagree

☐ Neither disagree nor agree

☐ Agree

Strongly agree

reset

**I needed to learn a lot of things before I could get going with this EHR system.**

\* must provide value

☐ Strongly disagree

☐ Disagree

☐ Neither disagree nor agree

☐ Agree

Strongly agree

reset

Submit

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# EHR Ergonomics Training Materials

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*Before* EHR Ergonomic Training



*After* EHR Ergonomic Training



## DS2 Learning Objectives

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- ❑ Students will understand and be able to articulate the benefits of using the EHR and laptop computer to their patients.
- ❑ Students will be able to address patient concerns about confidentiality of the EHR.

# Advantages of Using an EHR

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- ❑ Increased patient & provider **satisfaction** with the encounter and ability to **partner** more effectively and efficiently in patient **health** and **wellness & prevention**
- ❑ Increased **accuracy** of the medical record and diminished errors
- ❑ Increased **security & confidentiality**
- ❑ Better **reimbursement**; fiscal advantages

# EHR Script

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- ❑ Today we will be using a computerized health record to review your vital signs and medications.
- ❑ This system helps prevent errors by being more readable and ensuring that we are able to access the most complete and up to date information about you.
- ❑ I will need to take a moment to log into the system because the computerized health record system keeps your information secure and confidential by limiting access to it.

## DS3 Learning Objectives

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- ☐ Students will understand and be able to appropriately position the laptop for effective use in the patient encounter.
  
- ☐ Students will be able to effectively integrate the EHR into their interactions with the patient such that the patient is actively involved in viewing and reviewing their information on the laptop.

# Check list

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- ☐ Is the laptop positioned so that both you and the patient can see the screen to review and confirm the medication list?
- ☐ Do you make appropriate eye contact and communicate fluidly with the patient?

## DS4 Learning Objectives

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- ❑ Learners will have the opportunity to present questions and challenges that have arisen for them in their use of the EHR thus far.
  
- ❑ Learners will have the opportunity to discuss, reflect and problem solve in regarding their experiences.

### **Student EHR Questionnaire**

**[For Wednesday & Thursday Doctoring sessions only]**

***\*If you did not use the EHR, mark "Strongly disagree."***

**1. I was able to use the EHR effectively to engage with the patient.**

Strongly disagree (1) Disagree (2) Neither agree nor disagree (3) Agree (4) Strongly agree (5)

**2. I was able to articulate to the patient the benefits of using the EHR during the patient encounter.**

Strongly disagree (1) Disagree (2) Neither agree nor disagree (3) Agree (4) Strongly agree (5)

**3. I was able to address patient concerns and questions about confidentiality of the EHR.**

Strongly disagree (1) Disagree (2) Neither agree nor disagree (3) Agree (4) Strongly agree (5)

**4. I was able to appropriately position the EHR device (e.g., laptop) for effective use in the patient encounter.**

Strongly disagree (1) Disagree (2) Neither agree nor disagree (3) Agree (4) Strongly agree (5)

**5. I was able to effectively integrate the EHR into the patient encounter such that the patient was actively involved in viewing and reviewing his/her information in the EHR.**

Strongly disagree (1) Disagree (2) Neither agree nor disagree (3) Agree (4) Strongly agree (5)



### **Standardized Patient EHR Questionnaire**

**[For Wednesday & Thursday Doctoring sessions only]**

***\*If student did not use EHR, mark "Strongly disagree."***

**1. Student was able to use the EHR effectively to engage with me.**

Strongly disagree (1) Disagree (2) Neither agree nor disagree (3) Agree (4) Strongly agree (5)

**2. Student was able to articulate to me the benefits of using the EHR during my encounter.**

Strongly disagree (1) Disagree (2) Neither agree nor disagree (3) Agree (4) Strongly agree (5)

**3. Student was able to address my concerns and questions about confidentiality of the EHR.**

Strongly disagree (1) Disagree (2) Neither agree nor disagree (3) Agree (4) Strongly agree (5)

**4. Student was able to appropriately position the EHR device (e.g., laptop) for effective use in my encounter.**

Strongly disagree (1) Disagree (2) Neither agree nor disagree (3) Agree (4) Strongly agree (5)

**5. Student was able to effectively integrate the EHR into my encounter such that I was actively involved in viewing and reviewing my information in the EHR.**

Strongly disagree (1) Disagree (2) Neither agree nor disagree (3) Agree (4) Strongly agree (5)

### **Faculty EHR Questionnaire**

**[For Wednesday & Thursday Doctoring sessions only]**

***\*If student did not use EHR, mark "Strongly disagree."***

**1. Student was able to use the EHR effectively to engage with the patient.**

Strongly disagree (1) Disagree (2) Neither agree nor disagree (3) Agree (4) Strongly agree (5)

**2. Student was able to articulate to the patient the benefits of using the EHR during the patient encounter.**

Strongly disagree (1) Disagree (2) Neither agree nor disagree (3) Agree (4) Strongly agree (5)

**3. Student was able to address patient concerns and questions about confidentiality of the EHR.**

Strongly disagree (1) Disagree (2) Neither agree nor disagree (3) Agree (4) Strongly agree (5)

**4. Student was able to appropriately position the EHR device (e.g., laptop) for effective use in the patient encounter.**

Strongly disagree (1) Disagree (2) Neither agree nor disagree (3) Agree (4) Strongly agree (5)

**5. Student was able to effectively integrate the EHR into the patient encounter such that the patient was actively involved in viewing and reviewing his/her information in the EHR.**

Strongly disagree (1) Disagree (2) Neither agree nor disagree (3) Agree (4) Strongly agree (5)

### **Statistical Analysis of EHR Use Improvement**

Differences in EHR use improvement after each session between Thursday (Treatment) and Wednesday (Control II) groups. The contrasts are based on GLS linear models as described in the Approach section.

	<b>Trt(DS2-DS1) – Ctr II(DS2-DS1)</b>			<b>Trt(DS3-DS1) – Ctr II(DS3-DS1)</b>			<b>Trt(DS4-DS1) – Ctr II(DS4-DS1)</b>		
	Estimate	95% CI	P-value	Estimate	95% CI	P-value	Estimate	95% CI	P-value
<b>Student</b>									
Engage	1.14	(0.18, 2.10)	0.022	1.32	(0.37, 2.28)	0.008	1.26	(0.30, 2.21)	0.012
Benefits	1.14	(0.18, 2.11)	0.023	1.74	(0.78, 2.71)	<0.001	1.61	(0.64, 2.57)	0.002
Concerns	1.36	(0.41, 2.31)	0.007	1.78	(0.82, 2.73)	<0.001	1.64	(0.69, 2.60)	0.001
Position	0.93	(-0.02, 1.89)	0.060	1.30	(0.34, 2.26)	0.010	1.53	(0.58, 2.49)	0.002
Interactions	0.89	(-0.09, 1.87)	0.080	1.57	(0.59, 2.56)	0.002	1.54	(0.56, 2.52)	0.003
<b>Faculty</b>									
Engage	2.41	(0.96, 3.86)	0.002	3.65	(2.20, 5.10)	<0.001	2.28	(0.83, 3.73)	0.003
Benefits	1.79	(0.27, 3.30)	0.023	2.95	(1.44, 4.47)	<0.001	1.87	(0.36, 3.38)	0.018
Concerns	1.54	(0.49, 2.59)	0.005	2.70	(1.65, 3.76)	<0.001	1.94	(0.89, 2.99)	<0.001
Position	1.74	(0.52, 2.97)	0.007	3.03	(1.80, 4.25)	<0.001	1.71	(0.49, 2.93)	0.008
Interactions	1.27	(0.14, 2.40)	0.031	3.09	(1.95, 4.22)	<0.001	2.69	(1.55, 3.82)	<0.001
<b>SP</b>									
Engage	0.62	(-0.22, 1.46)	0.153	2.57	(1.73, 3.41)	<0.001	1.92	(1.08, 2.76)	<0.001
Benefits	1.73	(0.95, 2.51)	<0.001	2.60	(1.81, 3.38)	<0.001	2.40	(1.61, 3.18)	<0.001
Concerns	1.35	(0.56, 2.15)	0.001	2.85	(2.06, 3.65)	<0.001	2.35	(1.56, 3.15)	<0.001
Position	0.38	(-0.48, 1.24)	0.392	2.66	(1.80, 3.52)	<0.001	2.49	(1.64, 3.35)	<0.001
Interactions	0.18	(-0.69, 1.04)	0.688	2.61	(1.75, 3.48)	<0.001	2.23	(1.36, 3.09)	<0.001
<b>Student (based on original scores provided by students regardless of whether EHR was used or not used during the encounters.</b>									
Engage	0.58	(-0.30, 1.46)	0.198	0.81	(-0.06, 1.69)	0.073	1.33	(0.54, 2.21)	0.004
Benefits	0.57	(-0.28, 1.41)	0.193	1.22	(0.37, 2.06)	0.006	1.42	(0.57, 2.26)	0.002
Concerns	0.80	(-0.07, 1.67)	0.074	1.27	(0.40, 2.14)	0.005	1.47	(0.60, 2.34)	0.001
Position	0.39	(-0.50, 1.28)	0.396	0.81	(-0.09, 1.70)	0.081	1.54	(0.65, 2.43)	0.001
Interactions	0.32	(-0.58, 1.22)	0.487	1.05	(0.15, 1.95)	0.024	1.52	(0.62, 2.42)	0.001

Supplemental digital content for Silverman H, Ho YX, Kaib S, et al. A Novel Approach to Supporting Relationship-Centered Care Through Electronic Health Record Ergonomic Training in Preclerkship Medical Education. Acad Med.