Survey on EHR/CPOE for Geisinger ICU Physicians, PAs and NPs

1 year after the implementation…
Dear Geisinger ICU Staff,

A group of University of Wisconsin researchers is working in collaboration with researchers from Geisinger’s Center for Health Research on a study examining the impact of Computerized Provider Order Entry (CPOE) and Electronic Health Record (EHR) technologies on the work organization and quality of working life. This survey is part of an effort to evaluate the technology before and after its implementation. Like any intervention, use of an EHR may result in unintended consequences. We ask you to complete this survey to help us assess the implications, both positive and negative, of using the EHR (Epic). This will aid us in the ongoing task of making the EHR more useful to you.

We have already collected survey data twice:

• before implementation of the CPOE technology, and
• three months after implementation of the technology.

We are now collecting a final round of data 12 months after the technology has been in use. Your response is greatly appreciated.

Completion of the survey is voluntary. We are collecting information about your job, the quality of your working life, and your perceptions of the technology and your performance. The questionnaire will take about 15 minutes to complete. You can leave blank any questions you do not want to answer. No one at your workplace will ever see your answers. Your responses are strictly confidential and will be closely guarded. Research staff will be the only people to see your answers. Your name and other identifying information will not be associated with your survey answers. All results of this study will be reported in the aggregate so that no one person can be identified. No answers of individuals will ever be released.

It is our hope that through the information we obtain from this study, we can better understand how EHR technology affects employees. Thank you for your consideration.

Sincerely,

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Geisinger Health System
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Instructions

When completing the questionnaire, you can leave blank any questions that you do not want to answer. Remember that your responses are strictly confidential and will be closely guarded. This questionnaire has been designed to gather information about the work you do, the technology you use, and your quality of working life. Please try to answer all of the questions. To answer the questions, check the appropriate box on the scale. For example:

<table>
<thead>
<tr>
<th>1. Communication with people on this ICU is very open.</th>
<th>Strongly Disagree</th>
<th>Disagree</th>
<th>Neither Disagree Nor Agree</th>
<th>Agree</th>
<th>Strongly Agree</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>□1</td>
<td>□2</td>
<td>□3</td>
<td>□4</td>
<td>□5</td>
</tr>
</tbody>
</table>

Some questions will require answers similar to the scale above, while other questions will require different responses. Please try to be as accurate as possible.
Section A. About your job...

If you are a resident or intern, please answer the following questions for the ICU you worked on most recently.

1. Please check your current job position:
   - 1. Physician Assistant (PA)
   - 2. Nurse Practitioner (NP)
   - 3. Attending
   - 4. Fellow
   - 5. Resident (years 2 & 3)
   - 6. Intern (year 1)

2. How long have you worked for Geisinger? ___________ years ____________ months

3. What unit do you primarily work on?
   - 1. Adult ICU
   - 2. Cardiac ICU
   - 3. Pediatric ICU
   - 4. Neonatal ICU

4. How long have you worked on your current ICU? _________ years __________ months

5. How many hours do you work at your job in an average week? ________________ hours per week

6. When during the week do you typically work?
   - 1. Weekdays
   - 2. Weekends
   - 3. Both

7. When do you typically work?
   - 1. Day (first shift)
   - 2. Evening (second shift)
   - 3. Night (third shift)

8. How long is your typical shift?
   - 1. 8 hours
   - 2. 12 hours
   - 3. Other: _________________________

9. If you are a resident, please indicate which month you worked in the ICU:
   - 1. January
   - 2. February
   - 3. March
   - 4. April
   - 5. May
   - 6. June
   - 7. July
   - 8. August
   - 9. September
   - 10. October
   - 11. November
   - 12. December

Section B. About communication and coordination in the ICU...

If you are a resident, when answering the questions in this section, please think about the ICU that you worked on most recently.

Strongly Disagree Disagree Neither Disagree Nor Agree Agree Strongly Agree

<table>
<thead>
<tr>
<th>Question</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Communication with nurses on this ICU is very open.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2. It is easy to ask advice from nurses on this ICU.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>3. Communication with physicians/PAs/NPs on this ICU is very open.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>4. It is easy to ask advice from physicians/PAs/NPs on this ICU.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>5. I can think of a number of times when I received incorrect information regarding patient care from nurses on this ICU.</td>
<td></td>
<td></td>
<td></td>
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</tr>
<tr>
<td>6. It is often necessary for me to go back and check the accuracy of information regarding patient care I have received from nurses on this ICU.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
7. I can think of a number of times when I received incorrect information regarding patient care from physicians/PAs/NPs on this ICU. □1 □2 □3 □4 □5

8. It is often necessary for me to go back and check the accuracy of information regarding patient care I have received from physicians/PAs/NPs on this ICU. □1 □2 □3 □4 □5

9. I get information on the status of patients when I need it. □1 □2 □3 □4 □5

10. When a patient’s status changes, I get relevant information quickly. □1 □2 □3 □4 □5

11. In matters pertaining to patient care, nurses call physicians in a timely manner. □1 □2 □3 □4 □5

12. There is effective communication between nurses across shifts. □1 □2 □3 □4 □5

13. Nurses associated with the unit are well informed regarding events occurring on other shifts. □1 □2 □3 □4 □5

14. There is effective communication between physicians/PAs/NPs across shifts. □1 □2 □3 □4 □5

15. Physicians/PAs/NPs associated with the unit are well informed regarding events occurring on other shifts. □1 □2 □3 □4 □5

16. To what extent does one-to-one communication between staff contribute to the coordination of staff activities within your ICU? □1 □2 □3 □4 □5

17. To what extent do daily staff rounds contribute to the coordination of staff activities within your ICU? □1 □2 □3 □4 □5

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**Section C. About the EHR (Epic) in general…**

*This section asks about the EHR or Electronic Health Record also known as the Inpatient Epic system. Please rate the following characteristics of the EHR.*

1. Learning to operate the system Difficult □1 □2 □3 □4 □5 □6 □7 □8 □9 □10 Easy

2. Exploring new features by trial and error Difficult □1 □2 □3 □4 □5 □6 □7 □8 □9 □10 Easy

3. Remembering names and use of commands Difficult □1 □2 □3 □4 □5 □6 □7 □8 □9 □10 Easy

4. Tasks can be performed in a straightforward manner. Never □1 □2 □3 □4 □5 □6 □7 □8 □9 □10 Always

5. Help messages on screen Unhelpful □1 □2 □3 □4 □5 □6 □7 □8 □9 □10 Helpful

6. Experienced and inexperienced users’ needs are taken into consideration Never □1 □2 □3 □4 □5 □6 □7 □8 □9 □10 Always

7. Correcting your mistakes Difficult □1 □2 □3 □4 □5 □6 □7 □8 □9 □10 Easy
8. Please check the box that best reflects your acceptance of the EHR:

Dislike very much and don’t want to use

Like very much and eager to use

The following five questions ask about specific parts of the EHR.

9. What are your overall reactions to order entry (CPOE)?
   a. Difficult
   b. Frustrating

10. Order entry (CPOE) functions as I expect.
   c. Never

11. What are your overall reactions to the electronic medication administration record (eMAR)?
   d. Difficult
   e. Frustrating

12. The electronic medication administration record (eMAR) functions as I expect.
   f. Never

13. What are your overall reactions to the nursing flowsheet?
   g. Difficult
   h. Frustrating

The following questions ask specifically about the CPOE or order entry system of the EHR.

14. The order entry system is reliable – it does its job consistently.

15. Order entry improves my productivity.

16. Order entry has a negative impact on patient care.

17. Order entry reduces patient care errors.

18. The order entry system is easy to use.

19. Compared to paper ordering, order entry slows me down.

20. Order entry gives me the information I need to write better orders.

21. I feel I had adequate training on order entry.

22. Order entry improves the quality of patient care.

23. System response time on order entry is slow.

24. When I have a problem with order entry, I just ask someone for help.
25. I feel that I can benefit from refresher classes on order entry. | Never | It varies | Always |
<table>
<thead>
<tr>
<th></th>
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<th></th>
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</thead>
<tbody>
<tr>
<td></td>
<td>1</td>
<td>2</td>
</tr>
</tbody>
</table>

26. When I need help on order entry, I can find it. | Never | It varies | Always |
<table>
<thead>
<tr>
<th></th>
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</thead>
<tbody>
<tr>
<td></td>
<td>1</td>
<td>2</td>
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</tbody>
</table>

27. Overall, order entry improves the safety of care I provide. | Never | It varies | Always |
<table>
<thead>
<tr>
<th></th>
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</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>1</td>
<td>2</td>
</tr>
</tbody>
</table>

28. Overall, order entry saves me time. | Never | It varies | Always |
<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>1</td>
<td>2</td>
</tr>
</tbody>
</table>

29. Overall, I am satisfied with the order entry system. | Never | It varies | Always |
<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
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</thead>
<tbody>
<tr>
<td></td>
<td>1</td>
<td>2</td>
</tr>
</tbody>
</table>

The following questions ask about the usefulness of specific features in order entry (CPOE).

<table>
<thead>
<tr>
<th>Feature</th>
<th>Not useful at all</th>
<th>It varies</th>
<th>Extremely useful</th>
<th>Never use this feature</th>
</tr>
</thead>
<tbody>
<tr>
<td>30. Order sets</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>31. Writing orders from off the patient floor</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>32. Orders with pre-filled medication dose, frequency and indication</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
</tr>
</tbody>
</table>

How useful are the following features in identifying a problem with a medication order?

<table>
<thead>
<tr>
<th>Feature</th>
<th>Not useful at all</th>
<th>It varies</th>
<th>Extremely useful</th>
</tr>
</thead>
<tbody>
<tr>
<td>33. Allergy warnings</td>
<td>1</td>
<td>2</td>
<td>3</td>
</tr>
<tr>
<td>34. Drug-drug interaction warnings</td>
<td>1</td>
<td>2</td>
<td>3</td>
</tr>
<tr>
<td>35. Duplicate medication order warnings</td>
<td>1</td>
<td>2</td>
<td>3</td>
</tr>
</tbody>
</table>

How useful are the following features in correcting a problem with a medication order?

<table>
<thead>
<tr>
<th>Feature</th>
<th>Not useful at all</th>
<th>It varies</th>
<th>Extremely useful</th>
</tr>
</thead>
<tbody>
<tr>
<td>36. Allergy warnings</td>
<td>1</td>
<td>2</td>
<td>3</td>
</tr>
<tr>
<td>37. Drug-drug interaction warnings</td>
<td>1</td>
<td>2</td>
<td>3</td>
</tr>
<tr>
<td>38. Duplicate medication order warnings</td>
<td>1</td>
<td>2</td>
<td>3</td>
</tr>
</tbody>
</table>

The following questions ask about drug alerts in the EHR.

39. How often do you override the drug alerts in the EHR?

<table>
<thead>
<tr>
<th>Never</th>
<th>It varies</th>
<th>Always</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>2</td>
<td>3</td>
</tr>
</tbody>
</table>
To what extent do you agree or disagree with the following statements about drug alerts?

<table>
<thead>
<tr>
<th>Statement</th>
<th>Strongly Disagree</th>
<th>Moderately Disagree</th>
<th>Neither Disagree Nor Agree</th>
<th>Moderately Agree</th>
<th>Strongly Agree</th>
<th>Not Sure/Not Applicable</th>
</tr>
</thead>
<tbody>
<tr>
<td>40. Drug alerts help me prescribe safely.</td>
<td>☐₁</td>
<td>☐₂</td>
<td>☐₃</td>
<td>☐₄</td>
<td>☐₅</td>
<td>☐₆</td>
</tr>
<tr>
<td>41. Drug alerts often identify interactions which are clinically useful.</td>
<td>☐₁</td>
<td>☐₂</td>
<td>☐₃</td>
<td>☐₄</td>
<td>☐₅</td>
<td>☐₆</td>
</tr>
<tr>
<td>42. Drug alerts identify clinical situations where an alternative medicine may be less of a risk</td>
<td>☐₁</td>
<td>☐₂</td>
<td>☐₃</td>
<td>☐₄</td>
<td>☐₅</td>
<td>☐₆</td>
</tr>
</tbody>
</table>

In your experience with EHR thus far, to what extent has each of the following factors limited your use of the EHR drug alert system in your practice?

<table>
<thead>
<tr>
<th>Factor</th>
<th>A great deal</th>
<th>Moderately</th>
<th>Somewhat</th>
<th>A little</th>
<th>Not at all</th>
<th>Not sure</th>
</tr>
</thead>
<tbody>
<tr>
<td>43. Too many non-relevant alerts</td>
<td>☐₁</td>
<td>☐₂</td>
<td>☐₃</td>
<td>☐₄</td>
<td>☐₅</td>
<td>☐₆</td>
</tr>
<tr>
<td>44. Lack of time to review alerts</td>
<td>☐₁</td>
<td>☐₂</td>
<td>☐₃</td>
<td>☐₄</td>
<td>☐₅</td>
<td>☐₆</td>
</tr>
<tr>
<td>45. Lack of trust in content of alert</td>
<td>☐₁</td>
<td>☐₂</td>
<td>☐₃</td>
<td>☐₄</td>
<td>☐₅</td>
<td>☐₆</td>
</tr>
<tr>
<td>46. Alert does not allow for tailoring to providers’ individual needs (e.g., cannot turn alert function on/off)</td>
<td>☐₁</td>
<td>☐₂</td>
<td>☐₃</td>
<td>☐₄</td>
<td>☐₅</td>
<td>☐₆</td>
</tr>
<tr>
<td>47. Poor visual presentation (e.g., too much information displayed, difficult to read)</td>
<td>☐₁</td>
<td>☐₂</td>
<td>☐₃</td>
<td>☐₄</td>
<td>☐₅</td>
<td>☐₆</td>
</tr>
</tbody>
</table>

Section D. About your quality of working life...

Please indicate to what extent you agree or disagree with the following statements.

<table>
<thead>
<tr>
<th>Statement</th>
<th>Strongly Disagree</th>
<th>Disagree</th>
<th>Neither Disagree Nor Agree</th>
<th>Agree</th>
<th>Strongly Agree</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. In general, I am satisfied with the quality of care that I provide.</td>
<td>☐₁</td>
<td>☐₂</td>
<td>☐₃</td>
<td>☐₄</td>
<td>☐₅</td>
</tr>
<tr>
<td>2. I have enough time to complete patient care tasks safely.</td>
<td>☐₁</td>
<td>☐₂</td>
<td>☐₃</td>
<td>☐₄</td>
<td>☐₅</td>
</tr>
<tr>
<td>3. I usually have plenty to do; but I can always follow rules and procedures related to patient safety and standards of care.</td>
<td>☐₁</td>
<td>☐₂</td>
<td>☐₃</td>
<td>☐₄</td>
<td>☐₅</td>
</tr>
<tr>
<td>4. We have patient safety problems in our unit.</td>
<td>☐₁</td>
<td>☐₂</td>
<td>☐₃</td>
<td>☐₄</td>
<td>☐₅</td>
</tr>
<tr>
<td>5. I feel that it is just pure luck that more serious mistakes don’t happen around here.</td>
<td>☐₁</td>
<td>☐₂</td>
<td>☐₃</td>
<td>☐₄</td>
<td>☐₅</td>
</tr>
</tbody>
</table>
6. How often does an error occur when a medication is ordered?  
- Never  
- A few times a year or less, almost never  
- Once a month or less, rarely  
- A few times a month, sometimes  
- Once a week, rather often  
- A few times a week, nearly all the time  
- Every day

7. If an error occurs when a medication is ordered, how often is it detected before it can lead to an adverse event?  
- Never  
- A few times a month, sometimes  
- Once a week, rather often  
- A few times a week, nearly all the time  
- Every day

---

The following questions deal with the workload that you experience in your job. Please put an ‘X’ on each of the following six scales at the point that matches your overall experience of workload.

8. **Mental demand.** How much mental activity is required to perform your job (thinking, deciding, calculating, remembering, looking, searching, etc…)?

9. **Physical demand.** How much physical activity is required to perform your job (e.g., pushing, pulling, turning, controlling, activating, etc.)?

10. **Temporal demand.** How much time pressure do you feel due to the rate or pace at which the tasks or task elements occurred?

11. **Effort.** How hard do you have to work (mentally and physically) to accomplish your level of performance?

12. **Performance.** How satisfied are you with your performance at your job?

13. **Frustration level.** How insecure, discouraged, irritated, stressed and annoyed versus secure, gratified, content, relaxed and complacent do you feel about your job?

14. In general, how much influence do you have over work and work-related factors?

15. I feel emotionally drained from my work.

16. I feel used up at the end of the workday.

17. I feel fatigued when I get up in the morning and have to face another day on the job.

18. Working all day is really a strain for me.

19. I feel burned out from my work.
20. All in all, how satisfied would you say you are with your job?

<table>
<thead>
<tr>
<th>Not at all satisfied</th>
<th>Not too satisfied</th>
<th>Somewhat satisfied</th>
<th>Very satisfied</th>
</tr>
</thead>
<tbody>
<tr>
<td>□ 1</td>
<td>□ 2</td>
<td>□ 3</td>
<td>□ 4</td>
</tr>
</tbody>
</table>

21. How likely is it that you will actively look for a new job in the next year?

<table>
<thead>
<tr>
<th>Not at all likely</th>
<th>Somewhat likely</th>
<th>Quite likely</th>
<th>Extremely likely</th>
</tr>
</thead>
<tbody>
<tr>
<td>□ 1</td>
<td>□ 2</td>
<td>□ 3</td>
<td>□ 4 □ 5 □ 6 □ 7</td>
</tr>
</tbody>
</table>

Section E. About you…

1. What is your gender? □ 1 Male □ 2 Female

2. What is your education level? (Check only one)
   □ 1 Graduated from college (BA, BS) □ 2 Some graduate school □ 3 Graduate degree (Masters, Ph.D., M.D.)

3. How old are you? □ 1 34 or less □ 2 35-44 □ 3 45-54 □ 4 55+

4. Are you of Hispanic or Latino origin? □ 1 Yes □ 2 No

5. What is your racial background? (Check all that apply)
   □ 1 American Indian / Alaska Native □ 2 Asian □ 3 Native Hawaiian or Other Pacific Islander □ 4 Black / African American □ 5 White □ 6 Other (please specify):_______________

6. How many years of computer experience do you have?
   □ 1 Less than 1 year □ 2 2-3 years □ 3 4-5 years □ 4 6-10 years □ 5 11-20 years □ 6 More than 20 years

7. How much experience do you have with the EPIC in the Outpatient setting?
   □ 1 None, or very little □ 2 A little □ 3 Moderate amount □ 4 Much □ 5 Very much

8. How much experience do you have using computers?
   □ 1 I never use it □ 2 Occasional user □ 3 □ 4 I am a regular and expert user □ 5 □ 6 □ 7
Please write any comments you may want to share with the research team.

Thank you very much for your participation in this study.
When utilizing this document please cite:


