



Center for Quality and
Productivity Improvement
University of Wisconsin-Madison



Survey on EHR/CPOE for Geisinger ICU Nurses



1 year after the implementation...

Letter to Geisinger Intensive Care Unit Staff

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,

Pascale Carayon

James M. Walker, MD

Pascale Carayon, Ph.D.
Professor, Industrial and Systems Engineering
University of Wisconsin-Madison
608-265-0503 carayon@engr.wisc.edu

Jim Walker, MD, FACP
Chief Health Information Officer
Geisinger Health System
570-271-6750 jmwalker@geisinger.edu

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:

| | Strongly Disagree | Disagree | Neither Disagree Nor Agree | Agree | Strongly Agree |
|--|--------------------------|--------------------------|-------------------------------------|--------------------------|--------------------------|
| 1. Communication with people on this ICU is very open. | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |

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...

1. How long have you worked for Geisinger? _____ years _____ months
2. What unit do you primarily work on? ₁ Adult ICU ₂ Cardiac ICU ₃ Pediatric ICU ₄ Neonatal ICU
3. How long have you worked on your current ICU? _____ years _____ months
4. How many hours do you work at your job in an average week? _____ hours per week
5. When during the week do you typically work? ₁ Weekdays ₂ Weekends ₃ Both
6. When do you typically work? ₁ Day (first shift) ₂ Evening (second shift) ₃ Night (third shift)
7. How long is your typical shift? ₁ 8 hours ₂ 12 hours ₃ Other: _____

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

| | Strongly Disagree | Disagree | Neither Disagree Nor Agree | Agree | Strongly Agree |
|---|---------------------------------------|---------------------------------------|---------------------------------------|---------------------------------------|---------------------------------------|
| 1. Communication with <u>nurses</u> on this ICU is very open. | <input type="checkbox"/> ₁ | <input type="checkbox"/> ₂ | <input type="checkbox"/> ₃ | <input type="checkbox"/> ₄ | <input type="checkbox"/> ₅ |
| 2. It is easy to ask advice from <u>nurses</u> on this ICU. | <input type="checkbox"/> ₁ | <input type="checkbox"/> ₂ | <input type="checkbox"/> ₃ | <input type="checkbox"/> ₄ | <input type="checkbox"/> ₅ |
| 3. Communication with <u>physicians/PAs/NPs</u> on this ICU is very open. | <input type="checkbox"/> ₁ | <input type="checkbox"/> ₂ | <input type="checkbox"/> ₃ | <input type="checkbox"/> ₄ | <input type="checkbox"/> ₅ |
| 4. It is easy to ask advice from <u>physicians/PAs/NPs</u> on this ICU. | <input type="checkbox"/> ₁ | <input type="checkbox"/> ₂ | <input type="checkbox"/> ₃ | <input type="checkbox"/> ₄ | <input type="checkbox"/> ₅ |
| 5. I can think of a number of times when I received incorrect information regarding patient care from <u>nurses</u> on this ICU. | <input type="checkbox"/> ₁ | <input type="checkbox"/> ₂ | <input type="checkbox"/> ₃ | <input type="checkbox"/> ₄ | <input type="checkbox"/> ₅ |
| 6. It is often necessary for me to go back and check the accuracy of information regarding patient care I have received from <u>nurses</u> on this ICU. | <input type="checkbox"/> ₁ | <input type="checkbox"/> ₂ | <input type="checkbox"/> ₃ | <input type="checkbox"/> ₄ | <input type="checkbox"/> ₅ |
| 7. I can think of a number of times when I received incorrect information regarding patient care from <u>physicians/PAs/NPs</u> on this ICU. | <input type="checkbox"/> ₁ | <input type="checkbox"/> ₂ | <input type="checkbox"/> ₃ | <input type="checkbox"/> ₄ | <input type="checkbox"/> ₅ |
| 8. It is often necessary for me to go back and check the accuracy of information regarding patient care I have received from <u>physicians/PAs/NPs</u> on this ICU. | <input type="checkbox"/> ₁ | <input type="checkbox"/> ₂ | <input type="checkbox"/> ₃ | <input type="checkbox"/> ₄ | <input type="checkbox"/> ₅ |
| 9. I get information on the status of patients when I need it. | <input type="checkbox"/> ₁ | <input type="checkbox"/> ₂ | <input type="checkbox"/> ₃ | <input type="checkbox"/> ₄ | <input type="checkbox"/> ₅ |
| 10. When a patient's status changes, I get relevant information quickly. | <input type="checkbox"/> ₁ | <input type="checkbox"/> ₂ | <input type="checkbox"/> ₃ | <input type="checkbox"/> ₄ | <input type="checkbox"/> ₅ |
| 11. In matters pertaining to patient care, nurses call physicians in a timely manner. | <input type="checkbox"/> ₁ | <input type="checkbox"/> ₂ | <input type="checkbox"/> ₃ | <input type="checkbox"/> ₄ | <input type="checkbox"/> ₅ |
| 12. There is effective communication between <u>nurses</u> across shifts. | <input type="checkbox"/> ₁ | <input type="checkbox"/> ₂ | <input type="checkbox"/> ₃ | <input type="checkbox"/> ₄ | <input type="checkbox"/> ₅ |

| | Strongly Disagree | Disagree | Neither Disagree Nor Agree | Agree | Strongly Agree |
|---|---------------------------------------|---------------------------------------|---------------------------------------|---------------------------------------|---------------------------------------|
| 13. Nurses associated with the unit are well informed regarding events occurring on other shifts. | <input type="checkbox"/> ₁ | <input type="checkbox"/> ₂ | <input type="checkbox"/> ₃ | <input type="checkbox"/> ₄ | <input type="checkbox"/> ₅ |
| 14. There is effective communication between physicians/PAs/NPs across shifts. | <input type="checkbox"/> ₁ | <input type="checkbox"/> ₂ | <input type="checkbox"/> ₃ | <input type="checkbox"/> ₄ | <input type="checkbox"/> ₅ |
| 15. Physicians/PAs/NPs associated with the unit are well informed regarding events occurring on other shifts. | <input type="checkbox"/> ₁ | <input type="checkbox"/> ₂ | <input type="checkbox"/> ₃ | <input type="checkbox"/> ₄ | <input type="checkbox"/> ₅ |

| | Not at all effective | Slightly effective | Moderately effective | Effective | Very effective |
|---|---------------------------------------|---------------------------------------|---------------------------------------|---------------------------------------|---------------------------------------|
| 16. To what extent does <u>one-to-one communication</u> between staff contribute to the coordination of staff activities <u>within your ICU</u> ? | <input type="checkbox"/> ₁ | <input type="checkbox"/> ₂ | <input type="checkbox"/> ₃ | <input type="checkbox"/> ₄ | <input type="checkbox"/> ₅ |
| 17. To what extent do <u>daily staff rounds</u> contribute to the coordination of staff activities <u>within your ICU</u> ? | <input type="checkbox"/> ₁ | <input type="checkbox"/> ₂ | <input type="checkbox"/> ₃ | <input type="checkbox"/> ₄ | <input type="checkbox"/> ₅ |

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 | <input type="checkbox"/> ₁ | <input type="checkbox"/> ₂ | <input type="checkbox"/> ₃ | <input type="checkbox"/> ₄ | <input type="checkbox"/> ₅ | <input type="checkbox"/> ₆ | <input type="checkbox"/> ₇ | <input type="checkbox"/> ₈ | <input type="checkbox"/> ₉ | <input type="checkbox"/> ₁₀ | Easy |
| 2. Exploring new features by trial and error | Difficult | <input type="checkbox"/> ₁ | <input type="checkbox"/> ₂ | <input type="checkbox"/> ₃ | <input type="checkbox"/> ₄ | <input type="checkbox"/> ₅ | <input type="checkbox"/> ₆ | <input type="checkbox"/> ₇ | <input type="checkbox"/> ₈ | <input type="checkbox"/> ₉ | <input type="checkbox"/> ₁₀ | Easy |
| 3. Remembering names and use of commands | Difficult | <input type="checkbox"/> ₁ | <input type="checkbox"/> ₂ | <input type="checkbox"/> ₃ | <input type="checkbox"/> ₄ | <input type="checkbox"/> ₅ | <input type="checkbox"/> ₆ | <input type="checkbox"/> ₇ | <input type="checkbox"/> ₈ | <input type="checkbox"/> ₉ | <input type="checkbox"/> ₁₀ | Easy |
| 4. Tasks can be performed in a straightforward manner. | Never | <input type="checkbox"/> ₁ | <input type="checkbox"/> ₂ | <input type="checkbox"/> ₃ | <input type="checkbox"/> ₄ | <input type="checkbox"/> ₅ | <input type="checkbox"/> ₆ | <input type="checkbox"/> ₇ | <input type="checkbox"/> ₈ | <input type="checkbox"/> ₉ | <input type="checkbox"/> ₁₀ | Always |
| 5. Help messages on screen | Unhelpful | <input type="checkbox"/> ₁ | <input type="checkbox"/> ₂ | <input type="checkbox"/> ₃ | <input type="checkbox"/> ₄ | <input type="checkbox"/> ₅ | <input type="checkbox"/> ₆ | <input type="checkbox"/> ₇ | <input type="checkbox"/> ₈ | <input type="checkbox"/> ₉ | <input type="checkbox"/> ₁₀ | Helpful |
| 6. Experienced and inexperienced users' needs are taken into consideration | Never | <input type="checkbox"/> ₁ | <input type="checkbox"/> ₂ | <input type="checkbox"/> ₃ | <input type="checkbox"/> ₄ | <input type="checkbox"/> ₅ | <input type="checkbox"/> ₆ | <input type="checkbox"/> ₇ | <input type="checkbox"/> ₈ | <input type="checkbox"/> ₉ | <input type="checkbox"/> ₁₀ | Always |
| 7. Correcting your mistakes | Difficult | <input type="checkbox"/> ₁ | <input type="checkbox"/> ₂ | <input type="checkbox"/> ₃ | <input type="checkbox"/> ₄ | <input type="checkbox"/> ₅ | <input type="checkbox"/> ₆ | <input type="checkbox"/> ₇ | <input type="checkbox"/> ₈ | <input type="checkbox"/> ₉ | <input type="checkbox"/> 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 |
| <input type="checkbox"/> ₁ | <input type="checkbox"/> ₂ | <input type="checkbox"/> ₃ | <input type="checkbox"/> ₄ | <input type="checkbox"/> ₅ | <input type="checkbox"/> ₆ | <input type="checkbox"/> ₇ | <input type="checkbox"/> ₈ | <input type="checkbox"/> ₉ | <input type="checkbox"/> ₁₀ | | | |

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

9. What are your overall reactions to order entry (CPOE)?

a. Difficult ₀ ₁ ₂ ₃ ₄ ₅ ₆ ₇ ₈ ₉ Easy

b. Frustrating ₀ ₁ ₂ ₃ ₄ ₅ ₆ ₇ ₈ ₉ Satisfying

10. Order entry (CPOE) functions as I expect.

c. Never ₀ ₁ ₂ ₃ ₄ ₅ ₆ ₇ ₈ ₉ Always

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

d. Difficult ₀ ₁ ₂ ₃ ₄ ₅ ₆ ₇ ₈ ₉ Easy

e. Frustrating ₀ ₁ ₂ ₃ ₄ ₅ ₆ ₇ ₈ ₉ Satisfying

12. The electronic medication administration record (eMAR) functions as I expect.

f. Never ₀ ₁ ₂ ₃ ₄ ₅ ₆ ₇ ₈ ₉ Always

13. What are your overall reactions to the nursing flowsheet?

g. Difficult ₀ ₁ ₂ ₃ ₄ ₅ ₆ ₇ ₈ ₉ Easy

h. Frustrating ₀ ₁ ₂ ₃ ₄ ₅ ₆ ₇ ₈ ₉ Satisfying

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

| | Never | | | It varies | | | Always |
|--|---------------------------------------|---------------------------------------|---------------------------------------|---------------------------------------|---------------------------------------|---------------------------------------|---------------------------------------|
| 14. The order entry system is reliable – it does its job consistently. | <input type="checkbox"/> ₁ | <input type="checkbox"/> ₂ | <input type="checkbox"/> ₃ | <input type="checkbox"/> ₄ | <input type="checkbox"/> ₅ | <input type="checkbox"/> ₆ | <input type="checkbox"/> ₇ |
| 15. Order entry improves my productivity. | <input type="checkbox"/> ₁ | <input type="checkbox"/> ₂ | <input type="checkbox"/> ₃ | <input type="checkbox"/> ₄ | <input type="checkbox"/> ₅ | <input type="checkbox"/> ₆ | <input type="checkbox"/> ₇ |
| 16. Order entry has a negative impact on patient care. | <input type="checkbox"/> ₁ | <input type="checkbox"/> ₂ | <input type="checkbox"/> ₃ | <input type="checkbox"/> ₄ | <input type="checkbox"/> ₅ | <input type="checkbox"/> ₆ | <input type="checkbox"/> ₇ |
| 17. Order entry reduces patient care errors. | <input type="checkbox"/> ₁ | <input type="checkbox"/> ₂ | <input type="checkbox"/> ₃ | <input type="checkbox"/> ₄ | <input type="checkbox"/> ₅ | <input type="checkbox"/> ₆ | <input type="checkbox"/> ₇ |
| 18. The order entry system is easy to use. | <input type="checkbox"/> ₁ | <input type="checkbox"/> ₂ | <input type="checkbox"/> ₃ | <input type="checkbox"/> ₄ | <input type="checkbox"/> ₅ | <input type="checkbox"/> ₆ | <input type="checkbox"/> ₇ |
| 19. Compared to paper ordering, order entry slows me down. | <input type="checkbox"/> ₁ | <input type="checkbox"/> ₂ | <input type="checkbox"/> ₃ | <input type="checkbox"/> ₄ | <input type="checkbox"/> ₅ | <input type="checkbox"/> ₆ | <input type="checkbox"/> ₇ |
| 20. Order entry gives me the information I need to write better orders. | <input type="checkbox"/> ₁ | <input type="checkbox"/> ₂ | <input type="checkbox"/> ₃ | <input type="checkbox"/> ₄ | <input type="checkbox"/> ₅ | <input type="checkbox"/> ₆ | <input type="checkbox"/> ₇ |
| 21. I feel I had adequate training on order entry. | <input type="checkbox"/> ₁ | <input type="checkbox"/> ₂ | <input type="checkbox"/> ₃ | <input type="checkbox"/> ₄ | <input type="checkbox"/> ₅ | <input type="checkbox"/> ₆ | <input type="checkbox"/> ₇ |
| 22. Order entry improves the quality of patient care. | <input type="checkbox"/> ₁ | <input type="checkbox"/> ₂ | <input type="checkbox"/> ₃ | <input type="checkbox"/> ₄ | <input type="checkbox"/> ₅ | <input type="checkbox"/> ₆ | <input type="checkbox"/> ₇ |
| 23. System response time on order entry is slow. | <input type="checkbox"/> ₁ | <input type="checkbox"/> ₂ | <input type="checkbox"/> ₃ | <input type="checkbox"/> ₄ | <input type="checkbox"/> ₅ | <input type="checkbox"/> ₆ | <input type="checkbox"/> ₇ |
| 24. When I have a problem with order entry, I just ask someone for help. | <input type="checkbox"/> ₁ | <input type="checkbox"/> ₂ | <input type="checkbox"/> ₃ | <input type="checkbox"/> ₄ | <input type="checkbox"/> ₅ | <input type="checkbox"/> ₆ | <input type="checkbox"/> ₇ |
| 25. I feel that I can benefit from refresher classes on order entry. | <input type="checkbox"/> ₁ | <input type="checkbox"/> ₂ | <input type="checkbox"/> ₃ | <input type="checkbox"/> ₄ | <input type="checkbox"/> ₅ | <input type="checkbox"/> ₆ | <input type="checkbox"/> ₇ |
| 26. When I need help on order entry, I can find it. | <input type="checkbox"/> ₁ | <input type="checkbox"/> ₂ | <input type="checkbox"/> ₃ | <input type="checkbox"/> ₄ | <input type="checkbox"/> ₅ | <input type="checkbox"/> ₆ | <input type="checkbox"/> ₇ |
| 27. Overall, order entry improves the safety of care I provide. | <input type="checkbox"/> ₁ | <input type="checkbox"/> ₂ | <input type="checkbox"/> ₃ | <input type="checkbox"/> ₄ | <input type="checkbox"/> ₅ | <input type="checkbox"/> ₆ | <input type="checkbox"/> ₇ |

| | Never | | It varies | | | Always | |
|--|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|
| 28. Overall, order entry saves me time. | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 29. Overall, I am satisfied with the order entry system. | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |

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

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

| | Strongly Disagree | Disagree | Neither Disagree Nor Agree | Agree | Strongly Agree |
|---|--------------------------|--------------------------|----------------------------|--------------------------|--------------------------|
| 1. In general, I am satisfied with the quality of care that I provide. | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 2. I have enough time to complete patient care tasks safely. | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 3. I usually have plenty to do; but I can always follow rules and procedures related to patient safety and standards of care. | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 4. We have patient safety problems in our unit. | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 5. I feel that it is just pure luck that more serious mistakes don't happen around here. | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |

| | 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 |
|--|--------------------------|--|------------------------------|--------------------------------|---------------------------|---|--------------------------|
| 6. How often does an error occur when a medication is ordered? | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 7. If an error occurs when a medication is ordered, how often is it detected before it can lead to an adverse event? | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |

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?

Less than 1 year

₁

2-3 years

₂

4-5 years

₃

6-10 years

₄

11-20 years

₅

More than 20 years

₆

7. How much experience do you have with the EPIC in the Outpatient setting?

None, or very little

₁

A little

₂

Moderate amount

₃

Much

₄

Very much

₅

8. How much experience do you have using computers?

I never use it

₁

₂

₃

Occasional user

₄

₅

₆

I am a regular and expert user

₇

Please write any comments you may want to share with the research team.

Thank you very much for your participation in this study.