

FEATURE

ARTICLE

Evaluating the Barriers to Point-of-Care Documentation for Nursing Staff

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The Institute of Medicine's report entitled "To Err Is Human: Building a Safer Health System" argues that "health care organizations must develop a 'culture of safety,'" which includes "enabling care providers to avoid reliance on memory."¹ Documenting care at the time that care is delivered increases the accuracy of the documentation. Clinicians accustomed to documenting outside the patient room frequently write information about the patient encounter on paper to transfer to the electronic health record (EHR) at a later time.^{2,3} Delays in entering data can result in corruption of the data and can cause delays in treatment or errors in treatment,^{4,5} as information that is not recorded at the time of delivery might be forgotten as the clinician moves to the next patient encounter.

Point-of-care (POC) charting has been proposed as an effective method of capturing patient data.⁵ With POC charting, information is entered where care is delivered, providing all patient care providers with accurate information in a timely manner, increasing accuracy,⁶ and therefore providing increased patient safety.^{5,7} Barriers to documenting at the bedside must be identified and addressed to facilitate the success of POC documentation.⁷ Studies have shown that nurses have diverse reasons for being hesitant to use electronic documentation, including incorporating EHR documentation into existing workflow,^{8,9} increased time to log on and off the system,¹⁰ and increased time to document.¹¹ However, these studies involved nursing perspective on EHR documentation, not POC documentation. A study of patient perceptions of



Point-of-care documentation has been identified as a patient safety measure for improving accuracy and timeliness of data. To evaluate the barriers that nurses and nurse aide/clinical technicians encounter for electronic point-of-care documentation, we conducted surveys on a telemetry unit at a southwestern Pennsylvania community hospital. Our first survey revealed that the location of the in-room computers, perceived lack of in-room computer reliability, Health Insurance Portability and Accountability Act/privacy concerns, and perceptions of the patients' response to charting on computers in patient rooms were all barriers to point-of-care documentation. Our second survey revealed that workflow priority issues were also a barrier to point-of-care documentation, as staff members did not rate documentation as a high priority in terms of delivering timely medical care. Changes in both nursing practices and hospital infrastructure may be needed if these barriers to point-of-care documentation are to be overcome.

KEY WORDS

Barriers • Bedside documentation •
 Electronic documentation • Nursing •
 Point of care • Workflow

POC documentation found that perceptions that staff members were using the computer for non-work-related activity, concerns over data security, particularly in the presence of technical problems during data entry, and worries about confidentiality with regard to visitors seeing information on the screen all contribute to negative perceptions of POC documentation.¹² Negative reaction from patients can influence nurses' opinions of electronic POC documentation and consequently their willingness

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to use it. We are unaware of any previous studies that examine barriers to POC documentation for nursing staff.

Barriers and resistance can be expected any time changes are implemented.⁷ A recent article by Lee and McElmurry⁸ on nursing workflow disruptions pointed out that adding computerized charting requires changes in workflow. As understanding the potential barriers to use may be a necessary step in designing systems that will meet the goals of effective POC documentation, this study examines barriers that the nursing staff encounters during POC documentation. We also examine and explore the possibility that placing a low priority on documentation might present a barrier to POC documentation for nursing staff.

METHODS

Study Setting

The study was conducted during the summer of 2010 in a 48-bed telemetry unit in a southwestern Pennsylvania hospital. This unit was chosen because it had the largest staff in the hospital, allowing for a larger sample size for the study. Approval to conduct the study was received from the vice president of Patient Care Services and the unit manager. The study results are being used as part of a quality improvement project for the hospital's health care system. As the study consisted of staff interviews and surveys in the interest of quality improvement, it was determined that institutional review board approval was not required.

The staff of the telemetry unit had been using full electronic documentation since 2008 using a customized charting application, referred to locally as BEACON (Bridging Electronics and Clinicians Online) (McKesson, San Francisco, CA). In-room computers are mounted to the walls of the patient rooms in the telemetry unit. The configuration and small size of the rooms, along with electrical code requirements, limited the options for the type and placement of the computers. Some of the computers in the telemetry unit are mounted on the wall at the foot of the patient beds, while others are mounted on walls beside the patient beds. Although unit managers in the hospital had been encouraging the staff to document at the POC, audits of hospital-wide computer use had shown little in-room computer use.

Study Design

This qualitative study used two instruments developed to assess nursing staff's attitude towards POC charting and their workflow priorities. The first, the electronic documentation interview, was an interview that contained

both structured and open-ended questions designed to elicit discussion of barriers to POC documentation. This instrument was used in interview settings (Table 1).

The second questionnaire, the workflow survey, was designed to identify if documentation was considered a high priority relative to other tasks. This questionnaire contained closed-ended checkbox style questions that rated priority of tasks that nursing staff encounter during a scheduled shift. Specifically, the survey asked when (time of day) various activities occurred, what the priority of completing each activity was for the respondent in terms of personal preference, and what the priority

Table 1

Sample Questions Included in the Workflow Survey and Electronic Documentation Interview



Workflow Survey and Electronic Documentation Interview Shared Questions

- Demographic questions
 - What is your sex?
 - What is your job title?
 - What shift do you usually work?
- Opinions on EHRs (Likert scale, strongly agree to strongly disagree)
 - The use of EHRs helps improve patient care.
 - Using electronic documentation improves the quality of documentation related to patient care.
 - Electronic health records provide more security to patient's privacy than paper records.
 - Computerized charting decreases the workload of the nursing staff.

Electronic Documentation Interview

- What aspects of the charting process work better now than they did before BEACON electronic documentation?
- What aspects of the charting process work worse now than they did before BEACON electronic documentation?
- What are the elements of the BEACON electronic documentation system that you like?
- What are the elements to the BEACON electronic documentation system that you dislike?
- Overall, what would have to change to make you more likely document on the computer in the patient's room?

Workflow Questions

- When do these activities most often occur during your typical day at work (variables)?
- Please rate the priority of completing the following activities that occur on the typical day at work (variables).
- Variables: rounding with physician, completing/executing physician orders, obtaining patient physical assessment, obtaining patient vital signs, medication administration, assisting patient with ADLs, dressing changes, planning/coordinating care for patient, updating/educating patient and family, preparing patient for tests/surgery and their documentation

of completing the task was for the respondent in terms of timely medical care. These questions were intended to determine whether charting was not occurring at the POC because other tasks were perceived to be of higher priority, and if nursing staff perceived the priority of charting differently if it were discussed in terms of timely medical care as opposed to personal preference. The scale ratings were from highest priority (must be done immediately) to important (can be done later). This rating scale was based on the assumption that all nursing tasks listed would be considered important, but some would be more urgent than others.

Both the electronic documentation interview and the workflow survey contained the same questions on demographic information and opinions about electronic medical records. Demographic questions about sex, highest level of education, and hours per week of computer use outside work were added to determine whether these were factors in the use of computers for electronic documentation in the room. Questions on opinions of EHRs were used to explore potential relationships between attitudes to EHR and utilization of POC charting. Validated questions from a study by Moody et al³ were modified to identify nurses' perceptions of barriers and attitudes about EHRs and POC documentation.

Electronic Documentation Interviews

The electronic documentation structured interviews were conducted during the course of the RNs' and nurse assistants/clinical technician's (NA/CTs') scheduled shifts, as time permitted. Participation was limited to RNs and NA/CTs who worked on the telemetry unit. A total of 20 participants including 14 RNs and six NA/CTs were interviewed. Participants were recruited during their scheduled shift upon availability. The electronic documentation interviews consisted of manual completion of the survey, along with open-ended questions to elicit discussion. Data were collected both in a group setting on a night shift and in one-on-one interviews during a day shift.

Workflow Surveys

The workflow survey was a questionnaire in paper form. It was designed to be filled out by the nurses independently at their convenience. We distributed paper surveys to the telemetry unit nursing manager for distribution to the staff. We also left the surveys out at the main nurse station and went to the telemetry unit several times during the 2-week period to encourage staff to take the survey. Twenty-four workflow surveys were completed. Participation was limited to RNs and NA/CTs who worked on the telemetry unit. A total of 24 participants volunteered for this survey, including 16 RNs and eight

NA/CTs. Seven of the RN respondents and four of the NA/CT respondents had also completed the electronic documentation interview.

ANALYSIS

The data collected were examined to see if there was any relation between the categorical variables in the surveys and the nonuse of POC documentation. To identify the common themes, data analysis was conducted by plotting the responses to each question against the options presented. The responses obtained in the interviews were used to collect all of the barriers identified by the participants.

RESULTS

Electronic Documentation Interview Results

Electronic documentation interview subjects were from 20 to 65 years old, with 55% younger than 36 years (Table 2). Eighteen were females, and two were males. Fourteen participants were RNs, and six were NAs or CTs. Of the RNs, one was an RN-MSN, five were RN-BSNs, three were RN-ADNs, and five were RN diploma nurses (Table 2). Of the 14 RN respondents, three had been nurses for less than 2 years, five had been a nurse for 3 to 5 years, two had 16 to 25 years of experience, and three had been a nurse for more than 25 years. Forty-five percent of the respondents used the computer from 1 to 3 hours a week outside work, and 35% used the computer more than 7 hours a week outside work (Table 2).

Eighty percent of the respondents agreed that EHRs help improve patient care. However, opinions as to whether computerized charting decreases the workload of nursing staff were mixed. Forty-five percent of the respondents agreed or strongly agreed that computerized charting decreases the workload of nursing staff, 35% of the respondents were neutral to the question and 20% of the respondents disagreed or strongly disagreed.

In response to the question "With electronic documentation where do you usually chart the following?," most items were charted outside the patient room. Comparing where nursing staff documented before and after the switch to electronic documentation (Table 3) responses indicate some potential increase in charting in the room, but the small number of responses prevents the identification of any statistically significant changes. Little change was noted in charting outside patient rooms.

For the follow-up question "Please describe the factors that influence your choice of location for charting these

Table 2**Demographic Information**

Characteristics	Electronic Documentation Interview		Workflow Survey	
	RN	NA/CT	RN	NA/CT
Age, mean (range), y	37 (20–65)	32 (20–50)	35 (20–65)	26 (20–40)
Highest education				
High school diploma	–	2	–	2
NA certificate	–	3	–	5
RN diploma	5	–	6	–
RN-ADN	3	–	2	–
RN-BSN	5	–	7	–
RN-MSN	1	–	–	–
Other	1	1	–	–
Did not answer	–	–	1	1
Years of experience				
0–2	3	–	4	3
2–5	4	2	5	1
6–10	1	2	4	2
11–15	–	2	–	2
16–20	1	–	1	–
21–25	1	–	1	–
≥25	3	–	1	–
Use of computer hours/week				
0–1	–	1	2	–
1–3	6	3	4	4
3–5	–	1	–	2
5–7	1	1	2	1
>7	7	–	8	1

different data types,” 45% of the respondents gave more than one factor. Respondents said the location of the computer in the patient’s room was a barrier. Fifteen percent of the respondents said the computer was not close to the patient, and 15% said the computer was awkwardly placed. Forty percent of the respondents said that the computers in the patient rooms were slow or did not always work. Fifteen percent of the respondents were concerned about the privacy implications of asking questions in front of the patient’s roommate. Ten percent

of the respondents said that patients get upset when the nurse charts in the room because the nurse’s back is facing the patient. Another 10% said it was difficult to chart in the rooms because the patient and families try to talk to them while they are charting. One respondent said she could not sit down in the room while she charted. She said that for a lot of her shift, she is up and moving; charting outside the room was one of the few things she could do sitting down. One respondent said he repeatedly forgot to use the in room computers.

Table 3**Charting Locations Before and After Introduction to Electronic Documentation****Before/After Electronic Documentation, Where Did/Do You Usually Chart the Following?**

	Before Electronic Documentation				After Electronic Documentation			
	In Room	Outside Room	N/A	Total	In Room	Outside Room	N/A	Total
Admission assessments	3	9	8	20	5	10	4	19
Vital signs	2	14	4	20	5	15	0	20
Intake and output	2	14	4	20	4	16	1	21
Physical assessments	0	12	8	20	3	13	5	21
Care plans	0	13	7	20	2	12	6	20
Medication administration	1	11	8	20	4	11	6	21
Medication reconciliation	0	12	8	20	0	13	6	19

Abbreviation: N/A, not applicable.

Two questions were asked about positive aspects of electronic documentation. In response to the question "What aspects of the charting process work better now than they did before BEACON electronic documentation?," five respondents said it was easier and faster to chart with BEACON than by using paper documentation. Two respondents said BEACON was also a good reference for information including medical history and current laboratory results. One respondent liked the ability to chart wherever there was a computer, while another liked the ability to copy forward charting from a prior charting session. In response to the question "What are the elements of the BEACON electronic documentation system that you like?," seven respondents simply said it was easier and faster to chart electronically. Six respondents liked the design layout of the charting application. Two of the six said the layout made it easy to know what the charting requirements were. Two others said it was easy to find information that others had charted. One of the respondents liked the ability to copy their previous charting.

Two questions were asked about the negative aspects of electronic documentation. Seven respondents cited the amount of time it takes to log in to the charting application as a concern. Two respondents said the program often froze in the patient rooms. One respondent said the program shut down in the middle of charting. The location of the computers in the patient rooms was a problem for one of the nursing staff because she had to turn her back to the patient to chart.

In response to the question "Overall what would have to change to make you more likely to document on the computer in the patient room?," one nurse said that she could not think of anything that would make her more likely to chart in the room. Another said that there were no changes that would make her want to chart in the room because she wanted the patient to be comfortable. Several respondents requested more reliable or speedier computers. One commented, "make it work, let us get into the system quickly in the room... they (computers in patient rooms) just do not work all of the time." A few suggested portable computers. Of these, one wanted the portable computer because it was uncomfortable to stand, and one stated that with a portable computer, she would not have to log in and log out all of the time. Three respondents said they would change the location of the computers in the patient rooms. Two of those respondents wanted to be able to face the patients as they were charting, while the third wanted the computer closer to the patient activity. Some respondents also felt that the patient rooms were too small and noted that, many times, visitors would have to move for the nurses to be able to get to the computers.

One respondent said that, most of the time, the computers in the rooms were off and that it took too long to

start them up. Another respondent said that on the night shift, the computers were too bright and the light from the computers kept the patients awake. She described a time that her in-room charting had disturbed a patient's rest. After the patient complained, the nurse was hesitant to chart in any room on the night shift. Two nurses also said that the nurse's station has everything they needed for charting, including the patient's paper medical record so they felt that it was more convenient to chart there.

Another frequently heard theme in the interviews was nurse concerns about violating the Health Insurance Portability and Accountability Act (HIPAA) and patient privacy by charting admission assessments in the patient room. Two respondents were concerned about the possibility of family members being able to see things that the patient might not want them to see. Another nurse was concerned about patient confidentiality when users left electronic records open on the computer. We were also told that many questions, including a physical abuse screen and an alcohol/drug abuse screen, were private and should not be asked across the room in front of another patient. One nurse told us about a time when she was doing an admission assessment in a semiprivate room. The computer was on the wall next to another patient's bed. The other patient had two visitors who were sitting in chairs next to the computer. The nurse said she looked at the computer to see the questions. She then had to walk past the first patient's bed to ask the new patient those questions. The nurse then returned to the computer to chart on the new patient's responses and gather more questions. This sequence was repeated until the admission assessment was completed. The nurse commented that charting admission assessments in semiprivate rooms was awkward as she was worried about respecting the new patient's privacy.

Workflow Survey Results

Twenty-four questionnaires were completely filled out by the telemetry unit staff for the workflow survey. An additional participant omitted one section of the survey, and her responses were excluded. Participants' ages ranged from 20 to 65 years, with 68% being younger than 36 years (Table 2). Twenty-three respondents were females, and one respondent was male. Sixteen were RNs, and eight were NAs or CTs. Of the RNs, on the question of highest level of education, seven were RN-BSN, two were RN-ADNs, and six were RN diploma nurses (Table 2). Two of the nurses listed their highest level of education as "other" with comments that one had a BA in psychology and one had an MBA in communications. Of the RN respondents, four had been nurses for 0 to 2 years; five nurses, for 3 to 5 years; four nurses, for 6 to 10 years; and two nurses, for 16 to 25 years. Of the 24 respondents, eight use a computer

outside work for 1 to 3 hours per week and nine use a computer outside work over 7 hours a week (Table 2).

The 7 to 10 AM time slot was chosen by most of the 16 nurses, regardless of the shift they normally work, as the time slot that eight of the 16 tasks were most likely to occur. The tasks chosen as most likely to occur in the 7 to 10 AM time slot were rounding with physician, obtaining patient vital signs, electronic documentation of vital signs, medication administration, electronic documentation of medication administration, dressing changes, electronic documentation of dressing changes, and electronic documentation of care plans, patient-family education, and test or surgery preparation.

Half of the tasks chosen as most likely occur to from 7 to 10 AM were electronic documentation tasks. However, when nurses were asked to rate the priority of the activity and the documentation of the activity, the documentation of the activity was chosen at a lower priority rating than performing the activity in most cases and often chosen at the lowest priority rating. The priority with the highest frequency for documenting most tasks was lower than that of carrying out any other task. These results would suggest that charting the task is perceived as a low priority.

Furthermore, with the follow-up question “In terms of timely medical care, please rate the priority of the

following tasks,” little difference in priority assignment for charting tasks was noted as compared to personal preference of charting tasks (Table 4). This would suggest that nursing staff in this study did not feel that documentation affects timely medical care. This finding is consistent with a recent study conducted by Munyisia et al⁹ on perceptions of quality of electronic documentation in a nursing home. Munyisia et al found that despite encouragement from management, caregivers normally waited to document at the end of their shift, after attending to their resident’s needs. They also found that after using an electronic documentation system for 31 months, caregivers believed that information documented electronically was similar to paper documentation in terms of communication, decision making ability, relevance, and reliability.⁹

DISCUSSION

In response to our first research question regarding barriers to POC documentation, respondents identified several barriers to POC charting, including (1) the locations of the in-room computers, (2) perceived lack of in-room computer reliability, (3) HIPAA/privacy concerns, and (4) patients’ response to POC charting in patient

Table 4

Workflow Survey—Nurse Responses



In Terms of Timely Medical Care for the Patient, Please Rate the Priority of the Following Activities that Occur on the Typical Day at Work

		No. of Respondents			
		Highest Priority—Done Now	High Priority—Done Next Few Minutes	Important—Done as Soon as Possible	Important—Can Be Done Later
Obtaining patient physical assessment	Task	8	2	6	0
	Documentation	0	5	4	7
Obtaining patient vital signs	Task	7	5	4	0
	Documentation	0	6	5	5
Medication administration	Task	6	7	2	0
	Documentation	2	4	4	6
Assisting patient with ADLs	Task	6	3	4	3
	Documentation	0	5	2	9
Dressing changes	Task	4	3	4	5
	Documentation	0	5	1	10
Planning/coordinating care for patient	Task	3	2	5	6
Updating/educating patient and family	Task	2	4	6	4
Preparing patient for tests/surgery	Task	4	7	5	0
Electronic documentation of care plans, patient/family education, test preparation	Documentation	0	4	1	11

rooms. Although only 20 nurses were interviewed for the electronic documentation interview, the same themes arose repeatedly.

(1) *Location of the in-room computer.* The hospital in our study was an older hospital with small semiprivate patient rooms. Location of the computers in the room was a challenge for the BEACON design team, with room size, configuration, and safety codes limiting possible locations. Computers on mobile arms were tested but were often in the way of patient equipment such as intravenous poles and bedside commodes. The size of the rooms on our study unit would also have limited the maneuverability of computers on wheels. A stationary space-saving wall mount was eventually chosen. The locations of the in-room wall mounts were decided based on engineering restrictions and on feedback from the staff of the Progressive Care Unit (PCU), the manager of the PCU, and the BEACON design team on a room-by-room basis.

Location of computers in patient rooms is a potential issue for any older hospital that is implementing POC documentation. Alternatives to stationary devices should be investigated. Limited options for mobile devices were available when the stationary computers were selected for our study unit in early 2008. Mobile devices such as tablets and netbooks are lighter in weight and have longer battery life than laptop computers from just a few years ago, making mobile devices viable alternatives to desktop computers.

(2) *Perceived computer reliability.* The unit responsible for maintenance of the POC computers was surprised by the perceptions of computer reliability, as they had not received many complaints. This might be a result of the infrequent use of the computers in the room. In our study, the clinical staff had already lost faith in the reliability of the in-room computers after repeatedly running into issues such as slow start-ups and frozen screens. Perceived lack of reliability can be addressed by increased monitoring and testing of in-room computers by information technology (IT) staff.

(3) *HIPAA/privacy concerns.* POC charting in semiprivate rooms raises the possibility of incidental disclosure of potentially sensitive information. When the nurse is standing at a wall-mounted computer in the room or sitting at the bedside with a laptop or paper questionnaire, others in the room may hear parts of the discussion. This is called incidental disclosure in the HIPAA Privacy Rule, and it is acceptable as long as reasonable measures are taken, such as talking softly, using passwords to protect data, and not leaving confidential data on computer screens when the computer is not in use by staff.¹³ Education about HIPAA with regard to incidental disclosure might alleviate concerns for nursing staff.

(4) *Patient response to in-room computer use.* In-room computers bring the potential for distraction due to sounds of tapping keys, alert noises, and light emitted from displays. One nurse reported that a patient complained that the light from the computer was keeping her awake. Use of a dark background and a low power monitor could minimize emitted light and save power. Also, other nurses were worried that turning their backs to the patients while they charted would appear rude and upset patients. In a study by Wolf et al,¹² some patients did respond unfavorably to documentation in the room. Education of nursing staff about possible patient perceptions that may include using the computer for non-work-related activities, and measures used to keep personal information secure, would enable nursing staff to address patient concerns.

In response to our second research question regarding the importance of charting, the results from our workflow survey suggest that it is not a high priority for nursing staff. Whether it is done at the POC or at a computer outside the room, charting is not perceived as a high priority when compared to patient care tasks by the respondents to our survey. The nurses also did not increase the priority of charting when rating charting tasks in terms of timely medical care. This would suggest that education for nursing staff is needed to help them understand that charting does affect timely medical care.

Nursing staff's workflow priorities are the result of learning to work around the unpredictable patterns of patient care.⁶ In 1992, Benner et al¹⁴ wrote, "an expert nurse's workflow is guided by direct apprehension of the action required by the situation at hand, and documentation follows the action." In urgent and emergent situations, that should remain the practice today. The challenge will be for nursing staff to understand that, with the evolution of electronic documentation, POC charting is important for patients to receive timely medical care and should be done in routine care and nonurgent situations because clinical and medical staff members need current information to effectively plan care for the patient.

In the study by Lee and McElmurry,⁸ it was stated that changes in workflow are inevitable when computerized charting is implemented. If nursing staff members are expected to chart when they provide care, they will have learn to change their workflow. Workflow patterns that incorporate POC charting should be introduced and encouraged. The value of POC charting should be discussed when electronic documentation is introduced. The design and implementation of POC systems should also incorporate an understanding of nurses' work.

LIMITATIONS

Limitations to the study include a low response rate and a limited sample of convenience. The study was done only in one unit in a hospital, with a self-selected convenience sample. There was also overlap between the two groups that completed both the electronic documentation interview and the workflow survey. Other than the demographic questions, the contents of the two surveys were different. Although a larger study encompassing more patient units and additional hospitals might be needed to identify the relative importance of the barriers that we identified, the issues discussed by participants in both phases of our study are general enough to potentially apply to a wide range of hospitals.

Despite the small sample size, the results were consistent. As in previous work on health records, many barriers to electronic documentation were identified. Some were common with issues involved in earlier work, like problems in logging in and out or a patient's reaction to the system, while some were novel, like privacy issues, lack of room, and patients getting disturbed at night.

CONCLUSION

The potential benefits of POC documentation include accuracy and real-time data access. However, the value of POC charting has not been recognized by nursing staff in our surveys. For nursing staff on the telemetry unit at a southwestern Pennsylvania hospital, the location of the computers in the rooms and the perceived in-room computer reliability are barriers to POC documentation. In addition, nurses said they chose to chart outside the patient room because they were concerned about privacy of patient information and patient perceptions of nurses charting in the room. Computers were installed in the patient rooms for POC documentation, but the introduction of electronic documentation did not change the nursing staff's workflow. Remedies we suggest include IT department monitoring of computer reliability and education on the value of POC documentation for nursing staff, along with information about incidental disclosure and how to address patient concerns.

We identify three barriers that present challenges to the success of POC documentation. The first barrier is that nursing staff will have to adapt to using an electronic documentation system. The second and perhaps more difficult barrier for nursing to overcome is that nursing staff members will have to change their workflow to incorporate POC documentation. The final and perhaps most critical barrier is that hospitals will need

to provide nursing staff with documentation devices that keep up with the pace of nursing staff's workflow in acute care settings.

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