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Reducing Nursing Documentation Burden: Evaluation of an Electronic Health Record Optimization Plan

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Reducing Nursing Documentation Burden: Evaluation of an Electronic Health Record Optimization Plan

Submitted in Partial Fulfillment of the Requirements for the Degree of Doctor of Nursing Practice at the University
of Kentucky

By

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Lexington, KY

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Abstract

Background: UK HealthCare transitioned to a new enterprise electronic health record (EHR) system, offered by Epic Systems Corporation, in June 2021. Approximately 2,000 inpatient nurses use the EpicCare Inpatient Module in the 1,086 licensed bed facilities. Compared to other academic medical centers, UK HealthCare nurses take more time documenting in this EHR inpatient module's Basic Assessment Flowsheet (documentation burden) and have a longer delay between assessment and documentation (timeliness) potentially contributing to nursing dissatisfaction with using this new EHR.

Purpose: The purpose of this project was to evaluate the effectiveness of a phase of the Epic Nurse Well-Being Project, a nursing documentation optimization effort, implemented at UK HealthCare. Evaluation variables included nursing documentation burden and timeliness of documentation, particularly on time spent documenting in the inpatient EHR Basic Assessment Flowsheet and time from assessment to documentation.

Methods: This study employed a pre and post data design where data were obtained prior to and after an optimization phase in the Epic Nurse Well-Being Project at UK HealthCare. Epic efficiency data were collected from the Nursing Efficiency Assessment Tool (NEAT) on nursing documentation time spent in the Basic Assessment Flowsheet and time from assessment to documentation in the EHR. Data were also collected using pre and post surveys to assess the self-reported timeliness of documentation and nursing satisfaction surrounding EHR documentation.

Results: Satisfaction with the Basic Assessment documentation time in the flowsheet, satisfaction with amount of time between assessment and documentation, agreement that documentation did not interfere with ability to provide patient care, and overall satisfaction with documenting in the flowsheet increased. The average time participants self-reported a delay of their Basic Assessment documentation decreased by 12.2 minutes. Epic efficiency data showed the average number of minutes spent per user per day in the Basic Assessment Flowsheet increased by 0.86 minutes, and the average number of minutes between assessment and documentation increased by 0.2 minutes after the intervention but was not statistically significant.

Conclusions: The results showed an overall positive response from participants to the intervention, although there was not a notable difference in Epic efficiency data. This project contributes valuable insights into the importance of EHR optimization for both nursing staff and patient outcomes, emphasizing the need for ongoing optimization efforts.

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Tada Gan Irracht-Nothing Without Effort

Dedications

I would like to dedicate this to my mother in law, Kim, who was my supporter and encourager. She pushed me to be the best that I could be both professionally and personally. When I had doubts about how adding the DNP program to my busy career would affect my family, she reinforced the importance of the impact it would have on them as they grow up seeing a mom who can be successful in many arenas. Even through the end of her illness, she never stopped encouraging me to continue.

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Background and Significance

Electronic Health Records (EHRs) are used in 96% of hospitals in the United States with about one-third of hospitals using an EHR offered by Epic Systems Corporation (ONC, 2021). EHRs can be a valuable resource for inpatient nursing if they are executed efficiently and utilized correctly. Timely and accurate EHR documentation provides patient data for predicative models that run within the EHR. An example of this are deterioration index scores which can predict the likelihood of patient decline. Additional clinical decision support mechanisms such as warnings to clinicians for a critical vital sign will only work correctly if the documentation is entered appropriately. Moore et al. (2020) found that nursing time represents the single highest cost for most healthcare organizations. Increased time spent by nursing documenting in the EHR can impact the operating margins, reduce time available to spend in direct patient care activities, and increase total documentation time within the EHR. Mishra et al. (2022) found that nurses listed efficiency in the EHR as a valuable feature among clinicians, with the most frequently requested improvements being reduced documentation time and fewer click boxes.

In June 2021, UK HealthCare transitioned to a new enterprise EHR system, offered by Epic. Approximately 2,000 inpatient nurses use the EpicCare Inpatient Module in the 1,086 licensed bed facilities. Compared to other academic medical centers, UK HealthCare staff nurses spend more time documenting in the Basic Assessment Flowsheet (documentation burden) and have a longer delay between assessment and documentation (timeliness), potentially contributing to nursing dissatisfaction with using this new EHR (Epic, 2023).

Following the EHR transition, Epic conducted Post Live Visits (PLVs) where Epic staff rounded with UK HealthCare informatics staff to observe nursing workflows in action to assess for optimization opportunities. PLVs are intended to help ease the transition to the new EHR while improving efficiency and satisfaction of utilizing the system. These PLVs occurred about every three months following the first year of Epic implementation at UK HealthCare. During these PLVs, nurses cited concerns with the amount of time it took to document due to apparent lack of interoperability between the Basic Assessment, Vitals, and Daily Care/Safety flowsheets, necessitating duplicate and redundant nursing documentation. Compared to other academic medical centers whose nurses use Epic, UK HealthCare nurses spent more time on flowsheet documentation than about 20% of other academic medical centers and were in the bottom quartile for delay in documentation (Epic, 2023). As such, reducing the nursing documentation burden within the EHR through the Epic Nurse Well-Being Project optimization plan was warranted.

Current Evidence-based Interventions

Research demonstrates the need for reducing nursing documentation burden and identifies specific areas of focus. However, the literature lacks direction on how to best execute this work. Mishra et al. (2022) ascertained the need to improve the EHR by streamlining, organizing, and reducing nursing effort in inputting data into the EHR. Nurses in the Mishra et al. (2022) study identified both that functionality of the EHR and reducing documentation burden were the most important factors. The findings of this study suggested that improving functionality is key to

improving nursing satisfaction within the EHR. These studies also revealed that nurses desired less documentation burden but failed to identify strategies related to how to decrease documentation challenges. Studies have been conducted that demonstrate strategies to streamline admission documentation successfully in the adult and pediatric populations (Sutton et al., 2022, Horn et al., 2021). Expanding on this body of work to other elements of documentation in the EHR will provide strategies which can be utilized and modified for this project. Capitalizing on the expertise and knowledge of the nursing informatics department at UK HealthCare was key in this project execution. Moore et al. (2020) described a key research gap in using health information technology (health IT) to improve upon and to develop new documentation efficiencies. Nursing satisfaction with the EHR was another notable theme in the literature. Khairat et al. (2020) found a significant positive relationship between perceived efficiency and time spent in the EHR. Conversely, both Khairat et al. (2020) and Kutney et al. (2019) noted that nurses were concerned that EHRs interfered with patient care. Moore et al. (2020) found that an improved EHR design can impact the time it takes for nurses to conduct tasks, allowing for more time for direct patient care. Reduced efficiency and documentation burden were a source of frustration which led to detrimental cognitive effects for nursing according to Moy et al. (2023), while Senathirajah et al. (2020) found that removing repetitious navigation and excess clicks led to a reduced in cognitive burden for nurses.

Purpose/Objectives

Overview of the Project Purpose

The purpose of this project was to examine the impact of the Basic Assessment Flowsheet optimization phase of the Epic Nurse Well-Being Project at UK HealthCare. Data were obtained prior to and after the Basic Assessment Flowsheet optimization phase. Epic efficiency data were collected from the Nursing Efficiency Assessment Tool (NEAT) on nursing documentation time spent in the Basic Assessment Flowsheet and time from assessment to documentation in the EHR. Data were also collected using pre and post surveys to assess the self-reported timeliness of documentation and nursing satisfaction surrounding EHR documentation.

The objectives included:

- 1) Evaluate documentation burden, timeliness of documentation, and nursing satisfaction when utilizing the Epic Basic Assessment Flowsheet before implementation of the UK HealthCare Epic Nurse Well-Being Project: Basic Assessment Flowsheet optimization phase.
- 2) Evaluate documentation burden, timeliness of documentation, and nursing satisfaction when utilizing the Epic Basic Assessment Flowsheet after implementation of the UK HealthCare Epic Nurse Well-Being Project: Basic Assessment Flowsheet optimization phase.

Review of Literature

Summary of Literature Search

A review of existing literature was conducted using PubMed and CINAHL databases via the University of Kentucky Library System using the following criteria for article selection: peer reviewed, evidence based, with full text available, English language, and published between 2019 and 2023. Search terms included: ‘electronic health record’ and ‘latency,’ ‘electronic health record’ and ‘documentation,’ ‘electronic health record’ and ‘flowsheet,’ ‘electronic health record’ and ‘burden,’ ‘electronic health record’ and ‘optimization,’ ‘electronic health record’ and ‘usability,’ ‘electronic health record’ and ‘nursing,’ ‘optimization’ and ‘burden,’ ‘optimization’ and ‘nursing’ and ‘electronic health record,’ ‘usability and ‘nursing’ and ‘electronic health record’ and ‘PARIHS framework.’ This yielded a total of 215 articles for review with 22 of the articles being applicable to this study.

Gap Identification and Need for Proposed Practice Change

While the literature demonstrated the importance of including clinicians in all phases of optimization, how metrics play an important role in this project, and how optimization is valuable to nursing satisfaction in the EHR, there was a gap identified for strategies to execute optimization. While evidence supporting the reduction of documentation was readily identified, there was limited available evidence delineating tangible actions to execute documentation burden reduction.

Two articles reported the positive impact of including clinicians in all phases of an EHR optimization. Strudwick et al. (2022) highlighted that involving clinicians to identify areas of improvement pre intervention increases success in an optimization project. McIlreevy et al. (2022) demonstrated the necessity of engaging clinicians in the modification portion of the project by having them review documents to aid in removing duplicate areas of documentation and to re-order the documentation to better align with clinician workflow.

Relevant literature also demonstrated the value of utilizing metrics to target areas with opportunities for improvement. Wronikowska et al. (2021) and Lindsay and Lytle (2022) discussed metrics for measuring usability, but Wronikowska et al. (2021) did not examine how to achieve better usability. Lindsay and Lytle (2022) emphasized standards for usability modifications, targeting efficiency, reducing redundancy, and improving workflow navigation in their study. Horn & Sweeney (2021) constructed a tool to utilize while working with clinicians to help guide them in their review of needed documentation. Shala et al. (2022) and Sutton et al. (2020) noted a similar approach of creating an Essential Clinician Dataset (ECD) to identify data elements that are needed, allowing for a more targeted optimization.

Expanding on the tools used by clinicians in either the Horn & Sweeney (2021), Shala et al. (2022), or the Sutton et al. (2020) studies could also lessen the gap in evidence by demonstrating a method on which to base future research. This project will begin to fill the evidence gap by evaluating an optimization project aimed at reducing nursing documentation burden and delay in documentation, while improving nursing satisfaction with the EHR.

Theoretical Framework

The Promoting Action on Research Implementation in Health Services (PARIHS) framework was used to guide this project at the organizational level. PARIHS is a framework first published by Kitson, Harvey, and McCormick in 1998, updated in 2002, and further refined in 2015 (Bergström et al., 2020.) This framework focuses on meticulous planning, intentional execution, and careful monitoring of how change affects an organization. The PARIHS framework highlights how a successful implementation can be impacted by the experiences of the participating clinicians and based on the facilitation of the overall implementation process. This framework also examines barriers and enablers that may arise while working to help clinicians understand the importance of incorporating evidence-based practice. Lo et al. (2022), utilized this framework to implement a new technology to reduce documentation burden. During their study, the elements of the framework guided data collection and analysis. Surveys were used to determine perception and descriptive statistics such as mean and standard deviation were used to guide data analysis.

For this project, meticulous planning was required to begin the phased optimization project. A timeline was established which included information about each phase of execution. During and after each phase, data were examined and modified as needed during the next phase of the project while incorporating clinician input throughout the entire process.

Methods

Design

This study employed a pre and post data design. Data were collected on documentation time spent in the Basic Assessment Flowsheet and time from assessment to documentation in the EHR during August/September 2023 and again in January/February 2024. The Basic Assessment flowsheet is the flowsheet that a nurse (RN or LPN) uses when documenting each of their acute care patient's head-to-toe assessments at minimum, once per shift. The flowsheet expands to include additional data elements if the patient requires more complex assessments. Data were also collected using pre and post surveys to assess the perception of nursing surrounding this specific EHR documentation tool in August/September 2023 and again in January/February 2024. The goal of this design was to compare data from before and after the Basic Assessment Flowsheet phase of the Epic Nurse Well-Being Project to determine if there was a significant difference between system use data and between survey results.

Setting

Agency Description

The setting for this study was UK HealthCare hospital system in Lexington, KY. UK HealthCare is a 1,086-bed academic medical center network that includes UK Chandler Hospital, Kentucky Children's Hospital, and UK Good Samaritan Hospital with an average daily census of 886 patients. UK HealthCare includes a level IV

neonatal intensive care unit and an adult and pediatric hospital, is a Level 1 Trauma Center, is a Certified Comprehensive Stroke Center, has a National Cancer Institute designation, and is a regional referral center. For the purpose of this project, UK Chandler Hospital was selected as the data collection site.

Congruence of Project to Selected Agency's Goals, Mission, and Strategic Plan

This project aligns with the organization's 2025 Nursing Strategic Plan. Goals of the plan include leveraging available and future technologies to foster nurse efficiency and well-being within the EMR, leveraging Epic reporting capabilities, maintaining a national Epic standing for nursing productivity, decreasing nursing's active time in EHR flowsheet documentation by 10%, and decreasing delay in nursing EHR documentation by 10%.

Description of Stakeholders

Stakeholders for the project included executive nursing leadership, clinical nurses, UK HealthCare finance departments, health IT staff and leadership, ancillary support staff, and patients and their partners in care. Additionally, the principal investigator was a stakeholder by being employed at UK HealthCare as a nursing informaticist, transitioning to the role of Chief Nursing Information Officer during the timeframe of this project.

Facilitators of this project included the successful operation of the Nursing Advisory Council (NAC). NAC is a governing body comprised of clinical nurses which approves nursing and interdisciplinary EHR changes, reviews workflows and features within Epic, and views change requests with a lens of system usability and discretion in approval. The NAC acted as subject matter experts and were utilized as the decision-making body when evaluating and modifying the flowsheet. The NAC evaluated the need for documentation elements which demonstrated zero or minimal nursing documentation utilization (as identified by NEAT data) and acted as policy and procedure subject matter experts when determining the need for flowsheet rows and flowsheet row choices.

Additional facilitators for success included operational support from the Vice President of Hospital Operations and the Chief Nurse Executive in addition to the IT Epic ClinDoc team including the manager, analysts, and informaticists to support the changes were also facilitators. A robust EHR with the potential for optimal efficiency is an additional facilitator.

Potential barriers included a nursing culture which may have been resistant to change within the Basic Assessment flowsheet and increased patient volumes and staffing needs which may have contributed to a reduced ability of clinical nurses to engage in NAC. Increased workload on the IT Epic ClinDoc team could also be identified as a barrier to the completion of the changes during the timeframe needed to complete this project.

Sample

Target Population

The target population for the pre and post surveys included any bedside nurse working in Chandler Hospital who utilized the Basic Assessment Flowsheet in an adult, acute level of care, inpatient unit. Basic Assessment Flowsheet utilization metrics on nursing time spent in the flowsheet and time from assessment to

documentation on adult, acute, inpatient units in Chandler Hospital were used for this evaluation. Utilization metrics excluded data from any nursing documentation completed on a patient within UK HealthCare, not in an inpatient admission status.

Procedure

Institutional Review Board Submission Process

The University of Kentucky Institutional Review Board (IRB) granted a waiver of documentation of informed consent for the data obtained from the EHR. The IRB also approved the use of a consent cover letter that included the purpose of the study, voluntary participation description, known risks, methods and contacts for the participation of nursing in the survey portion.

Description of Evidence Based Intervention

The Epic Nurse Well-Being Project at UK HealthCare was a multi-phase Epic optimization project. During the Basic Assessment Flowsheet optimization phase, UK HealthCare evaluated the current Basic Assessment nursing documentation flowsheet content utilizing the NAC to create a more efficient documentation process. The work done as part of the Epic optimization project was not part of the DNP project work; the project work consisted of evaluating the outcomes of the Epic optimization work. Information from the Epic Flowsheet Utilization Report was utilized to help NAC complete an extensive review of flowsheet content, reviewing each row, the choices in each row, and the row information. Flowsheet rows which were duplicative were combined and the outliers were eliminated. Choices in each flowsheet row were evaluated for duplication, and normal values such as “no edema” were removed to fully utilize the “Within Defined Limits” provided by Epic and approved by UK HealthCare policy for charting by exception, and remaining choices were arranged in the order of most to least utilized choice. Workflows were reviewed to minimize multiple steps or clicks to complete documentation and to reduce scrolling to locate specific data points. Lastly, NAC and the health IT team ensured flowsheet data interoperability to improve efficiency and to avoid duplicative documentation. Data from the Flowsheet Utilization Report and NEAT provided by Epic helped guide the project design. These assessment tools provided information on which flowsheet rows and choices were used the most and least. After the design was final, it was tested in the Epic test environment and validated with NAC to ensure there was no effect on functionality, data integrity, or reporting in the EHR. Throughout this process, informaticists met with subject matter experts who utilized the flowsheet, as well as the NAC to evaluate these findings and to approve proposed changes. Once the new design was tested and validated, education was distributed to nurses two weeks prior to implementation. This included a tip sheet to notify nurses of the coming improvements which was distributed by Epic Trainers and Digital Navigators, following standard work already in place for Epic changes at UK HealthCare.

Measures and Instruments

Measures evaluated were documentation burden as defined by time spent documenting, time from nursing assessment to documentation, and nursing satisfaction with utilizing the EHR. Instruments utilized included a

demographics focused survey, a four item Likert Scale survey to evaluate nursing perception, an open-ended question focused on nurses' self-reported time between assessment completion and documentation of these assessment data, and two qualitative, open-ended questions focused on the Basic Assessment Flowsheet (see Appendices A and B). Epic efficiency metrics including NEAT Data and the Epic Executive Review Summary were measures utilized from Epic systems data.

Data Analysis

Age, years of nursing experience, years nursing experience at UK HealthCare, number of years of nursing experience working in current unit, and number of years using Epic were evaluated as continuous variables and measured as means and standard deviations. Categorical variables: race/ethnicity, sex/gender, and education level were evaluated as numbers and percentages. The EHR Nursing Satisfaction Survey-Demographic questions were analyzed using descriptive analysis. Documentation burden and delay in documentation were measured using Independent Sample t-tests. EHR Nursing Satisfaction survey responses were analyzed with a combination of Independent Sample t-tests. The timing of measurement for each variable was the pre implementation and post implementation group, excluding the two open ended response survey questions which varied between pre and post implementation.

Results

Demographics and Findings

A total of 35 pre surveys and 16 post surveys were collected for this study. The surveys assessed the perception of nursing surrounding the Basic Assessment Flowsheet in August/September 2023 and again in January/February 2024.

The average age of the participants was 42.48 years (SD=13.62, see Table 1). The majority of the participants were white (90%, see Table 1) while 3.3% were Black or African American, American Indian or Alaska Native, and Other. About 90% of the participants were female (86.7%, see Table 1). The distribution of education level among participants included a majority of nurses with a Bachelor's Degree in Nursing (81.3%, see Table 1), with the remainder of nurses holding an Associate Degree in Nursing. The average years of nursing experience participants reported was 13.82 (SD=12.18, see Table 1). The average number of years worked as an inpatient nurse at UK HealthCare was 8.24 (SD=11.83, see Table 1). The average number of years participants reported working in their current unit was 4.84 (SD=8.06, see Table 1) and nurses reported using Epic for an average of 4.24 years (SD=2.97, see Table 1).

Quantitative Survey Data

Satisfaction with the time it took to document in the Basic Assessment flowsheet, satisfaction with amount of time between assessment and documentation, agreement that the Basic Assessment documentation does not interfere with ability to provide patient care, and overall satisfaction with documenting in the flowsheet increased by 0.39, 0.57, 0.25, and 0.59 on the Likert Scale, respectively (see Table 2). However, there was not a statistically

significant increase between the pre and post survey satisfaction results. In addition, the average time participants self-reported a delay in their Basic Assessment documentation decreased by 12.2 minutes (see Table 2).

Qualitative Survey Data

Participant feedback related to the Basic Assessment flowsheet from the post survey responses included two main themes: 1) improved ease of use and 2) relocation of important documentation to the top of the flowsheet. Four of 16 post survey respondents noted that repetition was reduced, in turn reducing time spent documenting, improved ease of use, and a more intuitive flowsheet. Five of 16 post survey respondents reported that moving the Provider Notification section of the flowsheet to the top was the most helpful and specifically identified that they reduced scrolling through the assessment to locate the section for documentation. Both of these themes relay an improved workflow for participants.

Epic Efficiency Data

NEAT data was collected from 15 inpatient nursing departments comprised of 340 nurses in the pre data metrics and 321 nurses in the post data metrics. These data were specific to the level of the nurse and not drilled down to the number of patients nor the number of templates. The efficiency data revealed that the average number of minutes per user per day spent in the Basic Assessment Flowsheet increased by 0.86 minutes and the average number of minutes between assessment and documentation increased by 0.2 minutes after the intervention, but neither finding was statistically significant (see Table 3).

Discussion

The purpose of this project was to examine the impact of an EHR optimization plan on nursing documentation burden, delay in documentation, and on nursing satisfaction when utilizing the Basic Assessment Flowsheet. This researcher found that participants reported an increased satisfaction with documentation in the Basic Assessment Flowsheet as evidenced by the survey responses. There was not a statistically significant difference in the Epic efficiency data. Of particular interest, participants self-reported a decrease in time from assessment to documentation, but the efficiency data showed no change. This improved perception may be due to the fact that nurses felt like the flowsheets were easier to utilize and were using their time more efficiently to provide what seemed to them as more real time documentation. Continuing to measure these data over time to monitor for an actual decrease could be valuable to monitor.

An improved perception of usability in the EHR by nurses as stated in the qualitative post survey results is an important finding due to the fact that ease of use has been linked to less burnout and improved job satisfaction. Kutney et al. (2021) supported the findings that nurses working in hospitals with lower EHR usability experienced significantly higher odds of burnout, job dissatisfaction, and intention to leave, in comparison to those working in hospitals with better usability. Another unexpected effect of these results is the potential for improved patient safety. Kaihlanen et al (2020) reported that if nurses perceive EHR functionality as poor, their levels of stress related to information systems and higher incidences of cognitive failures increased. Kutney et al. (2021) also discovered that

surgical patients treated in hospitals with lower EHR usability experienced significantly higher odds of inpatient mortality and 30-day readmissions, compared with patients in hospitals with better usability.

The difference between this project's Epic efficiency data for timeliness of documentation and the post survey results which showed a self reported improvement in timely documentation could be explained by the following variables. The first variable for which this researcher could not account for was the acuity of patients during the study. Because of the timing of the pre study in late summer compared to the post study occurring during the winter, patients may have had higher acuities that are more common in the winter. Higher acuity patients may require more documentation, thus increasing documentation time. Another hypothesis is that nurses are using the flowsheet rows more effectively and completing documentation more accurately. Several participants identified the relocation of the Provider Notification section as being the most beneficial improvement. This section was moved to the top of the flowsheet. Moving the Provider Notification section may also have increased documentation time with nurses utilizing it more frequently than prior to the change. A follow up to this project could be to potentially study Provider Notification for patient metrics such as critical lab results, a patient safety metric which required to be tracked by The Joint Commission.

Implications for Practice, Education, Policy, and Research

As aforementioned, gathering metrics around documentation time (burden) and delay to documentation (timeliness) may yield different results due to seasonal variability in patient acuity and disease states. In addition, reviewing other metrics such as provider notification with critical results, or completion of required documentation may also demonstrate improvement from these interventions. Practice implications are promising, particularly pertaining to the noted benefit that participants found in the relocation of the Provider Notification section. Enhancing nursing's ability to accurately document patient changes, notification of providers, and any corresponding orders received may improve patient care and safety. There is also great potential for nursing education not only involving methods to improve documentation, but also around the ability to provide input to optimize their EHR experience. Realization of direct and positive change as a result of clinical nursing input enhances their willingness to speak up and provide constructive feedback for future workflow optimizations. Capitalizing on the increased satisfaction noted in the survey responses and continuing with future optimization efforts can assist in keeping nurses engaged and provide an increased sense of autonomy.

Limitations

The primary limitation of this study was the small survey sample. Another limitation was the inability to correlate survey participants to their corresponding departments due to the fact that participants remained anonymous. The stringent timeline of the project could also have impacted efficiency and survey results. Allowing additional time for participants to acclimate to the optimization prior to collecting efficiency metrics and surveys may have led to different results. Improved control for differing patient acuities may have also yielded different results.

Conclusion

In conclusion, this project sought to investigate the effects of an EHR optimization plan on nursing documentation burden, timeliness of documentation, and nursing satisfaction when utilizing the Basic Assessment Flowsheet. The results demonstrated an overall positive benefit from the revisions to the flowsheet, although there was not a decrease in time spent documenting or in time between assessment and documentation as demonstrated by Epic efficiency data. Significant findings include increased nursing satisfaction and an improved perception of EHR usability by nurses. This is crucial as research has linked ease of use to reduced burnout and increased job satisfaction. Additionally, the potential for improved patient safety was noted. This project contributes valuable insights into the importance of EHR usability for both nursing staff and patient outcomes, emphasizing the need for ongoing optimization efforts.

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Tables

Table 1

Demographic characteristics of the study sample (N=36)

Variable	Mean (SD) or n (%)
Age	42.48 (13.62)
Race/Ethnicity	
Black or African American	1 (3.3%)
American Indian or Alaskan Native	1 (3.3%)
White	27 (90%)
Other	1 (3.3%)
Sex/Gender	
Male	3 (10%)
Female	26 (86.7)
Prefer not to say	1 (3.3%)
Education Level	
Associate Degree in Nursing	6 (18.8%)
Bachelor's Degree in Nursing	26 (81.3%)
Years as a nurse	13.82 (12.18)
Years as a nurse at UK HealthCare	8.24 (11.83)
Years employed in current unit	4.84 (8.06)
Years using Epic	4.24 (2.97)

Table 2*Basic Assessment pre and post nursing survey results*

Variable	Pre	Post	<i>p</i>
	(<i>n</i> = 35)	(<i>n</i> =16)	
	<i>Mean (SD)</i>	<i>Mean (SD)</i>	
Satisfaction with time documenting (<i>documentation burden</i>)	3.71 (.96)	4 (1.10)	.349
Satisfaction with timeliness of documentation (<i>documentation delay</i>)	3.11 (1.18)	3.69 (1.14)	.111
Self-reported amount of time in minutes between assessment and documentation	76.37 (69.81)	64.17 (25.66)	.561
Overall satisfaction with documentation experience	3.71 (.96)	3.88 (1.02)	.589

Note. Mean parameter values for each of the analyses are shown for each survey result, as well as the results of the *t* tests (assuming equal variances).

Table 3*Epic efficiency data*

Variable	Pre (n=15) Mean (SD)	Post (n=15) Mean (SD)	<i>p</i>
Minutes per user per day spent documenting in the Basic Assessment Flowsheet	6.96 (0.87)	7.82 (1.94)	.07
Time in minutes between assessment and documentation	132.13 (22.45)	132.33 (17.77)	.5

Note. Pre: n=15 inpatient departments with 340 nurses. Post: n=15 inpatient departments with 321 nurses.

Appendix A: EHR Pre Nursing Satisfaction Survey

Please indicate the extent to which you agree (or disagree) with the following statements:

1. I am satisfied with the amount of time it takes me to document in the Basic Assessment Flowsheet.
 - Strongly disagree
 - Disagree
 - Neither agree nor disagree
 - Agree
 - Strongly agree
2. On average, how many minutes do you think you wait after you do your basic assessment to document it in the flowsheet?
3. I am satisfied with the amount of time I take between completing my patient's basic assessment and documenting the assessment.
 - Strongly disagree
 - Disagree
 - Neither agree nor disagree
 - Agree
 - Strongly agree
4. Basic Assessment Documentation does not interfere with my ability to provide patient care.
 - Strongly disagree
 - Disagree
 - Neither agree nor disagree
 - Agree
 - Strongly agree
5. Overall, I am satisfied with my experience documenting in the Basic Assessment Flowsheet.
 - Strongly disagree
 - Disagree
 - Neither agree nor disagree
 - Agree
 - Strongly agree
6. If you could revise the Basic Assessment Flowsheet, what would you change?
7. What do you wish could be improved on the Basic Assessment Flowsheet?

Appendix B: EHR Post Nursing Satisfaction Survey

Please indicate the extent to which you agree (or disagree) with the following statements:

1. I am satisfied with the amount of time it takes me to document in the Basic Assessment Flowsheet.
 - Strongly disagree
 - Disagree
 - Neither agree nor disagree
 - Agree
 - Strongly agree
2. On average, how many minutes do you think you wait after you do your basic assessment to document it in the flowsheet?
3. I am satisfied with the amount of time I take between completing my patient's basic assessment and documenting the assessment.
 - Strongly disagree
 - Disagree
 - Neither agree nor disagree
 - Agree
 - Strongly agree
4. Basic Assessment Documentation does not interfere with my ability to provide patient care.
 - Strongly disagree
 - Disagree
 - Neither agree nor disagree
 - Agree
 - Strongly agree
5. Overall, I am satisfied with my experience documenting in the Basic Assessment Flowsheet.
 - Strongly disagree
 - Disagree
 - Neither agree nor disagree
 - Agree
 - Strongly agree
6. What do you feel was most helpful about the revised Basic Assessment Flowsheet?
7. What do you wish would have been done differently to improve the Basic Assessment Flowsheet?

Appendix C: EHR Nursing Satisfaction Survey-Demographic Questions

Please record the most appropriate response in the questions below:

1. What is your age?
2. What is your race and ethnicity?
 - Hispanic or Latino/a
 - Black or African American
 - American Indian or Alaska Native (specific tribal affiliation)
 - Native Hawaiian or Other Pacific Islander
 - Asian
 - White
 - Other
3. What is your sex/gender identity?
 - Male
 - Female
 - I prefer not to respond
4. How many years have you worked as a nurse?
5. How many years have you worked as an inpatient nurse at UK HealthCare?
6. How long have you been employed in your current unit?
7. How many years have you used Epic?
8. What is your Education Level?
 - Diploma in Licensed Practical Nursing (LPN)
 - Associate Degree in Nursing (ADN)
 - Bachelor's Degree in Nursing (BSN)
 - Master's Degree in Nursing (MSN)
 - Doctor of Nursing Practice (DNP) & Doctor of Philosophy (PhD)