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Improving Clinical Competence With Electronic Medical Record Training in Nursing Students:

A Benchmark Study

A Paper Submitted in Partial Fulfillment of the Requirements

For NURS 5382: Capstone

In the School of Nursing

The University of Texas at Tyler

by

Ashley Reddock, BSN, RN

December 4, 2023

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Executive Summary

Nursing students are required to do many clinical hours based on their program, the Board of Nursing and their accrediting body. During these clinicals, students are faced with challenges that cause safety concerns due to lack of exposure or knowledge regarding policies and procedures. What seems like a simple task, could be life altering because of inadequate competency.

Performing at an expected level of education and demonstrating integration of knowledge, skills, abilities, and judgement defines competency according to the American Nurses Association (ANA) (2018). Nursing programs are expected to produce competent students, and competent nurses upon graduation. Displaying competency in electronic medical record (EMR) systems is necessary for students to adequately participate in clinicals, and complete assignments. Barriers exist for students to have EMR access and training. However, the benefits of EMR training should be prioritized over barriers. Benefits are not limited to, but include accurate documentation, improved decision-making skills, and students report an increased confidence level (Forman et al., 2020). These skills can contribute to the students' active learning and participation.

Documentation of patient assessments, interventions, care plans, and medication administration all occur in the EMR. The implementation of EMR training for nursing students will focus on these skills so that accurate documentation can occur. Patient safety will also be a focus point. Students will be able to review pertinent medical records in order to make the best decision for patients.

The financial cost of the additional training is \$1,056 for the clinical facility for nursing staff payment and \$25 for the nursing professor for SurveyMonkey© subscription to assist with

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survey disbursement and data analysis. Only time contributions made by clinical site information technology (IT) and educators, and nursing school professors are necessary. Since the training is on clinical site EMR, no new purchase of software is required. The increased patient safety and competency gained is why this training is recommended for nursing students.

Improving Clinical Competence With Electronic Medical Record Training in Nursing Students: A Benchmark Study

Texas is home to more than 200 nursing education programs and are preparing the next generation of nurses (Nursing Schools Almanac, 2023). Since 2009 and mandate by the Health Information Technology for Economic and Clinical Health (HITECH) Act, EMR systems were required for healthcare providers. Nursing programs and educators are responsible for preparing nursing students to be competent and ready for practice upon graduation. Part of that preparation needs to include EMR training for nursing students. This benchmark project is presented to show the benefits of EMR training in nursing students and why this should be a priority for nursing programs' curriculum.

Rationale for the Project

In 2021 there was over 34 million admissions to the hospital in the United States (American Hospital Association, 2023). Nurses are the ones providing care to these patients during a time of illness. During their shift, it is estimated that nurses spend 25-41% of their time spent on documentation (De Groot et al., 2022).

One of the many benefits of EMR implementation was increased patient safety. Receiving safe and best practice of medical treatment is expected when seeking help. Those that will soon be providing bedside care to patients need to be participating early in their education on all safety implications, which include EMR utilization.

Second to patient safety, is nursing student learning optimization and competency. A busy day at clinical with limited computer space, call lights, patient care and assignments does not provide the best opportunity to learn the EMR system. The question guiding this benchmark project is as follows: In nursing students (P), how does electronic medical record (EMR) training

(I) compared to no training (C) affect clinical competency (O) within three months (T)? By attending an EMR training course prior to clinical participation provides students with an effective learning environment and will increase patient safety and competency.

Literature Synthesis

Guided by the PICOT question, a systematic literature search was conducted in PubMed, CINAHL, and Cochrane databases utilizing the following key words: *electronic medical record*, *nursing students*, and *clinical competency*. Selected articles to support this benchmark project and PICOT question are shown in Appendix A.

Inadequate training for EMR systems, and gaps between lecture and clinical settings make the nursing student more vulnerable to a documentation error, poor decision making, lack of confidence or unnecessary stress (Asensi-Vicente et al, 2018; Baillie et al, 2013; Chung & Cho, 2017; Craig et al., 2021; Ellis et al., 2020; Feldthouse et al., 2022; Forman et al., 2020; Hong et al., 2022; Ledlow et al., 2021; Mollart et al., 2020; Wilbanks et al., 2018). By providing EMR training that allows students a safe environment to practice documentation of medications better prepares them for the clinical setting and can contribute to patient safety by preventing medication and documentation errors (Asensi-Vicente et al, 2018; Craig et al., 2021; Wilbanks et al., 2018). In addition to the three studies that specified prevention of medication and documentation errors, five studies showed that EMR training contributes to patient safety or improving nursing student competency (Baillie et al., 2013; Chung & Cho, 2017; Feldthouse et al., 2022; Forman et al., 2020; Hong et al., 2022). Medication error prevention and ability to document are expectations of nursing students and demonstrate competency.

EMR systems are the primary source for documentation in the healthcare setting. Some nursing education programs have not completely transitioned to teaching EMR throughout the

curriculum but incorporating EMR training throughout the program can contribute to patient safety (Asensi-Vicente et al, 2018; Chung & Cho, 2017; Hong et al., 2022; Ledlow et al., 2021; Mollart et al., 2020; Wilbanks et al., 2018). In some schools traditional paper charting methods are still being taught and this does not reflect current practice. If an EMR is being utilized, it often does not mimic hospital setting EMR. However, programs and studies that have implemented EMR training have seen an improvement in student confidence (Chung & Cho, 2017; Craig et al., 2021; Ellis et al., 2020; Forman et al., 2020; Mollart et al., 2020). Students who have provided feedback on implemented EMR training, stated that using an EMR system that mirrors the clinical site has better prepared them (Craig et al., 2021; Ellis et al., 2020; Hong et al., 2022; Wilbanks et al., 2018).

Furthermore, EMR training can assist the pre-licensure student into the Registered Nurse role upon graduation. The familiarity with the EMR has made the transition easier into workforce (Baillie et al, 2013; Chung & Cho, 2017; Forman et al., 2020; Mollart et al., 2020; Weinschreider et al., 2022). Three articles discussed the importance to implement EMR throughout the program (Hong et al., 2022; Ledlow et al., 2021; Mollart et al., 2020). It is crucial to provide nursing students with an EMR training opportunity at the clinical site prior to actual patient interaction. Collaborating with clinical site IT and educators, nursing professors can improve student confidence, competence, patient safety and better prepare nurses for the workforce by incorporating EMR training throughout the program curriculum.

Project Stakeholders

Nursing school clinical professors, clinical site educators, nursing students and patients are stakeholders affected by the benchmark project. Opportunities for inter-professional involvement include collaboration with IT, nursing informatics, and bedside nurses. Together

this group of healthcare professionals will all play a valuable role in assisting in the training implementation.

Having IT support to provide students with access and logins to the EMR. Nursing informatics will be able to provide expert advice on optimization of EMR for students. Bedside nurses can provide daily charting requirements, and their day-to-day experience which can bring insight to the training environment. Bedside nurses will also be the ones precepting nursing students, and this will help them know expectations of students. Permission from the clinical site administration would be required to give the students personal logins to the EMR. An EMR super user can navigate the EMR best and can share helpful hints, tips, and techniques.

Patients are the priority and will benefit from the increased competence and safety from nursing students who are assisting with their care. The nursing students are eventually going to be licensed professionals and the patients will appreciate their confidence and ability to provide safe care. This can increase the trust in the patient and student nurse relationship. Beneficence is expressed in this training by doing what is in the best interest of the patient.

Implementation Plan

The implementation is dependent on thorough planning. Projects that are poorly organized, and do not have a strategic plan are often unsuccessful (Melnik & Fineout-Overholt, 2019). For this benchmark project 40 level three pre-licensure BSN (Bachelor of Science in Nursing) students who have not had previous exposure to EMR training will be included. The major phases of implementation include pre-clinical EMR training, clinical participation where new skills and knowledge can be applied at the bedside, and an interview period. These phases of implementation will occur over a 12-week timeframe.

Prior collaboration with the clinical site will ensure that each student has computer and EMR access. Pre-clinical training will be done with assistance from IT at the clinical site, bedside nurses who will later be preceptors, and the nursing professor. Training will take place at the clinical site. Students will attend training in small groups of ten. Students will attend clinicals on a medical-surgical floor for one-12-hour shift per week. Clinical participation will allow students to navigate through the medical record to review prescribed orders, nursing care plans, documentation, and medication administration records.

At the end of the clinical rotations, students will be interviewed by the project coordinator and complete a survey (see Appendix C). Immediately after the survey students will be invited to participate in a group discussion. The group discussion will focus on results of survey and evaluate the experience. This benchmark projects allows students to obtain practice within the same EMR system that is used in clinical. The familiarity with the EMR system prior to actual patient interaction is important for patient safety and clinical decision making by nursing students.

Timetable/Flowchart

The flowchart serves as a reference guide for implementation. This step-by-step guide can be used at any clinical facility the students attend. It sets expectations for the students and timeline. The timetable illustrates tentative dates for this benchmark project. See Appendix B for flowchart and timetable.

- Week 1-2 Pre-clinical training – Students attend a four-hour EMR training session each week to develop navigation skills, review charting expectations, medication administration and become familiar with the specific EMR software at their designated clinical site.

- Week 3-10 Clinical participation – Students attend clinicals and participate in active EMR charting and chart review. Gradually increase the number of patients to match acuity and skill level for the student.
- Week 10-12 Interview period – Students complete researcher-designed survey and group interview for feedback.

Data Collection Methods

Data collection for this project is utilized through a 5-question Likert survey and open-ended discussion questions in a group setting. The survey is expected to take participants less than two minutes to complete, which will increase likelihood of responses. The survey questionnaire (Appendix C) is completed anonymously. A group discussion with all participants will last 30 minutes and will provide thematic content. Scores on survey will range from 5 to 25, and a mean score of 18 or above will indicate positive outcomes. Utilizing SurveyMonkey© will assist in data analysis of score values. Themes reported by nursing students in group discussion that indicate successful training include ability to navigate and accurately document in the EMR, increased confidence at clinical, decreased stress, and training was thorough and productive.

Evaluation

Evaluation of EMR training will be done based on a 5-question Likert survey and open-ended questions during group discussion. The survey questions are as follows with a scoring of *1-strongly disagree, 2-disagree, 3-neutral, 4-agree, and 5-strongly agree*:

1. The EMR training helped better prepare me for clinical.
2. I am more confident giving medications safely in the EMR.
3. I was given adequate time to learn the EMR and expectations.
4. This training will make me more marketable upon graduation.

5. I am confident in finding information in the EMR and documenting patient findings appropriately.

Scores range from 5 to 25 with lower scores indicating negative results for the EMR training. Higher scores indicate positive results such as EMR is helpful, increases confidence in safe medication administration, allowed adequate time to learn EMR, and indicates students perceived confidence in finding and documenting patient care.

For a new survey Nunnally and Bernstein (1994) recommend a Cronbach alpha of .90, however with a small 5-item survey a .70 Cronbach alpha reliability coefficient (Cohen, 1988) is hoped for in this project.

Discussion questions for group are as follows:

1. What did you like most about the EMR training?
2. What would you change about the EMR training?
3. What barriers did you face and how were they addressed?
4. Do you think this would be helpful for level 1 and 2 of nursing school?

It is hoped that through qualitative data analysis themes will emerge that show EMR training was well liked and helpful. Additional information will be obtained that can help refine the training and decrease or eliminate barriers. Evaluation data will inform the project leader on needed improvements or refinements for the future students and whether to continue this type of EMR training.

Cost/Benefit Analysis

The overall cost to implement this project will be \$1,056 for the clinical site to pay bedside nurses to assist with training days. This is based off of an average pay of \$33 per hour for nurses in Tyler, Texas (Indeed, n.d.). This will provide payment for two nurses to assist for a combined 32 hours total. The only expense for the nursing professor will be a subscription to SurveyMonkey© to provide anonymous survey link to students. This subscription is 25 dollars a month and allows for 50,000 responses each year. EMR software and equipment that is already being utilized by the clinical site means that no new software or equipment will need to be purchased. Time commitments from IT, nursing informatics and nursing professor is built into salaries.

This training is expected to increase patient safety. Goodman (2011) estimates that preventable adverse events cost the United States healthcare system approximately \$17 billion each year. Even if this training prevents one adverse event from occurring, that justifies the minimal financial cost associated with implementation.

Discussion of Results

Due to limitations regarding time constraints, nursing student clinical group availability and connections with clinical sites, implementation of this project was unable to be fulfilled. Current evidence supports positive outcomes from EMR training for nursing students such as improved competency, decreased stress for students, ease of transition into registered nurse role, and increased patient safety. These results would be expected with any clinical group that implements this training throughout the curriculum.

Challenges to implementation of EMR training would include faculty resistance, clinical sites not allowing student logins, clinical sites not having enough equipment for training opportunities, and funds. Nursing school faculty need to be enthusiastic about this

implementation, however faculty themselves may not be familiar with the EMR at clinical sites. This lack of experience may hinder EMR training. Creating strong relationships with clinical site educators and IT departments can facilitate EMR training and student logins. Relationship building with these stakeholders is important. Limited amount of funds needed for this implementation project may create barrier. If this occurs, plan to speak to stakeholders of this importance for student competency and patient safety to gain support. A leader who anticipates these barriers, encourages this project, facilitates strengths in their team members and connects with stakeholders will ensure that EMR training for nursing students remains successful.

Conclusions/Recommendations

It is imperative that nursing school faculty plan far in advance. Providing a list of student names to clinical sites to allow for log in credentials to be made will be the most time-consuming part. Nursing school faculty should also review and complete the EMR training prior to student participation. Providing education to bedside nurses on student expectations should also be included in the planning phase. Creating a tips sheet for students that contains IT contact for troubleshooting will be helpful when login issues arise.

At the completion of every semester, a thorough evaluation from student feedback is necessary to make improvements to the training for the next group. It is also recommended that EMR training start in the beginning level of nursing school and is continued throughout the program. By the time the student graduates they will be proficient in EMR documentation, and this will ease the transition into the Registered Nurse role, but most importantly contribute to patient safety. By ensuring that EMR training and competency are an essential part of the nursing curriculum, a safer healthcare environment is created.

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Appendix A

NURS 5382 Capstone Evidence Table

PICOT Question: In nursing students (P), how does electronic medical record (EMR) training (I) compared to no training (C) affect clinical competency and decision making(O) within three months (T)?
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PICOT Question Type (Circle: Intervention) Etiology Diagnosis or Diagnostic Test Prognosis/Prediction Meaning
--

Caveats

- 1) The only studies you should put in these tables are the ones that you know answer your PICOT question
- 2) Include APA reference
- 3) Use abbreviations & create a **legend** for readers & yourself
- 4) Keep your descriptions brief – there should be **NO complete sentences**.
- 5) This evidence table will be used to support your change project and will be inserted in your final paper as an appendix.

Place your APA References here in alphabetical order (Use correct 7th ed. APA reference format including the hanging indentation):

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Appendix A Continued

Citation : (i.e., author(s), date of publication, & title)	Conceptual Framework	Design/ Method	Sample/ Setting	Major Variables Studied and Their Definitions	Measurement of Major Variables	Data Analysis	Study Findings	Strength of the Evidence (i.e., level of evidence + quality [study strengths and weaknesses])
Author, Year, Title	Theoretical basis for study Qualitative Tradition		Number, Characteristics, Attrition rate & why?	Independent variables (e.g., IV1 = IV2 =) Dependent variables (e.g., DV =) Do not need to put IV & DV in Legend	What scales were used to measure the outcome variables (e.g., name of scale, author, reliability info [e.g., Cronbach alphas])	What stats were used to answer the clinical question (i.e., all stats do not need to be put into the table)	Statistical findings or qualitative findings (i.e., for every statistical test you have in the data analysis column, you should have a finding)	<ul style="list-style-type: none"> • Strengths and limitations of the study • Risk or harm if study intervention or findings implemented • Feasibility of use in your practice • Remember: level of evidence (See PICOT handout) + quality of evidence = strength of evidence & confidence to act • Use the USPSTF grading schema http://www.ahrq.gov/clinic/3rduspstf/ratings.htm
1. (Asensi-Vicente et al., 2018) Medicati	None	SR; Medline & CINAHL	N=19. Originally 113 articles	IV: 1. NS DV1: notification of ME	Qualitative content analysis	Thematic analysis	low reporting, large variety, mostly dosage error, negative experience, absent supervisor.	Strength of Evidence: High Level I Evidence

on Errors Involving Nursing Students : A Systematic Review		searched. IC and EC used.	met criteria IC: 2005-2017, English, original research, ME by nursing students EC: not English, literature reviews, not about ME/nursing	DV2: characteristics of ME DV3: student reaction DV4. supervision DV5. SIM.			Most common contributing factor was lack of experience.	Strengths: Articles includes in review were from multiple levels of evidence, international study Weaknesses: wide variability in each study design Risk/Harm: None Feasibility: Likely Conclusion: gap between clinical and theory, integrate IT and EMR training into clinical to improve patient safety Grade: A
2. (Baillie et al., 2013) A survey of student nurses' and midwife	Patton's Framework	Qualitative study. NS and midwife students	N=210 Survey and focus groups for qualitative and quantitative results	IV1: NS IV2: Midwife students DV1: Preparation for	Pearson's Chi Square	Thematic analysis	NS must develop competence in EMR. Opportunities are limited. Many barriers. 38% of NS reported no EMR training by end of 3 rd year.	Strength of Evidence: Moderate Level VI Evidence Strengths: shows that EMR training will better prepare for workforce Weaknesses: only done at one university in UK

s' experiences of learning to use electronic health record systems in practice				EMR/skills DV2: Access to EMR				Risk/Harm: None Feasibility: likely, changes were made based on this study. Conclusion: Need to train students on EMR, collab with clinical facility to optimize Grade: B
3. (Chung & Cho, 2017) The need for academic electronic health record systems in nurse education	None	Quantitative design with supportive qualitative research. 100 nursing schools	5 nursing schools= 62 NS and 21 faculty	IV1: Faculty IV2: NS DV1: Demographics DV2: knowledge DV3: Attitudes toward EMR	5 point Likert scale	Statistical and Thematic analysis	1/5 of NS reported never having been provided EMR training. Lots of barriers to EMR implementation in nursing education	Strength of Evidence: Low Level V evidence Strengths: schools invited from across the US, looked at quantitative and qualitative data Weaknesses: small sample size Risk/Harm: None Feasibility: likely Conclusion: EMR training will help NS be more competent Grade: B

		invite d, only 5 partic ipated						
4. (Craig et al., 2021) Simulation strategies to increase nursing student clinical competence in safe medication administration practices : A quasi-experim	Jeffries Simulation Framework	Quasi Experimental study. 3 rd year BSN students	N = 83, randomized into 2 groups	IV1: NS DV1: 3 scenarios for experimental group	MSKA, MSCEC, and confidence survey	MSKA CVI: 0.94 MSCEC CVI: 0.92 Student qualitative survey	The intervention group felt more confident, and scored better at the end of training.	Strength of Evidence: Moderate Level III evidence Strengths: students reported greater feelings of confidence and competence after sim Weaknesses: unable to complete all sims before clinical, students did not get to repeat the sim due to time constraints, inconsistencies in debriefing styles Risk/Harm: none Feasibility: likely, will need to collab with hospital to get similar EMR for students to practice Conclusion: educators should consider sim with EMR to

ental study								implement medication safety practices Grade: B
5. (Ellis et al., 2020) Students' perception on their use of an HER: pilot questionnaire study	None	Qualitative survey	N=24(pre survey); 23 (post survey). Anonymous, all NS registered for course invited to participate	IV1: NS DV1: pre training survey DV2: post training survey	10 point Likert scale and open ended survey	Statistical and thematic analysis	Pre survey median = 2 on proficiency Post survey median = 5 on proficiency Themes: Lack of confidence, desire to increase knowledge, responsibilities	Strength of Evidence: Moderate Level IV evidence Strengths: reviewed literature to support need for study Weaknesses: small sample size at one university in UK Risk/Harm: none Feasibility: somewhat likely Conclusion: NS reported more proficient in EMR, improvement in knowledge Grade: B
6. (Feldtho use et al., 2022) Implementing an Academi	None	EMR implementation guide of	No sample size. Setting was clinical sim center at	IV1: NS DV1: developed EMR	None	None	Implementation of real life EMR into nursing curriculum represents potential benefit	Strength of Evidence: Low Level VII evidence Strengths: Built EMR to mimic EPIC Weaknesses: A discussion of implementation importance, no

c Electroni c Health Record in Nursing Educatio n		exper t	large urban universit y					<p>data of how EMR training benefited students</p> <p>Risk/Harm: None</p> <p>Feasibility: not likely (Developed EMR to mimic EPIC)</p> <p>Conclusion: EMR implementation is beneficial to prepare nurses for clinical practice</p> <p>Grade: B</p>
7. (Forman et al., 2020) An Integrati ve Literatur e Review of the Use of Electroni c Health Record	Whittem ore and Knafl's	Litera ture Revie w IC and EC used.	N=46 Includes literature from 13 countries	IV1: EMR DV1: Benefits DV2: Barriers	qualitative methodolog y	Themati c analysis	<p>Benefits: attitude (increased confidence), skills (essential to competence), safety (safely provide patient care)</p> <p>Barriers: finances, technology, training (for faculty and NS), time</p>	<p>Strength of Evidence: Moderate</p> <p>Level V evidence</p> <p>Strengths: reviews literature from 13 countries</p> <p>Weaknesses: Further research needed for best implementation</p> <p>Risk/Harm: none</p> <p>Feasibility: likely</p>

for Clinical Nursing Education								Conclusion: EMR skills are essential, but what is best practice for implementation Grade: B
8. (Hong et al., 2022) Simulation Education Incorporating Academic Electronic Medical Records for Undergraduate Nursing Students : A Pilot Study	None	Mixed Method Pilot Study	N=76 (3 rd and 4 th year NS from 5 schools	IV: NS DV: 3 sims utilizing EMR	Self-reported survey with Likert scale (Cornbach's alpha was 0.95) and focus groups	SPSS and thematic analysis	SPSS: Demographics, usability, self-efficacy and nursing process Thematic analysis: Benefits- training, immersion, information structuring and confidence Challenges- pre-education, time, barriers, consider students' level	Strength of Evidence: Moderate Level IV evidence Strengths: Provides evidence that sim with EMR is beneficial Weaknesses: All students participated, no control group to compare to. Only done in South Korea Risk/Harm: none Feasibility: likely Conclusion: EMR should be a part of all curriculums to facilitate repeated use Grade: B

9. (Ledlow et al., 2021) Integrating a simulated electronic medical record system and barcode medication administration into a pre-license nursing program	None	Qualitative survey	N= 96 second semester NS	IV: NS DV: perception of EMR	Voluntary survey after sim check-off. 7 Likert scale questions, 3 open ended	Statistical and thematic analysis	31% response rate 96% reported EMR provided realistic experience 94% reported better prepared for clinical Theme: mimic hospital EMR	Strength of Evidence: Low Level VI evidence Strengths: Faculty had rigorous training prior to implementation Weaknesses: small response rate Risk/Harm: none Feasibility: likely Conclusion: Provided students with a safe environment to increase familiarity Grade: C
10. (Mollart et al., 2020)	None	SR of descriptive and	N = 23 IC: 2008-2018, English,	IV1 – NS IV2 – EMR	Surveys, qualitative methodology	Thematic analysis	Implementing simulated EMR training is essential in	Strength of Evidence: Moderate Level V evidence

Introduction of patient electronic medical records (EMR) into undergraduate nursing education: An integrated literature review		qualitative studies IC and EC used.	student nurses, EMR usage	IV3 – Faculty DV1 – advantages of EMR in academic setting DV2 – Challenges and limitations DV3 – developing and implementation			nursing curriculum	Strengths: Covered 5 countries, discussed challenges/advantages to implementation Weaknesses: only reviewed articles in English, 4 reports were low level of evidence Risk/Harm: can be expensive to implement Feasibility: likely Conclusion: to achieve EMR implementation there needs to be better funding, faculty support, and design consistency Grade: B
11. (Weinschreider et al., 2022) Electronic Health Record Knowled	Levac et al approach	Literature view IC and EC used	N=11 Articles from US and Canada	IV1: NS IV2: NGN DV1: assessment of EMR competency level	Assessments and surveys	Statistical and thematic analysis	Significant gaps in EMR KSA and NS/NGN are potentially overconfident with EMR use	Strength of Evidence: Low Level V evidence Strengths: included lots of different article types in review

ge, Skills and Attitudes Among Newly Graduate d Nurses: A Scoping Review				DV2: self- reported EMR competenc y				Weaknesses: Lots of variety in terminology for EMR competency in articles Risk/Harm: lack of EMR optimization can lead to consequences Feasibility: likely Conclusion: opportunity to grow NS foundation in EMR usage Grade: C
12. (Wilban ks et al., 2018) Electroni c Health Records in Simulati on Educatio n	None	Litera ture Revie w IC and EC used	N=15 Variety of studies and professio n 2007- 2016 5 countries	IV: health care students DV1: importanc e of EMR training DV2: properties of ideal EMR DV3: benefits and	Qualitative methodolog y	NVivo qualitat ive data analysis	1. Direct impact on patient safety 2. reproduction of real world EMR 3. contributes to higher level of thinking, financial costs, time consuming 4. need faculty support, functionality of EMR	Strength of Evidence: Level V evidence Strengths: included feedback from articles about pharmacy/medical students Weaknesses: predominately articles from North America, does not represent worldwide Risk/Harm: lack of training can cause medical errors Feasibility: likely

				disadvantages DV4: facilitators and barriers DV5: best practice			5. faculty training and video tutorials	Conclusion: incorporate EMR in education to promote patient safety Grade: B
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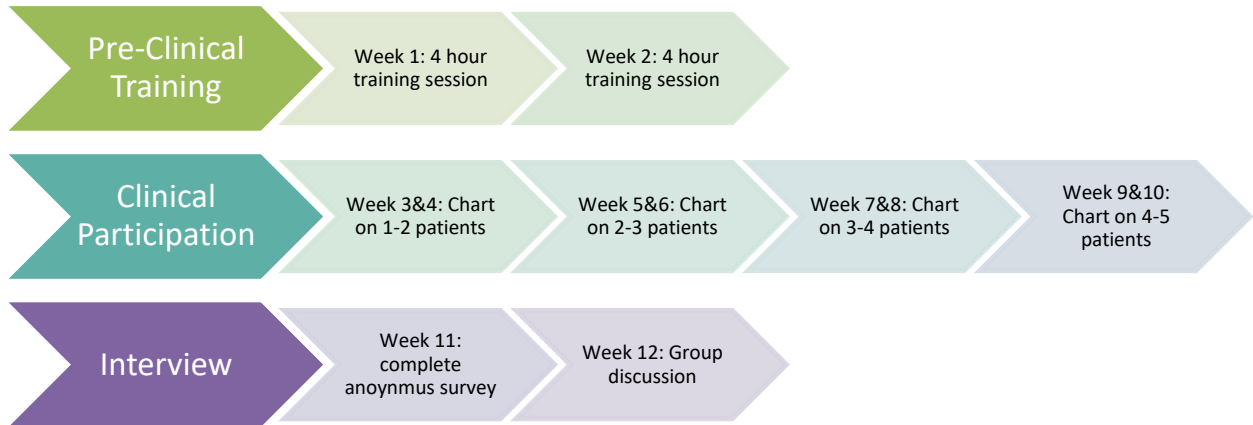
Legend: DV – Dependent Variable; EC – Exclusion Criteria; Edu – education; EMR – Electronic Medical Record; GRADE – grading of recommendations, assessment, development and evaluations method; IC – Inclusion Criteria; IT- Information technology; IV – Independent Variable; KSA – Knowledge, skills and attitudes; MAN – Meta-Analysis; ME – Medication Error(s); MSCEC – Medication Safety Critical Element Checklist; MSKA – Medication safety knowledge assessment; N – Number in study; NGN – Newly graduating nursing student; NS – Nursing student; sim – Simulation; SPSS – Statistical Package for Social Sciences; SR – Systematic Review

Please do not repeat the headings, just provide the data

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Appendix B

Flowchart and Timetable



Week 1:	EMR training session 1: Review login information, navigating EMR, how to request co-signer for charting
Week 2:	EMR training session 2: Review medication administration, documentation of care plan, assessment, I&Os, and education
Week 3:	Attend clinicals. Chart on 1-2 patients
Week 4:	Attend clinicals. Chart on 1-2 patients
Week 5:	Attend clinicals. Chart on 2-3 patients
Week 6:	Attend clinicals. Chart on 2-3 patients
Week 7:	Attend clinicals. Chart on 3-4 patients
Week 8:	Attend clinicals. Chart on 3-4 patients
Week 9:	Attend clinicals. Chart on 4-5 patients

EMR TRAINING FOR NURSING STUDENTS

Week 10:	Attend clinicals. Chart on 4-5 patients
Week 11:	Complete survey
Week 12:	Attend group discussion from 1300-1400 in conference room

Appendix C

Instrument (Include permissions at the bottom of your instrument or copyright information)

Use the following for scoring each question:

1-strongly disagree, 2-disagree, 3-neutral, 4-agree, and 5-strongly agree

1. The EMR training helped better prepare me for clinical.

1 <input type="radio"/>	2 <input type="radio"/>	3 <input type="radio"/>	4 <input type="radio"/>	5 <input type="radio"/>
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2. I am more confident giving medications safely in the EMR.

1 <input type="radio"/>	2 <input type="radio"/>	3 <input type="radio"/>	4 <input type="radio"/>	5 <input type="radio"/>
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3. I was given adequate time to learn the EMR and expectations.

1 <input type="radio"/>	2 <input type="radio"/>	3 <input type="radio"/>	4 <input type="radio"/>	5 <input type="radio"/>
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4. This training will make me more marketable upon graduation.

1 <input type="radio"/>	2 <input type="radio"/>	3 <input type="radio"/>	4 <input type="radio"/>	5 <input type="radio"/>
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5. I am confident in finding information in the EMR and documenting patient findings appropriately.

1 <input type="radio"/>	2 <input type="radio"/>	3 <input type="radio"/>	4 <input type="radio"/>	5 <input type="radio"/>
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