

Teaching Electronic Charting with Simulation And Debriefing in Early Fundamentals

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This project was implemented with support from the "Emerging Technologies" grant program at Molloy College. The authors purchased two workstations-on-wheels (WOWs), three Lenovo® tablets, and two printers to be set up in the simulation labs. The software (PC-CCC) was downloaded free from www.sabacare.com, and the instructions were developed with online software to capture lectures (Blueberry Standard) and were distributed to students prior to and in conjunction with the activities. The students did the simulations as part of their fundamentals experience in the lab with high fidelity simulators, a "patient" actor, and the computer workstation next to the bed.

Simulation for Student Learning – Electronic Health Records

As hospital electronic documentation systems continuously evolve, clinical nurses struggle to keep pace with increasingly new medical equipment and technologies to capture appropriate data for the electronic health record (EHR), and their education needs are constant. With the American Recovery and Reinvestment Act of 2009, President Obama signed into law the policy incentives to advance hospital acquisition of health information technology systems. This proliferation of new technologies has forced nursing education to add new documentation skills to the curriculum in anticipation of student nurses working in these technology-driven hospital systems. In the Institute of Medicine's (IOM) (2010) report, nurse educators are called upon to supplement curriculum and integrate technologies. Through coursework, clinical experiences, and simulation exercises, nursing students are expected to work with electronic health information so they are adequately prepared for the working world.

A particular need is to understand the fundamentals of charting using an electronic health record (EHR) (Rubbelke, Keenan, & Haycraft, 2014) and the benefits of learning a standardized nursing terminology so the "elements" of nursing can be part of that electronic record and are fundamental. Using a standardized terminology such as the Clinical Care Classification (CCC) System is critical to capture nursing actions in the hospital-wide systems today (Englebright, Aldrich, & Taylor, 2014).

The pedagogy associated with simulation is based on the importance of debriefing (Zigmont, Kappus, & Sudikoff, 2011). The process of debriefing is the critical final step for students to internalize the simulated experience and reflect on their observed performance with feedback on their cognitive choices in the encounter with a simulated patient. This provides a good opportunity to use the application of documenting nursing care in the teacher-student interaction about the simulated patient-student experience. Using a nursing documentation system with a coded, standardized terminology

can structure the communication and exchange in debriefing. This has added value to the student who is learning the full encounter from assessment through documentation, especially applying the nursing terminology at an important point when learning is maximized.

Simulation and the PC-CCC – Emerging Technologies Grant

The purpose of the "Emerging Technologies" grant program was to identify innovative technologies that enhance the learning experience for students at Molloy. The program supported

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faculty to use technologies in teaching. The evidence-based Microsoft Access® PC-CCC, developed by Feeg, Saba, and Feeg (2008), is a field-tested documentation system that we incorporated into the simulation lab experience of students in the fundamentals course in our program. The PC-CCC uses the terminology developed by Virginia Saba and colleagues using an automated, drop-down menu approach to documenting nursing care (sabacare.com). The software is a free, downloadable application from the Internet that can be used in conjunction with the fundamentals required by students learning early patient care documentation related to planning care. Our goal in the “Emerging Technologies” grant was to go beyond the EHR experience for students. While the main goal of the system is to teach electronic documentation, the process of students documenting their understanding of care delivered and coded language could provide an additional learning outcome when used with debriefing in simulation. With this combination, learning could go beyond the process of documentation, and the simulated experience could provide a full student-patient encounter, concluding with appropriate electronic charting that becomes part of the simulated patient’s plan of care.

Following earlier preparation procedures reported in the literature (Feeg et al., 2008; Mannino & Feeg 2011, 2012), students were emailed a short PC-CCC video introduction and step-by-step tutorial, along with two simulated patient scenarios prior to their simulation experience (<http://sabacare.com/ToolKit/DesktopDemo.html>). They were instructed to view the videos, review the nursing process, and consider potential nursing plans of care for the two simulated patient scenarios. On the morning of the simulation experience, paired students practiced documentation on Lenovo Think Pad® tablets equipped with PC-CCC software. As students entered the simulation lab one pair at a time, they received verbal report by faculty on one of the two patients they were previously assigned. The students then had 15 minutes to introduce themselves to the patient, perform a focused patient assessment, prioritize, and provide patient care followed by documentation of their plan of care using the PC-CCC software.

Design and Method

The PC-CCC is designed according to the nursing process. Using the PC-CCC in

Figure 1.
Screen Shot of Main User Interface

Problem ID	Date	Diagnosis	Expected Outcome	Type of Action	Intervention	Actual Outcome	Status	Resolve Date
6	6/10/2014	Fluid Volume Excess Risk	(S)	A-C-T	Intravenous Care		In progress	
5	6/10/2014	Individual Coping Impairment	(I)	A-C-T	Spiritual Comfort		In progress	
4	6/10/2014	Knowledge Deficit of Disease F	(I)	T	Behavior Care		In progress	
3	6/10/2014	Cardiac Output Alteration	(S)	A-M	Cardiac Care		In progress	
2	6/10/2014	Activity Intolerance	(I)	A-C-T	Energy Conservation		In progress	
1	6/10/2014	Airway Clearance Impairment	(I)	A-C-T	Pulmonary Care		In progress	

nursing education not only provides students with the psychomotor experience of electronic documentation, but aids in their understanding and use of the nursing process. Figure 1 demonstrates how the PC-CCC guides users through the steps of the nursing process. Using assessment techniques, the student first identifies a care category and care component. Next, a nursing diagnosis with supporting free-text data is entered to identify an actual or a potential patient health concern. Each plan of care created using the PC-CCC then requires the documentation of an expected patient outcome with nursing actions and specific nursing interventions necessary to achieve that expected outcome. Many plans of care can be active at one time, and each is identified with an individual problem identification number. Although not used in this simulation experience, once interventions are carried out, any plan of care in the database may be evaluated for success, and an actual outcome may be documented. Integration of the PCCC with simulation exercises provides an excellent critical thinking exercise that not only allows for electronic documentation, but fosters the nursing student’s cognitive growth by linking patient outcomes to nursing actions (Mannino & Feeg, 2012).

In this project, 77 second-year students were introduced to a simula-

tion environment with technology. In the brief 15-minute scenario, students were able to assess patients, prioritize, provide care, and document a plan of care using the PC-CCC patient care record uploaded onto a work station on wheels (WOW). During the simulation scenario, students demonstrated effective communication and worked together as a collaborative team exchanging information about patient assessments, nursing diagnosis and interventions.

Debriefing

The period following the simulation experience, often referred to as debriefing or “post-simulation” experience, is an integral part of learning in nursing education (Johnson-Russell & Baily, 2010; National League for Nursing Simulation Innovation Resource Center [NLN-SIRC], 2010). According to the International Nursing Association for Clinical Simulation and Learning (INACSL) standards of best practice in simulation, debriefing is to “move toward assimilation and accommodation in order to transfer learning to future situations” (INACSL, 2011, p. 53). Debriefing improves critical thinking, clinical judgment, and clinical performance in students (Driefuerst, 2009; Wickers, 2010). Further, debriefing provides an opportunity for reflective learning and identification of mental models that lead to behaviors or cogni-

Figure 2.
PC-CCC Individual Care Record

Individual Care Records									
Patient: Mary Smith									
Problem ID	Date	Diagnosis RELATED TO/AS EVIDENCED BY	Expected Outcome	Type of	Intervention ACTION/RATIONALE/Reference	Actual Outcome	Status	Resolve Date	
1	6/10/2014	Airway Clearance Impairment RELATED TO: increased and retained secretions, pneumonia, ineffective cough; EVIDENCED BY: restlessness, dyspnea, SaO ₂ 91, cyanosis, rales/crackles and rhonchi/wheezes upon auscultation, sputum production	(I)	A-C-T	Pulmonary Care ASSESS: vital signs, respirations and breath sounds, rationale monitoring status (Cravens Ch 35); TEACH: patient and family about proper nutrition, to avoid exposure to infected people, practice good hygiene, receive an influenza vaccine, rationale to prevent malnourishment & prevent infection, patient about proper breathing techniques including taking deep breaths, rationale to expand alveoli and promote an effective cough to prevent pulmonary complications (Cravens Ch 35); CARE: assist with postural drainage & provide chest PT & coughing and deep breathing, rationale changing positions of client to shift mucus where it can be coughed out and to prevent it from pooling (Cravens Ch 35); ASSIST: patient with deep breathing using an incentive spirometer and taking deep breaths 8-10 times an hour rationale to reduce alveolar collapse, provide oxygen therapy as needed rationale to maintain SaO ₂ >93% (Cravens Ch 35)		In progress		

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Note: Patient information is based on a simulation exercise and does not reflect actual patient data.

tive processes that provide the ability to build new mental models to be used in future experiences (Zigmont et al., 2011).

Debriefing Using the PC-CCC

A structured framework is required to promote learning in the debriefing period. A critical component needed for the simulation and debriefing experience is the establishment of defined learning objectives with projected outcomes for students. Defined learning objectives provide structure for evaluating the simulation experience. Additionally, debriefing after simulation requires several essential components. Attributes such as reflection, emotion, reception, integration, and assimilation can frame simulation debriefing. Integration and assimilation can be achieved when the facilitator models framing and embeds the experiences of the simulation into scaffolding that are familiar to the learner. This allows the learner to reference when in future care situations (Driefuerst, 2009).

A suggested framework for debriefing in nursing education is to follow a structure similar to the nursing process. "Integrating elements of the nursing process in debriefing sets the stage for assimilation of the knowledge, skills and attitudes into practice and provides a path for accommodation and transference into future patient care environments" (Driefuerst, 2009, p. 111). Using this structure, appropriate nursing interventions and thought processes leading to the prioritization of actions may be

revealed. The use of the PC-CCC Individual Care Record (see Figure 2) has provided a framework for student nurses within the simulation experience and throughout the debriefing process.

The PC-CCC Individual Care Record was used in the debriefing period as a guide for faculty as well. Documentation on the patient care record enabled the facilitator to guide student reflection related to their individual simulation experiences. Nursing process, nursing diagnosis, goals, and interventions were discussed with students. Through the use of the PC-CCC, several priority nursing diagnosis goals and interventions were appropriately documented.

The care records were used by the faculty to enable students to reflect upon how they came to priority decisions and conclusions about each patient. Using the PC-CCC Individual Care Record additionally provided students with the ability to review the thought processes and decision-making of other students regarding a different priority nursing diagnosis with goals and interventions. For novice student nurses, the use of the PC-CCC Individual Care Record within simulation provided student nurses with multiple opportunities for successful learning.

Evaluations of the PC-CCC

Evaluations were carried out using the same 13-item PC-CCC usability survey previously used by Mannino and Feeg (2010). Students ($n = 77$) reported at

least an 87% agreement with all items. Items with greater than ninety percent agreement included statements such as: 1) *This program aided my ability to understand and prioritize nursing diagnosis;* 2) *This program aided my ability to understand and prioritize nursing interventions;* 3) *Using this program aided my ability to understand nursing care plans;* 4) *Using this program aided my ability to create nursing care plans;* 5) *I would like to continue using this program for all nursing courses that require the development of nursing care plans;* 6) *The screen design was organized and clear;* 7) *The format was easy to follow;* 8) *The information was easy to understand;* 9) *The system allowed me to chart my care plan;* 10) *The system was efficient to enter the data;* and 11) *I would recommend using this program at the bedside.* Overall students' were pleased with the PC-CCC and responses were very positive. Faculty agrees the PC-CCC program enhances the simulation experience and positively affects student learning.

Learning Beyond Documentation Alone

Additional learning objectives for the simulation experience and debriefing in this project were developed based on the IOM (2010) recommendations to transform nursing education and integrate technologies. Competencies developed from the Quality and Safety Education for Nurses (QSEN) project was used to guide nurse educators toward the creation and implementation of simulation scenarios using the PC-CCC. The QSEN competency for Informatics focuses on the change of Knowledge, Skills, and Attitudes (KSAs) through the use of "information and technology to communicate, manage knowledge, mitigate error, and support decision making" (Cronenwett et al., 2007, p. 129).

Through the simulation experience with the use of the PC-CCC and faculty-guided debriefing, fundamental student learners were able to demonstrate within the KSA competency recommendations for Informatics. Learners were able to describe examples of how technology and information management are related to the quality and safety of patient care, as well as recognize the time, effort, and skill required for computers, databases, and other technologies to become reliable and effective tools for patient care. Additionally, student learners had the opportunity to demonstrate skills by using the WOW and the PC-CCC to document and plan patient care in an electronic health record. Attitudes that were

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modeled by nurse faculty in this project emphasized the value of technologies that support clinical decision-making, error prevention, and care coordination, as well as the importance of nurses' involvement in design, selection, implementation, and evaluation of information technologies to support patient care.

Conclusion

Simulation in nursing education provides an experiential and learner-centered experience for learners. Even early in their program, through immersion and hands-on activities, learners can assume an active role in patient care while practicing in a safe setting. Simulation offers the opportunity to bridge the gap between theory and practice by allowing students to apply knowledge and clinical reasoning skills to actual patient care situations (Durham & Alden, 2012). The addition of the simulated electronic documentation component gave the students a full 360-degree patient-care experience from taking report to charting on the computer. **DN**

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