EVALUATION OF A ONE-DAY MEDITECH MAGIC TRAINING PROGRAM FOR REGISTERED NURSES AND LICENSED PRACTICAL NURSES IN A LONG TERM CARE PROGRAM

by

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Abstract

Background: An evaluation was completed on the One-Day Meditech Magic Training Program for Registered Nurses (RNs) and Licensed Practical Nurses (LPNs) developed for the Long Term Care (LTC) Program.

Methods: Both a literature review and consultation with stakeholders were completed to determine possible evaluation methods, expected outcomes, and ways to measure the effectiveness of the education program. A pretest/posttest design and questionnaire were chosen as the evaluation tools for this project.

Results: No significant difference was found between the pretest and posttest total scores indicating that learners retained information from the orientation session ($Z = -1.820$, $p = 0.069$). Additional Wilcoxon matched-pairs signed rank tests were performed on the individual sections of the tests and revealed a significant decrease in the posttest scores for entering a Diagnostic Imaging requisition ($Z = -1.975$, $p = 0.048$). No other significant findings were present. Questionnaires were also analyzed revealing that most participants were pleased with the Meditech documentation education they received and did not indicate barriers that would affect electronic documentation.

Conclusions: Further testing is required to ensure reliability and validity of the evaluation tools. Finally, caution is needed due to a small sample size. However, problematic documentation tasks were identified during the evaluation, and as a result both the training session and support materials will be improved as a result of this project.

Keywords: Electronic documentation, evaluation, nursing staff, training

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Introduction and Objectives

The Long Term Care Eastern Health (LTCEH) Program within St. John's utilizes two different Meditech computer documentation systems: Meditech Magic 5.66 and Meditech Client Server 5.64. The former was introduced to the St. John's Long Term Care facility on March 25, 2014 and to Masonic Park on November 4, 2014. Prior to this, both of these facilities had been using Meditech Client Server 5.64.

Computer documentation within the LTC Program involves the day-to-day documentation of care needs for residents in nursing homes, which includes documenting electronically on interventions, assessments, notes, allergies, and the Kardex. In addition, Meditech Magic 5.66 includes an order entry module that allows staff to electronically send requests for various tests, meals, as well as referrals to various health care professionals. During orientation, all new Registered Nurses (RNs) and Licensed Practical Nurses (LPNs) receive a mandatory introductory Meditech education session.

Colleagues and frontline staff have commented informally to me that Meditech Magic 5.66 is less user-friendly than the former Meditech Client Server 5.64 system. Through informal assessments during Meditech Magic classes, and problem areas identified by staff and managers, it was determined that the computer documentation training in LTC for the Meditech Magic 5.66 system could be improved in order to better prepare staff to accurately document and retrieve information from the electronic chart. Since RNs and LPNs are involved with most of the day-to-day documentation and responsibility of residents within this setting, a One-Day Meditech Magic Training Program for RNs and LPNs in the LTC Program was developed. This one-day training module consists of a half-day of hands-on, instructor-led review of the system, with the

afternoon consisting of staff having the opportunity to practice using the system (please see Appendix A for the outline of this program).

The purpose of this practicum project was to evaluate this new training program. An evaluation was needed to determine if this program is adequate since there is a legal obligation of staff to document care accurately, as well as obtain data from the system to plan care for residents. An evaluation of the teaching program was therefore required in order to determine if changes are needed to better prepare staff for the clinical area. The following objectives were developed for this practicum:

1. During this practicum, I will conduct a process evaluation and an impact/outcome evaluation of the One-Day Meditech Magic Training Program for RNs and LPNs in LTCEH, St. John's.
2. During this practicum, I will make recommendations for improvement of the One-Day Meditech Magic Training Program for RNs and LPNs in LTCEH, St. John's, as outlined in a detailed evaluation report.
3. By the end of this practicum, I will demonstrate Advanced Nursing Practice (ANP) competencies as outlined in a final practicum report.

Overview of Methods

A literature review and consultation with stakeholders was completed to determine possible evaluation methods, expected outcomes, and ways to measure the effectiveness of the One-Day Meditech Magic Training Program for RNs and LPNs in the LTC Program. A pretest/posttest design was developed as the evaluation tool to measure the effectiveness of the program. In addition, a questionnaire was used to gather

orientating staff's opinions regarding education, factors affecting documentation and support materials available for Meditech Magic 5.66.

Summary of Literature Review

A review of the literature was completed on computer documentation training and effective methods to evaluate computer education sessions (please see Appendix B for the complete literature review and summary tables). The search strategy included both CINAHL and PubMed databases. For CINAHL, the main search strategy was (MH "documentation") OR (MH "Nursing Orders") AND (MH "Computerized Patient Record") OR (MH "Patient Record Systems") AND (MH "Staff Development") OR (MH "Employee Orientation") OR train* OR educat* AND nurs*. This revealed 113 results. In order to broaden the search, the phrases "computer documentation" and "computer documentation AND evaluation AND education" were also used. The search terms used for PubMed included ("Computer User Training" [MESH]) AND ("Documentation" [MESH]) AND ("Medical Records Systems, Computerized" [MESH]) and phrases such as "program evaluation" AND "electronic documentation" AND "training". Of the results, only those written in English that involved EMR training or evaluation were considered. Reference lists from the above articles were also reviewed to find additional relevant literature. In addition, primary sources concerning adult-learning theory and information concerning a potential evaluation framework were also reviewed.

The Center for Disease Control and Prevention (CDC) framework was chosen to guide the evaluation for the practicum project. In addition to the CDC framework, the PROCEED portion of the PRECEDE-PROCEED model was used for this project, as outlined in McKenzie, Neiger, and Thackeray (2013): Specifically, a process evaluation,

an impact evaluation, and an outcome evaluation were used. Program improvement may result from process evaluations, while outcome evaluations are used to ensure the program is meeting the needs of learners (Stanhope & Lancaster, 2011). During the process evaluation, Stanhope and Lancaster (2011) stated that questions regarding what is not working, as well as the possible reasons why the program is not working should be asked. Regarding outcome/summative or impact evaluation, the degree to which objectives and goals of the program are met is examined (Stanhope & Lancaster, 2011).

Overall, the available literature concerning the evaluation of computer documentation training for nurses is limited. The majority of studies discussed changes made to improve existing training programs, training that has taken place upon the implementation of the Electronic Medical Record (EMR) at various sites, and the examination of facilitators and barriers related to EMR usage. There appears to be overwhelming support to suggest that current EMR training programs may not be effective in providing staff members the comfort level needed to use electronic documentation systems effectively. For example, both Mitchell (2015) and Stromberg (2011) noted that staff confidence using the computer documentation system may be enhanced by improvements in training.

Prior experience and basic computer skills are also necessary for staff to be successful in learning the EMR. With regards to basic computer skills, Nicklaus, Kusser, Zessin and Amaya (2015) and Fuller (2006) discussed the need for additional computer training in order for staff to feel comfortable with computer documentation. The introduction of superusers and learning modules were also discussed in the literature as a method to aid staff members to document electronically. For example, both Poe, Abbott,

and Pronovost (2011) and Sockolow, Rogers, Bowles, Hand, and George (2014) examined the use of peer coaches and superusers respectively, to aid staff who were having trouble with the EMR. Finally, learning modules, as discussed in Nokes et al. (2012) indicated that students were very satisfied with learning modules and commented that the posttest allowed them to review the narratives, learn from mistakes, and repeat items until they correctly answered all of the posttest questions.

Factors other than training may also affect staff from documenting efficiently and effectively in the EMR. Some of these barriers included technical issues, such as logging on and dead batteries (Lyden, 2008;Whittaker, Aufdenkamp, & Tinley, 2009). Some additional barriers identified by Lyden (2008) included the number of available computers and location of these devices, and user confidence. Other authors have described similar findings. In addition to technical issues and number of computers and printers, Lee (2008) identified problems such as workflow change, poor content design, decreased charting quality, and the impact on staff relationships. Darbyshire (2000) also noted similar themes such as issues with passwords, not enough computers, and issues with system usability. Finally, Yeh et al. (2009), identified four obstacles during their evaluation which included (a) resistance by nurses, (b) insufficient computer access, (c) computerized records did not match paper records, and (d) maintenance of system. They emphasized that resistance must be addressed and that quality training is extremely important along with adequate computer access and proper support.

Due to the limited number of available studies concerning the evaluation of computer documentation training for nurses, the best way to evaluate this type of training is unknown at this time. In the literature, attempts have been made to assess the

effectiveness of EMR training, namely staff members' perceptions of the EMR and competency tests. Many of the studies within the literature review reported small sample sizes, possible bias, estimations, and lack of generalizability across settings. However, it was valuable to explore the methods used in previous research to determine an evaluation plan for the current practicum project. As a result, the literature review was helpful in exploring previous work completed related to the topic of EMR training and nurses, with particular interest in the methods of evaluating teaching sessions for effectiveness. Using this information, a suitable evaluation plan was developed for the current practicum project.

Summary of Consultations

Consultations with stakeholders regarding computer documentation training of RNs and LPNs, and effective methods to evaluate computer education sessions were completed for this practicum (please see Appendix C for the complete consultation report). The stakeholders identified for this practicum included the Clinical Lead Manager at the St. John's Long Term Care facility and Masonic Park, colleagues within the Long Term Care RAI-MDS, Clinical Documentation and Clinical Education department in St. John's, the Consolidation Team of Eastern Health and RNs and LPNs working at St. John's Long Term Care and Masonic Park. A questionnaire was developed for each stakeholder group to collect information regarding the documentation tasks indicated by stakeholders that required additional education for staff, additional factors affecting electronic documentation, and feedback on the support materials for Meditech Magic 5.66.

Data management and analysis for this consultation process involved descriptive statistics and conventional content analysis. A total of 85 RN and LPN consultation questionnaires were distributed. Eighteen RN and LPN consultation questionnaires were returned for a response rate of 21%. Thirteen consultation questionnaires were distributed via email to the rest of the stakeholder group. A total of seven responses were received for a response rate of 54%.

All stakeholder groups were asked to identify areas of Meditech Magic that required additional education for staff by marking an "X" in the column next to the documentation task provided on the questionnaire. In addition, conventional content analysis was used to examine information contained in the open-ended questions on the questionnaire. Five areas were analyzed using this method during the consultation process. These included (a) whether RNs and LPNs differed in their Meditech Magic educational needs, (b) examples of evaluation methods used in the past and feedback or advice regarding evaluation methods, (c) factors that may affect the evaluation and strategies to deal with these factors, (d) barriers and facilitators that affect electronic documentation, and (e) feedback regarding the Meditech Magic support materials.

According to stakeholders, the top three documentation tasks that require additional education are (1) documenting on multiple residents at the same time for one intervention, (2) entering or editing the administrative data screen, and (3) changing levels of interventions. Adding the basic plan of care, printing reports, adding and editing allergies, deleting interventions no longer needed on the process intervention screen, and undoing and editing documentation were also high on the list of documentation tasks that required additional education for staff members. Most of the following set of

interventions that required additional Meditech education were interventions involving order entry. Adding interventions to the process intervention screen was listed among the order entry tasks. The top 14 documentation tasks identified as requiring additional education were both identical for all stakeholders and the RN/LPN group. As a result, an evaluation using these 14 documentation tasks was considered since evaluating all of the tasks would be impractical. Since both lists contained the same tasks only in a slightly different order, it was felt that this would be an appropriate list to develop the evaluation tool (please see Appendix D for a brief description of some of the Meditech terms listed above). Also, screen shots of the Process Intervention Screen and Process Interventions by Location/List can be found in Appendix E and F respectively.

Various methods of evaluation were identified from the consultation process. I decided to use a convenience sample for the current project since I was looking to enroll staff coming to either St. John's Long Term Care or Masonic Park for this particular practicum project. A pretest/posttest format was chosen to assess the accuracy of completing documentation tasks from the consultation process. I also decided to use a questionnaire to collect additional information regarding Meditech Magic training and support materials. Since "time" was identified during the consultation process as the most common factor to affect the evaluation of the program, I decided to plan the completion of the questionnaire and posttest in consultation with the participant during their orientation period.

Information regarding barriers and facilitators to electronic documentation was collected to explain the evaluation results in the following section. For example, lack of time, system usability, staff-shortages and issues concerning skill mix, the inability to

locate resources on the Intranet, technical skill of staff, and quality and availability of equipment on the units are unrelated to the Meditech training session. However, it is important to be aware of these factors since they may indirectly affect the evaluation. Finally, the consultation process was used to collect feedback regarding the Meditech Magic support materials. Overall it was noted that staff needed to be made more aware of the three support resources, which include the LTC Meditech Magic User Guide, the Long Term Care Meditech Magic Quick Reference Guide and the Meditech Online Learning Modules.

Program Evaluation Results

Information from the literature review and findings from the consultation report were used to develop the evaluation plan. Using information gathered from the consultation with stakeholders, the majority of the pretest and posttest was developed using documentation tasks identified as requiring additional education for staff members. In total, the pretest and posttest included 17 documentation tasks. Fourteen of these tasks were identified by the consultation with stakeholders and included (1) editing the administrative data screen, (2) adding allergies, (3) adding the basic plan of care, (4) adding interventions (5) changing levels of interventions, (6) deleting interventions no longer needed on the process intervention screen, (7) undoing documentation, (8) printing reports, (9) documenting on multiple residents at the same time for one intervention, (10) sending messages to dietary, (11) submitting laboratory requisitions, (12) submitting microbiology requisitions, (13) sending consultation requisitions and (14) sending diagnostic imaging requisitions. Three additional questions to make the tests practical were also added which included, adding a direction to an intervention, backdating

documentation, and asking a question requiring users to input accurate documentation (please see Appendix G for the pretest and Appendix H for the posttest). It was assumed during development that both the pretest and posttest were equal in terms of difficulty because the aim was to use nonidentical, but equivalent questions.

Evaluation Procedure

Participants chosen for this evaluation project were the staff completing orientation to St. John's Long Term Care or Masonic Park from a facility not using the consolidated version of Meditech Magic 5.66. All RNs and LPNs meeting these criteria in December 2015, January 2016 and February 2016, were asked to participate in the evaluation project. These participants were chosen since they required Meditech Magic training and would have had little or no experience with documenting in this system in the past.

Meditech orientation classes were scheduled to take place at either the computer training room at St. John's Long Term Care or St. Patrick's Mercy Home, St. John's. Information sheets were distributed and discussed with all RNs and LPNs at the beginning of the Meditech Magic orientation session (please see Appendix I for the information sheet). During the regular Meditech Magic orientation sessions, all RNs and LPNs complete practice questions in the second half of the session. For this evaluation project, the pretest was used in the place of the practice questions. During the pretest, participants were encouraged to use the Meditech user guides to answer the questions. I also took notes in order to record the questions posed by participants. Following the pretest, answers to the questions were discussed with the participants to ensure they understood the answers to all of the questions.

RNs and LPNs who volunteered for the evaluation process were asked to include their initials and the last three digits of their employee number on the pretest. Upon completion, the pretests were sealed in envelopes and stored in a locked filing cabinet in my office at St. Patrick's Mercy Home, St. John's. In addition, the pretests were also scanned and emailed using a secure Eastern Health email system, and stored on my encrypted, password-protected work laptop.

In approximately 2 weeks, participants were contacted and asked if they were willing to continue with the evaluation project. Those who agreed to complete a questionnaire and posttest were scheduled at a time that was convenient for them during their scheduled shift, avoiding any other planned training and, if at all possible, during their orientation period (please see Appendix J for the evaluation questionnaire). This second portion of the evaluation took place at the site the participant was assigned. This made the time away from units for staff members as short as possible. Participants either completed this portion in the computer training room at St. John's Long Term Care or in an office at Masonic Park. Locations away from the units were chosen in order to ensure a quiet environment for participants to complete the posttest without distractions.

No names appeared in the questionnaires, however staff were asked to include their initials and the last three digits of their employee number on the posttest. Participants were again encouraged to use the Meditech user guides to answer the questions on the posttest. I also took notes during the posttest to record the questions posed by participants. Following the posttests, answers to the questions were discussed with participants to assist their comprehension of the documentation tasks.

Upon completion of the second portion of the evaluation, posttests and questionnaires were sealed in envelopes and stored in a locked filing cabinet in my office at St. Patrick's Mercy Home, St. John's. As with the pretest, the posttests and questionnaires were also scanned and emailed using a secure Eastern Health email system, and stored on my encrypted, password-protected work laptop. The documentation tasks contained on both the pretest and posttest were completed by participants in Meditech Magic by using a test user account. As a result, performance on each test was kept private for each participant. Finally, all tests and questionnaires will be shredded 1 year after the completion of the practicum project, as well as deleted from my computer.

Evaluation Objectives

1. RNs and LPNs in the One-Day Meditech Magic Training Program will accurately complete 80% of the documentation tasks contained on the pretest following the lecture portion of the program.
2. Two weeks following the completion of the One-Day Meditech Magic Training Program for RNs and LPNs, the program participants will accurately complete 80% of the documentation tasks contained on the posttest.
3. Two weeks following the completion of the One-Day Meditech Magic Training Program for RNs and LPNs, 80% of the program participants will rate their ability to complete Meditech Magic 5.66 documentation tasks listed on a questionnaire.
4. Two weeks following the completion of the One-Day Meditech Magic Training Program for RNs and LPNs, 80% of the program participants will identify factors that may affect Meditech Magic 5.66 documentation via a questionnaire.

5. Two weeks following the completion of the One-Day Meditech Magic Training Program for RNs and LPNs, 80% of the program participants will provide feedback on the support materials concerning Meditech Magic via a questionnaire.

Evaluation Results

A total of nine participants completed the pretest portion of the study. One person did not complete the second portion of the evaluation process leaving a total of eight complete pretest/posttest data sets and eight completed questionnaires. In total, four RNs and four LPNs completed both portions of the evaluation. On average, participants completed the questionnaire and posttest in 20 days or approximately 3 weeks following the pretest. The times between pretest and posttest ranged from 14 days up to 27 days. Even though the goal was to have participants back in approximately 2 weeks, at times it was difficult to reconnect with staff members and also plan for a time while they were working that did not conflict with additional training. One participant completed the second portion of the evaluation outside of the scheduled orientation period. However, both the staff member and management were in agreement with this revised method and, therefore, the participant was able to complete this portion of the evaluation.

Questionnaire. Descriptive statistics and conventional content analysis were used to interpret the results collected from the questionnaires. The questionnaire was comprised of four sections. First, participants were asked to rate their ability to perform various documentation tasks in Meditech Magic 5.66. The second portion of the questionnaire required participants to answer questions regarding the training received, perceived facilitators and barriers to electronic documentation, and the importance of timely documentation. The third section included questions regarding the support

materials available for Meditech Magic. Finally, the last question enabled participants to include any additional information concerning Meditech Magic that they would like to add.

Self-performance rating. Half of the participants indicated that they thought their ability was excellent for adding interventions, documenting (including backdating), entering documentation on multiple residents at the same time for one intervention, and entering consults. As noted earlier, documenting, including backdating, was not identified as a task that was problematic. However, as stated above, for practical reasons it was tested in the current evaluation. As a result, the opinions of participants on documenting, including backdating, were similar to the opinions of stakeholders held during the consultation process. The finding regarding adding interventions and entering consults, however, were unexpected since these tasks were identified during the consultation process as requiring additional education for staff members.

The task of entering documentation on multiple residents at the same time for one intervention was also identified by stakeholders as a problematic task during the consultation process. However, according to the questionnaire, the majority of participants felt comfortable performing this task. Unfortunately, due to a problem identified during the evaluation process, accurate results could not be obtained regarding this documentation task for this evaluation project. As a result, this component was deleted from the results.

Half of the participants also indicated that they believed their ability was good in completing the documentation tasks involving undoing and editing documentation. While four out of seven participants indicated that their ability was good for writing, editing, or

undoing notes. Only undoing documentation was examined in the current project since this task was identified by stakeholders during the consultation process as a problem area for staff in terms of documentation. As a result, a discrepancy appeared in terms of staff's comfort level regarding undoing documentation from the results obtained on the evaluation questionnaire and consultation with stakeholders.

Half of the participants also indicated that they thought their ability was fair regarding documenting allergy information, adding the basic care plan and printing reports. These results indicated that participants exhibited less confidence in their ability for these tasks. All three tasks were also identified from the consultation with stakeholders as problem areas that required additional education for staff members.

Results from the questionnaire were inconclusive for the sections involving entering or editing the administrative data screen, using the Kardex, adding text to interventions on the process intervention screen, and deleting interventions no longer needed on the intervention screen. All tasks excluding using the Kardex and adding text to interventions were identified by stakeholders as requiring additional education and, as a result, were examined in the current project.

Five out of eight participants indicated that their ability was either good or excellent regarding adding or changing the direction of an intervention, changing the level of an intervention, viewing documentation in Meditech, and ordering entry tasks, such as laboratory, microbiology, and diagnostic imaging. According to the consultation with stakeholders, all but adding or changing the direction of an intervention and viewing documentation in Meditech were identified as areas in need of additional education for staff members. As a result, most of the above findings were unexpected. Finally, five out

of eight participants indicated their ability to enter a message to dietary was either poor or fair. This was an expected result since entering a message to dietary was determined to be a task that stakeholders identified as requiring additional educational resources.

Interpretation of findings. There are several possible reasons for the discrepancies between the results obtained from consultation with stakeholders and the responses from participants obtained via the questionnaire. One reason could be that differences exist between the abilities or confidence regarding documentation tasks for RNs versus LPNs. In the current study, four participants were RNs and four participants were LPNs. Since the numbers of both groups were small, the participants as a group may not have been representative of the population of RNs and LPNs for the current setting. On further examination, a difference in the perception of feeling confident in completing various documentation tasks was noted. Overall, RNs were noted to indicate mostly fair to excellent confidence in their ability to complete all of the listed documentation tasks except using the Kardex, printing reports, sending messages to dietary and documenting on multiple residents for one intervention at the same time.

In contrast, results from the four LPNs showed less of a pattern. This group tended to show less confidence regarding the documentation tasks involving the administrative data screen, allergy documentation, adding the care plan, adding text to an intervention, deleting interventions that are no longer needed from the intervention screen and sending messages to dietary. LPNs did, however, appear to indicate that they had fair to excellent ability to document (including backdating) and document on multiple residents at the same time for one intervention.

Some of these findings can be explained by the results obtained from the consultation process. It was reported during the consultation with stakeholders that some documentation tasks, were mainly performed by RNs, in particular entering information on the administrative data screen, allergy documentation, and adding the care plan. As a result, it is expected that LPNs may not have had the same amount of practice performing these tasks as RNs and, as a result, feel less confident in their ability to perform these tasks. Another possible reason for the discrepancy of results could be that the participants in the current evaluation may not have been accurately aware of their abilities regarding documentation. Mitchell (2015) stated that self-reporting abilities regarding documentation is not always accurate. As a result, in the current project, competency was also studied by using a pretest/posttest design. Finally, since all eight participants rated their abilities concerning documentation tasks, this evaluation objective was met, with the exception that the questionnaire was completed in 3 weeks instead of the originally stated 2-week timeline.

Training/documentation barriers and facilitators. The second question on the survey included questions regarding the amount of training received, perceived facilitators and barriers to electronic documentation, and the importance of timely documentation. Overall, the responses from both the RN and LPN groups were similar and, therefore, the following are the results summarized for all eight participants.

The majority of participants either strongly agreed or agreed with the statement that the training received was sufficient. In addition, five out of the eight participants either strongly agreed or agreed with the statement that Meditech Magic was easy to use. Five out of eight participants either strongly disagreed or disagreed with the statement

indicating that they did not feel confident in their ability to use Meditech; as a result, indicating that they actually did feel confident in completing documentation tasks in Meditech. The majority of participants also agreed or strongly agreed with the statement that they could identify staff that could assist them with Meditech if necessary. One participant did not respond to this question and instead wrote unknown next to the question. The majority of the participants also either strongly agreed or agreed with the statement, "I have excellent computer skills".

The majority of participants either strongly disagreed or disagreed with the statement indicating that it was difficult to find a computer to document care (although one respondent indicated that the computer was slow). The majority also either strongly disagreed or disagreed that it was difficult to find time during the day to document electronically. One participant wrote unknown next to this question. Finally, seven out of the eight participants either strongly agreed or agreed that it was important to document care in a timely manner.

Interpretation of findings. According to these results, most of the participants who took part in this evaluation project were pleased with the education they received regarding Meditech documentation and felt that their computer skills or staff members on the units could aid them in performing electronic documentation tasks. Barriers such as not enough computers or finding time to document were not identified by these participants in the questionnaire. These results were unexpected since both the literature review and the consultation with stakeholders indicated that the current education sessions are probably not adequate and list barriers such as time, lack of computers or usability of documentation systems as barriers to electronic documentation. Even though

the participants did not perceive the same barriers as indicated in the literature review or the consultation process, all eight participants answered the questions pertaining to their satisfaction with the Meditech education session and the barriers and facilitators to electronic documentation. As a result, this evaluation objective was met, with the exception that the questionnaire was completed in 3 weeks instead of the originally stated 2-week timeline, since greater than 80% answered this portion of the questionnaire involving factors that may affect electronic documentation.

Follow up with these participants to determine if their responses would differ at a later date is necessary since some or most of the participants probably have not had adequate time during their orientation to perform such documentation tasks independently, as suggested by one participant. Also, participants may not have had time to become fully aware of their work environments at the time they completed the questionnaire. As a result, it is suggested that in future evaluations, the questionnaire should be completed later than 3 weeks from the original Meditech class. Two weeks was originally decided for this project to allow time to compile results and to decrease the chance of losing participants, as was noted in the case of Stromberg (2011).

In addition, the main reason for having the questionnaire prior to the posttest ensured that the completion of the posttest did not influence the results of the questionnaire. The posttest was used as an evaluation tool, but could also have been taken as additional practice for the participants. Since the main goal of this project was to determine whether the orientation session was adequate, the question of whether the education was sufficient needed to be asked prior to the posttest in order to avoid potential bias.

Support materials. Questions 3 to 8 on the questionnaire required participants to indicate whether or not they used the LTC Meditech Magic User Guide, the Long Term Care Meditech Magic Quick Reference Guide or the Meditech Online Learning Modules. In addition, participants were asked whether they found these resources useful and were also able to enter comments regarding each resource material. The results indicated that all participants had not used either the LTC Meditech Magic User Guide or the Long Term Care Meditech Magic Quick Reference Guide. Only one participant indicated on this section that they had used the Meditech Online Learning Modules. The comments entered regarding the Long Term Care Meditech Magic Quick Reference Guide included questions as to where to find the resource, and that time was needed to obtain the guide and, therefore, was not usually acquired. Two participants entered comments regarding the Meditech Online Learning Modules, which included statements indicating that they did not know how to access the resource. The one participant who indicated that she had used the Meditech Online Learning Modules stated that she found this resource useful. Finally, one of the participants who indicated that she had not used the LTC Meditech Magic User Guide or the Meditech Online Learning Modules, indicated that she did not find these resources useful. This would suggest that this participant had used these resources or were at least somewhat aware of their existence.

Interpretation of findings. The findings for this question were not surprising. However, staff must not have considered their usage of the user guides during the pretest when answering this question, as some participants were noted to have used them during the test. Participants may have also misinterpreted the question and did not realize that I was asking them about the guides that had been available to them during the test.

However, consultation with stakeholders regarding these support materials indicated that most staff members did not know these resources existed or had not used them regularly, except for the Long Term Care Meditech Magic Quick Reference Guide. Instead, it was suggested, during the consultation with staff, that staff tended to use each other as a resource. This was also noted throughout the evaluation when staff continued to ask me questions while the manuals were located on their desks. As a result, revisions to the support materials will mainly involve the Long Term Care Meditech Magic Quick Reference Guide, since this resource was identified as being the user guide most utilized by staff members. Therefore, this evaluation objective was not really met since the main finding of this section was that these resources were not used. The only feedback that was obtained from this questionnaire was that staff members should be made more aware of these resources.

Additional comments regarding training. The final question required participants to enter any additional comments concerning Meditech Magic education. In total, three responses were received. One participant suggested to divide the education into smaller sections followed by a day of review. Another participant stated that they were still orienting and, therefore, had not yet had the opportunity to document in Meditech independently. Lastly, another participant indicated that they had found the additional practice in the test system helpful. As a result, these responses indicated that perhaps the education session was too long and did not provide time for participants to absorb all of the material. However, this was noted by only one person. Also, I will continue to offer access to the test system for staff members to practice following class, which was the practice prior to and during the current evaluation process.

Pretests/posttests. Data management and analysis for the pretest/posttest results involved descriptive statistics and Wilcoxon matched-pairs signed rank tests. Pretest and posttest scores were compared to determine if there was a significant difference between the two tests. The null hypothesis for this project was that there is no statistical difference between the median pretest and posttest scores. Posttest scores equal to or greater than the pretest scores would provide evidence that the training program was successful. A significant decrease in the posttest score would indicate that participants were not able to retain the information provided during the orientation Meditech Magic training session. Initially I planned to use the paired *t* test to determine if a significant difference existed between the pretest and posttest. However, since an assumption of the paired *t* test is that at least 30 pairs are needed (Kellar & Kelvin, 2013), and only eight pairs of data were available for the current project, the Wilcoxon matched-pairs signed rank tests was used to analyze the data.

The answer key for the pretest and the posttest can be found in Appendices K and L, respectively. As stated earlier, during the data collection process, it was noted that there was a problem with the way "process interventions by location/list" or documenting on multiple residents for one intervention was evaluated. It was discovered that this item in both the pretest and posttest could not be accurately scored to determine if participants were using the "process interventions by location/list" tab or entering the individual charts to document care. As a result, this item was omitted from the analysis, leaving the pretest and posttest each with 16 documentation tasks.

Since there was no reason in this current project to assume one documentation task was more important than another, each score obtained from each of the 16 sections

was marked out of 10 in order to ensure each section of the pretest and posttest were equally weighted. As a result, both the pretest and posttest were scored out of 160 points, or 10 points for each of the 16 sections. For both the pretest and posttest, marks were only given if the answer to the questions were obtained from previous learning or obtained independently using the Meditech Magic user manuals. Participants were told that I would be recording documentation tasks that required intervention by me. As a result, marks were deducted for wrong or incomplete answers, or if the participant was unable to proceed on from a particular question and had to ask me for help during the test.

Findings from pretests/posttests. The pretest total scores ranged from 48% to 100%, with a median of 87%. The posttest scores ranged from 32% to 93%, with a median of 83%. Seven out of nine participants scored 80% or higher on the pretest. This dropped to four out of eight scoring 80% or higher on the posttest. The Wilcoxon matched-pairs signed rank test was completed on the pretest and posttest total scores and showed that the posttest score was less than the pretest score for six participants. The remaining two participants scored greater on the posttest as compared to the pretest. However, no significant difference was found between the total score of the pretests compared to the total scores of the posttests ($Z = -1.820$, $p = 0.069$; see Table 1 in Appendix M).

Therefore, the participants did not perform significantly worse on the posttest compared to the pretest. As such, for this evaluation, there is evidence that the training program was effective in fostering learning with regards to Meditech documentation for RNs and LPNs in the LTC program. However, it should be noted that the result of the Wilcoxon matched-pairs signed rank test indicated that this decrease in scores was

approaching significance. Also, not all participants achieved 80% on both the pretest and posttest and, therefore, the first two objectives for this evaluation were not met for some of the participants, assuming a 3-week timeline. In fact, only half of the participants met this objective, for the posttest, assuming a 3-week timeline for the objective. As a result, additional Wilcoxon matched-pairs signed rank tests were completed on each of the 16 documentation tasks to determine if there were significant differences between the pretest and posttest scores for any of the sections.

Of the 16 documentation tasks, only the scores in one section of the pretest and posttest differed significantly. This section contained the documentation task of entering diagnostic imaging requisitions (i.e., x-rays). Participants were noted to have performed significantly worse on this section of the posttest as compared to the pretest ($Z = -1.975$, $p = 0.048$; please see Table 2 in Appendix M).

No other significant differences were found for the remaining 15 documentation tasks. Improvement was noted on the tasks involving backdating, leveling interventions, and sending consults, although none were noted to be significant ($Z = -1.414$, $p = 0.157$; $Z = -0.577$, $p = 0.564$; $Z = -1.633$, $p = 0.102$), respectively. Participants received full marks for the section on documenting interventions on both the pretest and posttest and, thus, maintained performance ($Z = 0.000$, $p = 1.000$). Also, participants performed equally well on the task involving undoing interventions and entering information in the administrative data screen ($Z = 0.000$, $p = 1.000$) for both tasks.

Participants were noted to have lower scores on the posttest for the remaining nine sections indicating a decrease in performance on these tasks. However, these decreases were not found to be significant. These sections included allergy documentation (Z = -

1.890, p = 0.059), adding the care plan (Z = -0.447, p = 0.655), adding an intervention (Z = -1.414, p = 0.157), adding a direction (Z = -1.000, p = 0.317), deleting interventions (Z = -0.577, p = 0.564), printing reports (Z = -1.000, p = 0.317), sending messages to dietary (Z = -0.184, p = 0.854), sending laboratory requisitions (Z = -1.000, p = 0.317), and microbiology requisitions (Z = -0.674, p = 0.500).

Interpretation of findings. Upon further examination, I determined that the pretest and posttest question for the section testing diagnostic imaging may not have been equal in terms of difficulty. On the pretest, participants were asked to enter a requisition for an x-ray of the left ankle. On the posttest, participants were asked to enter an anterior posterior chest x-ray. Three participants entered a chest anterior posterior lateral x-ray instead of an anterior posterior chest x-ray. Upon further investigation, it was discovered that the chest anterior posterior lateral x-ray was a more common x-ray to enter by nurses.

As noted above, participants entering information incorrectly or asking me for help during either the pretest or the posttest would result in a deduction of marks from applicable sections. Sometimes, entering information incorrectly or not knowing how to begin the question would either result in incorrect or missing data for most or all of the section. In other words, information concerning a documentation task would be completely or mostly incorrect, or missing. As a result, for certain sections of both tests, marks were lost for the entire portion of the task from the point of the error where the participants made the critical mistake. For example, in the case of entering an x-ray, entering the wrong procedure (i.e., CHEAPLA instead of CHEAP) would result in lost marks for that section at that point forward for the question. In total, four participants entered the procedure incorrectly for this section. Therefore, these four participants lost

almost all marks for this section, which most likely contributed to the significant decrease in posttest scores for this section of the test.

Even though none of the scores for the nine documentation tasks were shown to have decreased significantly for participants, further examination is needed to determine the reasons why participants performed worse on these sections. It should also be noted that the decrease in performance on the documentation task of entering allergy information was approaching significance. Therefore, it will need to be determined if these tasks are actually problematic for staff members or if the examples used on the posttest were in fact comparable to the applicable pretest sections. Of course, the same is true for the sections in which staff either maintained or performed better. Before drawing the conclusion that these sections do not require additional education of staff, the sections would have to be examined to determine if the pretest and posttest sections are in fact comparable. Once sections are determined to be comparable, the particular areas of the documentation tasks in which the participants are having trouble can be examined and possible solutions implemented to increase performance on such tasks.

Limitations

There were several limitations noted for this evaluation project. First, the sample size was small and, therefore, it was difficult to determine whether the results of the evaluation would be applicable to the population of RNs and LPNs in the LTC setting. With the current sample, caution was needed when comparing answers on the questionnaire between RNs and LPNs since the numbers of both groups were low and, therefore, it was difficult to generalize the findings to the population.

Also, it was noted during the evaluation process that some staff asked me questions during both of the tests that were readily found in the Meditech user guides that were provided to all participants. In other words, some participants seemed to prefer to ask me for help instead of looking up the information in manuals. This could have happened for a number of reasons. First, it was identified during the consultation process that the larger Meditech user guide was not often utilized on the units. One reason stated by staff was that it was too large. As a result, participants may have found it difficult to locate relevant sections of the manual in a timely manner that could have been used to answer particular sections. Also, it was reported during the consultation with stakeholders that staff use other staff as a resource. Therefore, since I was readily available in the room during both tests, participants probably decided that it was much easier to obtain help from me instead of looking up the information in the manuals. As a result, participants may have scored higher on these tests had I not been present, since marks were deducted for asking me questions during the pretest and posttest.

Another limitation was that both tests and answer keys were not tested for reliability. However, all four items appeared to meet face validity since it was determined during the development of these tools that each section of the test was appropriate to use in examining a participant's competency level with regards to the documentation tasks. Suggestions for future improvements would be to test corresponding sections of the pretest and posttest to ensure the sections are indeed comparable.

In addition, since no other similar evaluation has been attempted in the past, I needed to continually examine the evaluation procedure to ensure it would be accurate and applicable in the current setting. The pretest and posttest were reviewed by a few

members of my immediate department to determine face validity of the tests however, the pretest and posttest were pilot tests. This was the main reason I decided to take notes during each pretest and posttest in order to record any issues. In addition, I felt I had to take notes in order to accurately grade the questions on the tests when participants asked questions regarding documentation tasks. Although I was careful to record as much as possible, I may have missed some issues or not heard conversations between participants during the tests. This would have affected the scoring of the tests.

Another reason I decided to stay in the room was to be present in case I needed to intervene, since I did not have time to pilot the tests. Adult learning occurs most effectively in a comfortable environment (Knowles, 1980). Therefore, I did not want to create a stressful situation for staff by creating a strict testing environment. Some participants were noted to be more concerned regarding their performance than others. By being in attendance, I could intervene if the participant appeared stressed or frustrated. Of course, I could have introduced a bias during the evaluation process if I intervened more than needed in order to prevent participant frustration. When I did intervene during the tests, marks were deducted for those particular sections. As a result, the scores obtained on the pretests and posttests may have been lower than what would have normally been found had I not intervened; unless, the participant became completely overwhelmed and instead did much worse without the intervention. In addition, I also decided to stay in the room during the tests to ensure participants were working individually. Without supervision, participants may have still avoided the manuals by asking each other for help during the test.

Also, in one case a participant did not have time to complete the pretest. As a result, some of the later questions were not attempted and, therefore, may have artificially decreased their score on these sections on the pretest. In addition, participants may have also had an advantage on the later questions if they had asked questions and I had referred them to the manual. If participants then considered the manual a useful resource, they would have been more likely to answer the later questions using the manual instead of asking me for help, thus increasing their score on the later sections of the test.

Finally, I had forgotten to provide manuals to two participants during the posttest until they had asked for help. I still deducted marks during both instances for these sections since I still wanted to record where the participant was having trouble. In one instance, the participant continued to ask me questions even with the book. This made me believe the results would not have been different for this participant had I not forgotten to provide the manual.

In conclusion, it would appear that the actual performance on the documentation tasks for participants was accurately captured or at least no lower than what was discovered by these results. As a result, I feel confident that the documentation tasks where staff either improved or reached a ceiling were tasks that did not require changes to the Meditech training session; provided of course, that the pretest and posttest questions were equal in terms of difficulty. Even though the decrease in performance on 10 of the 16 tasks was only significant for one of these tasks, additional attention to these sections during class and support materials will occur. Finally, since the ability to document on multiple residents at the same time for one intervention could not be tested during the

current evaluation, additional attention and support materials will be added regarding this documentation task.

Discussion of Advanced Nursing Practice Competencies

The four Advanced Nursing Practice (ANP) competencies outlined in the Canadian Nurses Association (CNA; 2008) Framework include, clinical competencies, research competencies, leadership competencies, and consultation and collaboration competencies. During N6660, I demonstrated clinical competency by developing a pretest/posttest, which involved the collection of both quantitative and qualitative data from consultations, and expert knowledge regarding Meditech Magic 5.66 computer documentation. In addition, findings were used to develop the consultation and evaluation materials for this practicum. By choosing to complete this evaluation project, I assumed a leadership role to identify problem areas with respect to Meditech Magic 5.66 documentation. Finally, this practicum would not have been possible without the consultation and collaboration with stakeholders in developing an evaluation that is both practical and meaningful to staff in the LTC Program.

Next Steps

The next steps upon completion of this practicum report include (1) the dissemination of findings to stakeholders, (2) revision of the orientation Meditech Magic 5.66 class plan, (3) revision of the Meditech Magic 5.66 support materials, and (4) consultations with stakeholders to improve the methods and materials used during the evaluation process. The dissemination of findings to stakeholders is the last step of the CDC framework (Farell et al., 2002). During this step, stakeholders will become aware of

the findings of the project and may also be able to provide additional insight for the outcomes of the evaluation results.

With regards to the second and third steps outlined above, problematic documentation tasks identified during the evaluation will be given additional instruction and practice time for staff members during the Meditech Magic orientation class. Also, the LTC Meditech Magic User Guide will be divided into manageable sections and requested to be made available on the LTCEH Intranet page. The Long Term Care Meditech Magic Quick Reference Guide will be revised to include documentation tasks studied in this project, ensuring the examples used in the guide are applicable to the LTC setting. The guide will be designed to ensure staff members have easy assess to the information available by making the table of contents easy to understand. Finally, suggestions for updates to the Meditech Online Learning Modules will be made to the Consolidation Team to include examples of documentation tasks commonly used in the LTC setting, as well as a link to this resource on the LTCEH Intranet page for easy access.

The last step involves holding further consultations with stakeholders to improve the evaluation methods and materials used during the practicum. Several limitations were noted above that may have affected the outcomes obtained in this project. Therefore, additional work needs to be completed to ensure the evaluation tools are valid and reliable. In addition, suggestions on how to improve the evaluation methods to gain a more accurate representation of learning during future evaluations concerning computer documentation is required. This will ensure the evaluation is appropriate to use in the LTC Program.

Conclusions

This practicum included an evaluation of a One-Day Meditech Magic Training Program for RNs and LPNs that was recently developed for the LTC Program. The importance of involving stakeholders, especially frontline staff who use Meditech Magic 5.66 for day-to-day documentation was found to be critical in ensuring the evaluation was appropriate to use in the LTC setting. Many lessons were learned during this process as listed above and can, therefore, be used to either improve future computer documentation evaluation projects or guide similar proposed evaluation projects in the healthcare setting.

Even though limitations prevented the generalization of findings to the LTC population, the evaluation was still useful in determining documentation tasks that may require additional intervention and support for staff members. As a result, the findings from this practicum will be used to improve both the class plan and support materials currently available for RNs and LPNs using Meditech Magic 5.66 in the LTC Program.

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Appendix A

Meditech Magic Teaching Plan RN/LPN Class

1. **Keyboard**
    a. Review main keyboard functions
2. **Login**
    a. Explain initial login
        1. Username & a temporary password issued by HTDM and need to reset password
3. **Main Menu**
    a. Point out different modules within Meditech: NUR, OE, PCI etc…
    b. Select NUR, then the Status Board
4. **Status Board**
    a. Explain Status Board and Integrated Desktop:
        1. Review headers and tabs
        2. Explain strip along the side
5. **Administrative Data Screen**
    a. The data entered in this field will populate the Resident Profiles/Kardexes
    b. Some information will default from the admission module but staff are responsible to ensure that the info is correct
    c. Stress not entering any info in the **Temporary Location** field
    d. **Condition**: F9 look-up
    e. **Visitors** allowed Y or N
    f. **Cmt:** careful, can cross over to other screens
    g. (We can wait to input **Height** and **Weight**)
    h. **Admitting Diagnosis** – add "LTC Resident"; Respite resident and the Dx.
    i. **Past Medical History** – add anything pertinent to the R's current condition (eg. Fracture of L hip 2012)
    j. **Surgeries/Procedures** – that are done during R's stay at this facility

k. **Infection Prevention**: F9 lookup

l. Information on page 2 does not get completed in LTC

m. Show SPRH information

n. Show how to pull in contact information from the admin module

6. Allergies

a. Refer staff to Allergy Management Online Module and policy

b. Explain the difference between Coded & Uncoded allergies

c. Add new allergies:

1. Select **new**; begin to type first 2- 3 letters of the word, check the drop box
    - Enter an example of a coded allergy
2. Select the correct name
3. **Type** field, select **Allergy** or **Adverse Reaction**
4. **Severity** – not used
5. **Verified-** will default in
6. **Reaction**: this field must be completed
7. **Comment**: if you need more space to document the reaction
8. Click OK – will return to main Allergy Management screen
9. Enter blue dye (uncoded allergy)
10. When finished entering all allergies, **File**
11. **Confirm**: updates all existing Coded Allergy/Adverse Reaction Information.

7. Enter Initial Plan of Care

a. Add the **E BASIC CARE PLAN – LTC**

8. Process Interventions

a. Explain how to use the verb strip – enter the letters or click on the words

b. Review Intervention headers and Interventions related to the header (Pg Up and Pg Down)

c. ***Add Intervention***

1. Stress adding only interventions that start with E
2. Show how to look up & select an intervention
    - Add the intervention **E POCT, Glucose/Insulin Record**
    - Add **E Hip protectors ensure use of (LTC)**
    - Add **E Intake and Output**

d. ***Change Direction***

1. Review Meditech directions
2. Show how to enter a custom direction (.0700)
3. Add directions to **E POCT, Glucose/Insulin Record**
4. Have class add Q12H to **E Hip protectors ensure use of (LTC)** (Demo after)
5. Have class add .every shift to **E Intake and Output** (Demo after)

e. ***Document Now***

1. Will record documentation at this date & time
2. Document on a single intervention
    - Document on **E Hip protectors ensure use of (LTC)** (a tick)
3. Tick multiple interventions; DN
    - **E Bowel Movement Record**
    - **E Incontinence System, change prn**
    - **E Ur, voided**
    - **E POCT, Glucose/Insulin Record**
4. Indicate how to & why you would remove the ticks from in front of the interventions.

f. ***Document Intervention***

1. Will allow staff to change date & time of documentation
2. Record for 0800 yesterday:
    - **E Vital Signs**
    - **E Height, record**

- **E Weight, record**
- **E POCT, Glucose/Insulin Record**
- **E Intake and Output**

3. Meal Intake interventions (Change times)

g. ***Edit Text***

1. Will allow staff to add info to an intervention
    - Select **E Communication** and add message
2. Show how info can be seen on the Process Intervention screen

h. ***Change Level***

1. Explain levelled interventions and the need to individualize the levels to meet resident needs
2. Change level from **E Nutrition, feeding, complete feed** to **E Nutrition, feeding, assist with**

i. ***Change Status***

1. Some interventions will not be applicable to the resident and will need to be removed from the intervention list
2. Complete intervention **E Hip protectors ensure use of (LTC)**

j. ***Select Interventions***

1. Show only completed interventions
2. Reactivate **E Hip protectors ensure use of (LTC)**

k. ***View History***

1. Staff can view as well as or edit or undo documentation (do an example of each)

l. ***Edit Admin Data***

1. Demo how staff can go to the Admin data screen from the PI screen as well as from the Status Board

m. ***Patient Notes***

1. Can be accessed from the Process Intervention Screen through “Patient Notes” or from the Status Board “Pt Notes”.

2. Review "Patient Note Functions"
    - **View Existing Notes** – view notes already entered
    - **Enter New Notes** – how new notes are entered
    - **Amend Existing Notes** – used to add info to an already saved note
    - **Undo Existing Notes** – Use if a note was written in error
3. Demo each of the above
4. Open Focus note template **(F4 & F9)** while demoing entering a note
5. Show how to backdate a note
6. Explain Shift F6 (to fix broken notes)

9. Order Entry

a. On the Status Board, click the **Orders** Tab

b. Press the enter key to add the resident name & info, the order date & the black line in the lower columns

c. **Enter a Diet order** (LPNs – teach, not entering it yet)

d. Review procedure for notifying dietary of uncoded allergies.

e. NOTE: **If change** in diet order or texture or if the resident has **returned from hospital a New Order must be entered**.

f. Enter a **Lab order**

1. Nurse takes off order, puts it under communication, then LPN can put BW order into computer
    - Select LAB Category
    - Select CBC as the procedure
    - Explain Priority, date & time fields
    - Continue to press enter and complete all applicable fields
    - Save the order
    - A label for the blood tubes will print on the unit

g. Enter a **DI order**
    1. Select DIRAD as the category
    2. Enter an example of an x-ray
    3. Complete the fields at the bottom of the page
    4. Save the order

h. Enter a **consult**
    1. Select the category: i.e. PT
    2. From the procedure list select PTR (Physiotherapy Referral)
    3. Complete the priority & date of referral as well as fields at the bottom of the page
    4. Save the referral

10. PCI (Patient Care Inquiry)

a. To access PCI, select Review on the status board

b. Review Verb Strip

c. To maneuver through the records, highlight the desired record and press the right arrow key
    1. Orders
    2. Show where to find labs
    3. Notes
    4. Show how to view documentation (Clinical monitoring)

11. Print Reports

a. Select Print reports from the status board

b. Print profiles
    1. Show how to print a Patient Profile

c. **Note: Reinforce the importance of selecting the correct printer. Printers on units have been labeled.**

d. Print the Bowel Movement Report

12. PI Loc/List - Process Interventions by Location/List

a. Use Process Interventions by Location/List to document on a specific intervention for multiple residents at one time

b. Load status board with a location:

1. In the INT box, enter an example of an intervention
2. Using the Rt CTRL tick the intervention under the resident's name
3. Click DN or DI (to change the time/date)

13. Client Server

Demo old system

14. Practice Questions

*Note: The original Meditech Magic RN/LPN class plan was developed by both the Consolidation Team of Eastern Health and the Long Term Care RAI-MDS, Clinical Documentation and Clinical Education department. However, some recent modifications to this plan have occurred and, therefore, the current plan listed above includes both revised and original material. Finally, the Meditech Magic RN/LPN class plan was used as a guide during class. Additional or different examples than those listed above were sometimes used depending on the needs of learners in the Meditech Magic session.

Appendix B

Integrative Literature Review: Evaluating Electronic Documentation Training for Nurses

Nurses are required to document the treatment provided to people within their care. Record keeping provides a method of communication, promotes quality improvement, manages risk, ensures professional accountability, protects against liability, is used to expand the science of nursing, and can be a source of information regarding funding and resource management Association of Registered Nurses of Newfoundland and Labrador (ARNNL; 2010). Within the literature, the electronic health record (EHR) or electronic medical record (EMR) are used interchangeably to refer to the patient's computerized chart. There are many positives to the EMR as compared to paper-based records. In particular, EMRs take up less physical space, are organized and accessible, prevent replication of procedures, standardize data, and help coordinate care provided by different disciplines (Eisenberg, 2010).

Nurses are the health care providers that provide the most around the clock care to people and, therefore, need to be comfortable and competent in using the EMR implemented by their facility (Poe, Abbott, & Pronovost, 2011). The purpose of this paper is to examine the literature involving computer documentation training of nurses and effective methods to evaluate these EMR training sessions. The search strategy included both CINAHL and PubMed databases. For CINAHL, the main search strategy was (MH "documentation") OR (MH "Nursing Orders") AND (MH "Computerized Patient Record") OR (MH "Patient Record Systems") AND (MH "Staff Development") OR (MH "Employee Orientation") OR train* OR educat* AND nurs*. This revealed 113 results. In order to broaden the search, the phrases "computer documentation" and "computer documentation AND evaluation AND education" were also used. The search terms used for PubMed included ("Computer User Training" [MESH]) AND

("Documentation" [MESH]) AND ("Medical Records Systems, Computerized" [MESH]) and phrases such as "program evaluation" AND "electronic documentation" AND "training". Of the results, only those written in English that involved EMR training or evaluation were considered. Reference lists from the above articles were also reviewed to find additional relevant literature. Finally, since the purpose of this paper was to examine the literature regarding computer training of nurses and potential evaluation methods, primary sources concerning adult-learning theory and information concerning a potential evaluation framework were reviewed.

Adult Learning Theory

In order for adults to learn effectively, training sessions must be tailored to address the specific needs of adults. According to Knowles, Holton, and Swanson (2005), optimal learning for an adult occurs when they are aware of the need to learn, take responsibility for their learning, can associate new learning to previous experiences, are ready and are motivated to learn. In addition, it is also important that the learning environment is comfortable and learners share the responsibility for planning and taking part in the learning experience (Knowles, 1980).

Overall, the literature suggests that the length and quality of EMR training is important for ensuring staff are comfortable and confident in using the electronic system to document care. In order to meet the needs of staff, training programs may need to be adjusted. According to Knowles (1980), evaluation is an important part of teaching. As a result, this paper will also examine the literature in order to determine evaluation methods previously used to assess EMR training programs. In order to evaluate a program effectively, an evaluation framework should be used to guide the process. The following

section contains a discussion of the evaluation framework chosen for this particular practicum project.

Evaluation Framework

The Center for Disease Control and Prevention (CDC) framework was chosen to guide the evaluation for the practicum project. This framework includes six steps, which are (a) engage stakeholders, (b) describe the program, (c) focus the evaluation design, (d) gather credible evidence, (e) justify conclusions, and (f) ensure use and sharing of lessons (Farell et al., 2002). In terms of engaging stakeholders, all should be involved in the evaluation process in order to ensure it is useful to those who have an interest in the evaluation results (CDC, 2011). In the second step of this framework, the program is described. This includes the program goals and objectives, as well as a program logic model (Farell et al., 2002).

In addition to the CDC framework, the PROCEED portion of the PRECEDE-PROCEED model as outlined in McKenzie, Neiger, and Thackeray (2013), specifically a process evaluation, an impact evaluation, and an outcome evaluation will be used for this current project. Program improvement may result from process evaluations, while outcome evaluations are used to ensure the program is meeting the needs of learners (Stanhope & Lancaster, 2011). During the process evaluation, Stanhope and Lancaster (2011) stated that questions regarding what is not working, as well as the possible reasons why the program is not working should be asked in order to improve the program. Regarding outcome/summative or impact evaluation, the degree to which objectives and goals of the program are met is examined (Stanhope & Lancaster, 2011). Focusing the evaluation design is the third step of the CDC framework and involves choosing

evaluation designs and appropriate statistical analyses (McKenzie et al., 2013). Steps four through six are straightforward and as stated above, involve the collection, analysis, and dissemination of results (McKenzie et al., 2013).

Finally, the CDC framework also includes four standards, which are (a) utility, (b) feasibility, (c) propriety, and (d) accuracy (Farell et al., 2002). This ensures the program is useful (utility), practical (feasibility), ethical and legal (propriety), and reliable and valid (accuracy; Farell et al., 2002). This framework was chosen due to the comprehensive and logical flow of the framework. The following section will discuss the available literature regarding EMR training and nurses, with particular interest in the methods of evaluating teaching sessions for effectiveness.

Literature Concerning EMR Training and Nurses

The available literature concerning the evaluation of computer documentation training for nurses is limited. The majority of studies discussed changes made to improve existing training programs, training that has taken place upon the implementation of the EMR at various sites, and the examination of facilitators and barriers related to EMR usage. At times, EMR training with students and disciplines other than nursing were also explored, if the article was found to be helpful in determining possible evaluation methods for EMR training sessions. The following section will discuss these articles in detail with a summary of gaps in the literature concerning this topic at the end of the paper.

EMR Training for Staff

The ability of a new nurse to document competently in the EHR after the first week of orientation was examined by Mitchell (2015). This study included an evaluation

of learning in the form of both pre and postconfidence tests and a competency examination at the end of the orientation. Mitchell discovered that more practice time was needed to improve documentation. Similarly, Stromberg (2011) discussed a revised method for training new staff in the electronic medical record. Initially, the training was two 9-hour days with all disciples being taught together, with some staff leaving at various times throughout the session when topics were no longer applicable. Stromberg described this previous method of teaching as a demonstration lecture, with very little return demonstration from participants.

Staff were found to be uncomfortable with using the system weeks or months after training and complained that too much information was presented at the one time (Stromberg, 2011). In addition, it was reported that having different disciplines in the one classroom was not ideal due to the varying needs of the learners. As a result, the four goals of the new training method were (a) discipline-specific training sessions, (b) decreased time in the classroom per day, (c) smaller packages of material, and (d) more time on each topic (Stromberg, 2011). This resulted in nurses receiving 23 hours of training over 4 days. Stromberg (2011) planned for an evaluation to be given to the learners at the conclusion of their training to allow staff time to use the system prior to completing the evaluation. Unfortunately, Stromberg (2011) reported that the information contained in the surveys was probably not an accurate reflection of the training program due to inconsistencies in the time of receiving the surveys from staff after the training session, incomplete or missing surveys, as well as mostly receiving positive feedback when surveys were returned.

EHR training education was also discussed in Nicklaus, Kusser, Zessin, and

Amaya (2015). As in the case above, initially, Nicklaus et al. reported computer training as mainly consisting of instructor-led demonstrations. These authors utilized Benner's novice-to-expert model and Lowe's five Key Principles for Successful EHR Training. Their strategies included a computer skills assessment test, EHR proficiency tool, web-based training (WBT) modules, clinical scenarios, and practice in learning laboratories.

With regards to the computer skills assessment, Nicklaus et al. (2015) reported 80% or lower indicated a need for additional computer training prior to EHR education. In addition, these authors reported that the EHR proficiency tool allowed each person to be assessed and, as a result, they received individualized training. WBT modules were reported to be self-learning modules, with basic information related to the EHR contained in small sections. After this component was completed, Nicklaus et al. reported that specialty classroom training was initiated. Scenarios were presented and a demonstration was given by the instructor. Then, the participants practiced. The staff members also had the opportunity for paid practice time in the learning laboratory (Nicklaus et al., 2015). The limitations of this program, as stated by the authors, included the cost of keeping the learning laboratory open, as well as the more complicated EHR processes of certain specialized clinical areas. Staff members, however, stated that this new process was effective and critical thinking was evident via questions asked by the staff in training sessions (Nicklaus et al., 2015).

The creation of an interdisciplinary, computerized documentation system was discussed in Fuller (2006). While transitioning to computerization, similar as in the case above, Fuller discovered that many staff members had issues with basic computer skills and, therefore, required additional computer training. Bredfeldt, Awad, Joseph, and

Snyder (2013) also discovered a need for additional training concerning the EHR at Kaiser Permanente, Mid-Atlantic States (KPMAS). Two separate classes utilizing blended learning were developed for providers. The first class involved chart review and managing patient level data, which also included managing problem and medication lists (Bredfeldt et al., 2013). The second class involved topics to increase accuracy and efficiency of documentation as well as order entry tasks. The authors reported both classes to be 4-5 hours long.

Bredfeldt et al. (2013) discovered increased usage of both the problem and medication lists by participants. These authors had an overwhelming response from staff for these additional training sessions, indicating a need for such education. More studies are needed however, to develop appropriate targets for medication and problem list usage (Bredfeldt et al., 2013). Also, since Bredfeldt et al. discovered that trainees who were already proficient at the problem lists reached a ceiling, it was difficult to determine the effectiveness of the session for this particular group.

The need for additional help in understanding the functionality of the EMR was also evident in Poe et al. (2011). These authors examined the use of peer coaches and found evidence for such superusers of the system on the unit to help staff who were having trouble with the EMR. These authors noted increased satisfaction with training and confidence with the EMR as a result of the program. Similarly, Sockolow, Rogers, Bowles, Hand, and George (2014) discussed the challenges and facilitators with the implementation of an evidenced-based nursing information system (NIS). An NIS is a module that is used to standardize documentation collection that can be used as part of, or in conjunction with, a computerized medical record system (Sockolow et al., 2014).

Managers identified “superusers” to provide extra support regarding the program on the units (Sockolow et al., 2014). These authors also stressed the importance of continuous ongoing training.

Problems with computerized documentation were also noted after it was introduced at Howard Young Medical Center in 1998 (Gapko, 2001). Nurses were entering information into different parts of the system and at times double documenting. By working with nurses, various improvements were made to the screens that made documentation faster and more complete (Gapko, 2001). Training for new staff was increased and Gapko (2001) reported continual education for staff. In addition, Gapko (2001) reported that guidelines were in the process of being developed to guide the documentation process to help prevent double documentation from occurring.

EMR Training for Students

The following section contains articles of EMR learning and students. Since the students in these articles were adults, similar principals regarding adult learning can be applied to teaching and evaluating EMR training sessions for staff. For example, utilizing a free EMR for the training of students was discussed in Hoyt, Adler, Ziesemer, and Palombo (2013). These authors recruited students from the University of West Florida and Lake-Sumter Community College in both 2011 and 2012 to complete the Questionnaire for User Interaction Satisfaction (QUIS) and a time-motion study to test efficiency and error rates of documentation. Hoyt et al. discovered that the free EMR training system had high usability scores, acceptable time-motion results, and low error rates for students. These authors did, however, report a small sample size and state the possibility of a Type II error or a potential recruitment bias.

Nokes et al. (2012) discussed electronic documentation with undergraduate nursing students. In this article, modules were examined as a method to help nursing students learn the documentation system utilized in a home care agency. By using an online wound care module, students were able to complete the 50-minute module that included a scenario involving documentation. After the module was completed, students completed a 12-item posttest. Overall, Nokes et al. reported that the students were very satisfied with the module and commented that the posttest allowed them to review the narratives, learn from mistakes, and repeat items until they correctly answered all of the posttest questions.

Student education regarding electronic documentation was also discussed in Bowers et al. (2011). These authors reported students initially having to attend a 4-hour computer class to learn about the electronic documentation system to prepare for their clinical experience. These authors identified a knowledge gap concerning the EMR as a method of communication. To address this, these authors reported that self-paced, 45-minutes to one-hour courses containing posttests were developed. These courses were contained in an online format called the Student Nurse Portal (SNP; Bowers et al., 2011). An anonymous survey was given after each semester to evaluate the courses. Sixty-one percent of respondents reported feeling adequately or well prepared to use the EMR system from classroom instruction regarding EMR documentation and training within the SNP. This was up to 66% when tutoring also occurred on the nursing units (Bowers et al., 2011). In the past, hospital resources were being used to train students. Now, only new faculty are trained by hospital staff (Bowers et al., 2011).

In the final article concerning students, Warboys, Mok, and Frith (2014) used a

nonexperimental, correlational design to explore student perceptions of the EMR as a learning tool and the level of EMR usage needed in order to be comfortable with the documentation system. Students completed a 50-minute training session at the beginning of the course, and an anonymous survey regarding EMR-use perceptions at the end of the semester (Warboys et al., 2014). Seventy-two percent of students who used the EMR thought it was realistic and 75% thought that it would be helpful as a tool to document nursing care (Warboys et al., 2014). Overall, these authors reported that students had positive perceptions of the EMR, but felt they could use more training.

By reviewing the above literature, there appears to be overwhelming support to suggest that current EMR training programs may not be effective enough to allow staff the comfort level needed to use the documentation system effectively. The need for additional training time that includes the principals of adult learning is suggested. Prior experience and basic computer skills are also necessary for staff to be successful in learning the EMR. In addition, as suggested above, staff may find it helpful to have access to self-paced learning modules and superusers on nursing units for additional support with the program.

In most of the literature discussed above, attempts have been made to assess the effectiveness of EMR training, namely staff members' perceptions of the EMR and competency tests. Factors other than training, however, may affect staff from documenting efficiently and effectively in the EMR. The following section will contain a discussion of these additional factors affecting staff computer documentation.

Additional Factors Affecting Staff Documentation in the EMR

The purpose of Stronge and Brodt (1985) was to pilot a questionnaire concerning attitudes of nurses towards computerization. Stronge and Brodt were interested to determine nurses' views of computers, since they reported that attitudes on a particular subject can affect behaviour. These authors reviewed the literature and noted that issues, such as job security, legal ramifications, quality of patient care, capabilities of computers, employee willingness to use computers, and the benefit to the institution, were the main areas required to capture nurses' views regarding computers. In September of 1984, Stronge and Brodt asked junior and senior nursing students to complete the 66-statement questionnaire concerning these issues relating to computerization. From this pilot, these authors were able to create an instrument to measure nurses' attitudes regarding computers and, therefore, provide a way to collect this important information needed for a complete evaluation regarding computer training.

As discussed in the previous section, Fuller (2006) was involved in the creation of an interdisciplinary computerized documentation system. Fuller also discovered that clinicians enjoyed socialization at the nurses' station, which prevented point-of-care charting at the bedside. In addition, Fuller reported that some staff felt documenting on the computer in front of the patient was distracting for patients and nurses. As a result, computer placement is important to note when examining electronic documentation compliance, if point-of-care documentation is being evaluated.

Electronic documentation training of staff upon the adoption of an EHR was explored in Whittaker, Aufdenkamp, and Tinley (2009). These authors used a qualitative, descriptive study to explore nurses' perceptions in terms of barriers and facilitators in

EHR adoption. They listed computer-related items as issues, such as logging on and dead batteries, which affected the accessibility of information. Nurse-related issues were listed as point-of-care documentation and team work, whereas contextual issues involved long training sessions, delays between training and implementation, as opposed to supportive management, and the presence of superusers. These barriers and facilitators need to be addressed or supported respectively, if an EHR is to be adopted successfully (Whittaker et al., 2009).

Similarly, the evaluation of the introduction of a computer-based nursing documentation system was explored in Ammenwerth, Mansmann, Iller, and Eichstadter (2003). In this study, four wards at the University Hospitals of Heidelberg, Germany introduced *Pflegeinformations- und Kommunikationssystem* (PIK), defined as "nursing information and communication system" (Ammenwerth et al., 2003, p. 71). Questionnaires were distributed at three time periods: before, during and after implementation of PIK to measure changes in staff acceptance to the computer documentation system. In addition, these authors also conducted focus group sessions to gather supplementary data to better understand some of the information collected from the questionnaires. Ammenwerth et al. reported both previous acceptance of the nursing process and self-confidence with computers as the two main factors that influenced acceptance of computer-based documentation. The additional factors that influenced acceptance were listed to be: fit with the nursing workflow, system functionality, change and number of documentation procedures required, number and fluctuation of patients, age of nurses, and number of key users available (Ammenwerth et al., 2003).

Lyden (2008) discussed the implementation from paper to computer and, in

particular, the addition of a VISICU eICU ® to an ICU. Similar to Whittaker et al. (2009), Lyden listed barriers to documentation as difficulty in logging on, short battery life, slowness, other technical issues with the computer or software, low numbers of computers as well as the locations of devices, additional required documentation for the program, and user confidence with the system.

As discussed in the previous section, Sockolow et al. (2014) discussed the challenges and facilitators with the implementation of an NIS. The major findings from this qualitative study included eight themes, which were (a) computer placement, (b) difficulty using NIS, (c) documentation completeness: efficiency, (d) time at bedside, (e) team communication, (f) training, (g) workflow changes, and (h) perceived value of NIS. From this study these authors discussed that, depending on the situation and information to be entered into the computer system, some staff members may prefer to document at point-of-care or outside the patient's room. They also noted that computer program inefficiencies might cause double documentation or workflow issues. Sockolow et al. also stressed the importance of ensuring that nurses know the value of the NIS in order to not to view documenting in this module as a task, but that it has value.

Lee (2008) explored nurses' experience with a documentation system 1 year after implementation. Lee used an 800-bed teaching hospital in northern Taiwan to complete a descriptive qualitative study with 23 nurses. Interviews included questions about nurses' workflow and the electronic documentation process. Problems identified included insufficient PCs and printers, slow response time, workflow change, poor content design, decreased charting quality, and the impact on staff relationships. Similarly, Lee, Mills, and Lu (2009) used a multimethod approach to evaluate the nursing information system

in Taiwan. These authors evaluated two hospitals using evaluation surveys, interviews, and an observation segment and found a slightly overall positive evaluation of NIS, with negative views from staff concerning hardware, patient care, content design, confidentially and workflow.

Darbyshire (2000) conducted a qualitative study that included focus groups of 53 nurses and midwives in Australia during a 6-week period that took place between October and December 1998. The main question of this study was, "How do nurses experience working with CPIS in their everyday practice?" (Darbyshire, 2000, p. 5). Similar major themes resulted from these focus groups, which included issues with passwords, not enough computers, issues with navigating the screens, the need for icons and graphics, appropriate ways to access help when users encounter problems, the need for prompts and reminders, issues with printing data from the system, and system responsiveness (Darbyshire, 2000).

A quasi-experimental design that utilized a one group pre/posttest was used to evaluate a Nursing Process Support System in Chinese (NPSSC) for long-term care residents in Taiwan (Yeh et al., 2009). This system required users to enter resident assessment data and select appropriate nursing diagnoses. The program would then generate suggested nursing interventions and an individualized care plan. During the evaluation, the researchers identified four obstacles that included (a) resistance by nurses, (b) insufficient computer access, (c) computerized records did not match paper records, and (d) maintenance of system. Yeh et al. (2009), however, reported that completeness, organization, and consistency of nursing records improved significantly, such that expected outcomes were achieved, care plans were completed within 48 hours and care

plans were used in clinical teaching or staff development. They attributed the higher satisfaction with the system to the inclusion of nurse scientists, computer programmers, administrators, physicians, and bedside nurses in the development. They emphasized that resistance must be addressed and that quality training is extremely important along with adequate computer access and proper support.

Finally, due to the extensive list of barriers identified in the above studies, various stakeholders involved with computer documentation should be involved in the evaluation of electronic documentation training. As suggested above, greater satisfaction with a project may result from the inclusion of stakeholders involved or affected by the plan. Lyons et al. (2005) discussed information technology for the implementation of clinical guidelines using focus groups containing administrators, physicians, and nurses in 18 U.S. Veterans Affairs Medical Centers. Computer tasks, workplace factors, system design, and personal concerns were the four domains identified from the focus groups of these three groups of people. Overall, it was noted that computer-related issues were more often discussed as barriers with physicians and nurses, while administrators modestly reported that computers were a facilitator (Lyons et al., 2005). As a result, Lyons et al. stressed the importance of understanding the difference that stakeholder groups can have regarding perceived barriers and facilitators in order for problem areas to be appropriately addressed.

Conclusion

Due to the limited number of available studies concerning the evaluation of computer documentation training for nurses, the best way to evaluate this type of training is unknown at this time. As suggested by the above literature, the majority of such

training programs are perhaps ineffective in preparing nurses to work comfortably with the EMR. However, by using the principals of adult learning during the development or modification of these training programs, facilitators of these programs can ensure that they are using appropriate methods to prepare staff to use the EMR within their facility. Training programs, however, should be evaluated to ensure they are meeting the needs of staff. In the proposed practicum, the CDC framework will guide the evaluation process to ensure all stakeholders are included to identify and address all facilitators and barriers regarding EMR training.

Many of the above studies discussed in this paper report small sample sizes, possible bias, estimations, and lack of generalizability across settings. However, it is valuable to explore methods used in previous research to determine an evaluation plan for the current practicum project. As suggested in various articles discussed previously, pre/posttests either regarding perceptions or attitudes of the documentation process, as well as competency tests have been utilized for evaluation of EMR training sessions. Various qualitative studies or portions of studies where mixed methods were used generated rich information regarding potential facilitators and barriers that are important to be aware of when evaluating training programs. In addition, as suggested above, self-paced learning modules and superusers on nursing units may be useful for additional support and should also be included in the evaluation process. Therefore, the above literature review was helpful in exploring previous work completed related to the topic of EMR training and nurses, with particular interest in the methods of evaluating teaching sessions for effectiveness. With this information, a suitable evaluation plan to evaluate electronic documentation training for nurses will be developed.

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Appendix A

Table 1

Literature Summary Table for EMR Training for Staff

Authors/Title	Setting/Participants/Interventions/ Methods	Key Results/Points	Strengths and Limitations
Bredfeldt et al. (2013) Training providers: Beyond the basics of electronic health records	-Mixed methods approach, case-control 1:4 match -36 participants and 144 nonparticipants -Two separate classes: (1) chart review & managing patient level data including problem and medication lists; (2) accurate and efficient documentation and order entry -Open-ended question survey	-Increased usage of both the problem and medication lists by participants -Medication list: $p< 0.05$, Wilcoxon sign rank test -Problem list: $p=0.06$, Wilcoxon sign rank test -Overwhelming response from staff for training	Limitations: -Small sample -Need appropriate targets for outcome measures -Trainees who were already proficient at the problem lists reached a ceiling

Table 1 (continued)

Literature Summary Table for EMR Training for Staff

Authors/Title	Setting/Participants/Interventions/Methods	Key Results/Points	Strengths and Limitations
Mitchell (2015) Electronic documentation: Assessment of newly graduated nurses' competency and confidence levels	-4500 bed urban hospital, Midwest USA -New Registered Nurses orienting to the hospital -64 RNs (data analysis on 62) aged 21-53, 52 female, 12 male, 38 with BSN, 25 an AD and one a diploma –Descriptive, pre/post design –Completed: (1) demographic questionnaire, (2) preconfidence self-evaluation preclass questionnaire, (3) test of competency, and (4) electronic documentation confidence self evaluation postclass questionnaire	-Competency scores mean = 9.8 (70%) -Pre/post confidence scores $p<0.01$ -Moderate relationship found between postconfidence and competence (Pearson Correlation = 0.301) -Many RNs had previous experience with EMR documentation in other roles	-Small sample size -EHR system may differ in functionality from others -Instruments not tested for reliability

Table 1 (continued)

Literature Summary Table for EMR Training for Staff

Authors/Title	Setting/Participants/Interventions/Methods	Key Results	Strengths and Limitations
Poe et al. (2011) Building nursing intellectual capital for safe use of information technology: A before-after study to test an evidence-based peer coach intervention	–A large northeastern medical centre -Use of peer-coaches to facilitate implementation of EMR -A nonexperimental, before-after study -Overall: pre-go-live n=207 (50%), psychiatric nurses pre-go-live n=137 (62%) & neuroscience nurses pre-go-live n=70 (36%) -Overall: post-go-live n=155 (37%), psychiatric nurses post-go-live n=79 (36%) & neuroscience nurses post-go-live n=100 (52%)	-Overall the satisfaction with the intervention was better than expected	-Overall satisfaction may have been due to bias and not really peer-coaches -Low response rate on post survey -One site = low generalizability -Nonpaired pre & post design

Table 2

Literature Summary Table for EMR Training for Students

Authors/Title	Setting/Participants/Interventions/Methods	Key Results	Strengths and Limitations
Hoyt et al. (2013) Evaluating the usability of a free electronic health record for training	-Quantitative-qualitative study -University of West Florida and Lake-Sumter Community College, 2011/2012 -QUIS usability survey (satisfaction) and a time motion study (time on task and error rates) -44 students completed QUIS survey -23 students completed a usability survey and time-motion study -1 physician and 5 nurses completed the time-motion study	Time-Motion Study: Clinicians faster than non-clinicians, $p<.0025$ -Overall error rate = 1.9/student or 5.6% for all 33 tasks -Time to complete time-motion not significantly correlated with satisfaction -Findings indicate high usability, efficiency and effectiveness	-Reliability: QUIS Cronbach's alpha = .95 -Time motion study = small sample size -Possible Type II error or bias in recruitment

Table 2 (continued)

Literature Summary Table for EMR Training for Students

Authors/Title	Setting/Participants/Interventions/Methods	Key Results	Strengths and Limitations
Warboys et al. (2014) Electronic medical records in clinical teaching	-Nonexperimental, correlational design -Southeastern US research university, nursing school -220 baccalaureate junior-level students -Explore student perceptions of the EMR as a learning tool and the level of EMR usage needed -50-minute training session: how to use EMR software called OpenEMR -Anonymous 12 question survey on perception of EMR	-Average usage of EMR = 4.10 times (SD 1.63) -72% of students who used the EMR thought it was realistic; 75% thought that it would be helpful as a tool -Overall felt more training was needed -Positive relationship between the amount of use of the EMR and perception of the EMR	Limitations: -Generalizability -Only perceptions were examined, not outcomes such as competency

Table 3

Literature Summary Table for Additional Factors Affecting Staff Documentation in the EMR

Authors/Title	Setting/Participants/Interventions/ Methods	Key Results	Strengths and Limitations
Ammenwerth et al. (2003) Factors affecting and affected by user acceptance of computer-based nursing documentation: Results of a two-year study	-4 wards of the University Hospitals of Heidelberg, Germany -31 nurses -PIK = computer documentation system using nursing process -PIK evaluated using questionnaires and focus groups -Questionnaires: Approximately 3 months before, 3 months after & 9 months after intervention	-Acceptance of computer-based documentation: (1) previous acceptance of nursing process, and (2) previous self-confidence with computers -Additional factors influencing acceptance were fit with nursing workflow, system functionality, change/number of documentation procedures, number/fluctuation of patients, age of nurses, & number of key users	-Quantitative and qualitative methods = rich data -High reliability reported for all questionnaires = high internal consistency

Table 3 (continued)

Literature Summary Table for Additional Factors Affecting Staff Documentation in the EMR

Authors/Title	Setting/Participants/Interventions/ Methods	Key Results	Strengths and Limitations
Darbyshire (2000) User-friendliness of computerized information systems	-Qualitative study -53 nurses and midwives in Australia -6-week period: Oct-Dec 1998 -Main question was, "How do nurses experience working with CPIS in their everyday practice?" (Darbyshire, 2000, p.5)	Major themes: (1) Passwords, (2) Terminal waiting, (3) Navigability, (4) Need for icons and graphics, (5) Help, (6) Prompts and reminders, (7) Printing, (8) System responsiveness -Wanted something to minimize paperwork and repetitive admin tasks, not create duplication or burden	-Appropriate methods used (focus groups) Limitation: -No formal attempt at interrater reliability or validity

Table 3 (continued)

Literature Summary Table for Additional Factors Affecting Staff Documentation in the EMR

Authors/Title	Setting/Participants/Interventions/Methods	Key Results	Strengths and Limitations
Lee (2008) Nursing information: Users' experiences of a system in Taiwan one year after its implementation	-4 surgical units of an 800-bed teaching hospital, northern Taiwan -23 nurses -Descriptive qualitative interviews -Questions regarding nurses' workflow and the electronic documentation process	-6 themes emerged: (1) Insufficient PCs and printers (2) Slow response time (3) Workflow change (4) Poor content design (5) Decreased charting quality (6) Impact on relationship	-Appropriate methods used (focus groups) -Strong data analysis methods used to ensure trustworthiness of data collected

Table 3 (continued)

Literature Summary Table for Additional Factors Affecting Staff Documentation in the EMR

Authors/Title	Setting/Participants/Interventions /Methods	Key Results	Strengths and Limitations
Lee et al. (2009) The multimethod evaluation of a nursing information system in Taiwan	-2 hospitals in Taiwan -Evaluation surveys, focus groups, and observation segment -Questionnaire included 30 closed questions and one open-ended question (623/875 completed) -Focus group interviews -Work sampling observations (4 hour observation period with a 10 min snapshot)	-Slightly overall positive evaluation of NIS -Negative responses for hardware, patient care, content design, confidentially and workflow -6 themes from interview: unsatisfactory design, slow response time and computer shortage, insufficient training for printing problems, personal interactions with patients and physicians, workflow change, usage advantages -Overall nurses spent 35.8% documenting, night nurses the most	Limitations: -Specific setting -Percentages were estimates during observations

Table 3 (continued)

Literature Summary Table for Additional Factors Affecting Staff Documentation in the EMR

Authors/Title	Setting/Participants/ Interventions/Methods	Key Results	Strengths and Limitations
Lyons et al. (2005) Information technology for clinical guideline implementation: Perceptions of multidisciplinary stakeholders	-18 US Veterans Affairs Medical Centers -Purposive sample of 322 individuals including administrators, physicians and nurses -50 focus groups to identify facilitators and barriers regarding computers for CPGs	-18 themes within four domains (A) Computer tasks: documentation, decision support, performance evaluation, data retrieval & order entry (B) Workplace factors: patient records, guideline implementation & maintenance, computer literacy & resources (C) System design: accessibility, essential data, charting formats, computer glitches (D) Personal concerns: time, workload, attitudes, computer complaints	-Collected views of multiple stakeholders -Not specific about role of information technologies –Did not include information technology specialists in focus groups -Focused on acute care

Table 3 (continued)

Literature Summary Table for Additional Factors Affecting Staff Documentation in the EMR

Authors/Title	Setting/Participants/Interventions/Methods	Key Results	Strengths and Limitations
Stronge & Brodt (1985) Assessment of nurses' attitudes toward computerization	-Pilot of a questionnaire concerning attitudes of nurses towards computerization -Included junior and senior nursing students -48/60 individuals returned the questionnaire -Used 66 statements from issues related to computerization found in the literature: (1) Job security, (2) Legal ramification, (3) Quality of patient care, (4) Capabilities of computers, (5) Employee wiliness to use computers, (6) Benefit to the institution	-Able to identify statements with issues -20/66 statements chosen for questionnaire -Content validity was determined to be fine once an additional statement concerning job security was added	-Nursing students used not staff -Older study (1985), opinions may have changed -Internal consistency: split-half reliability r = .90

Table 3 (continued)

Literature Summary Table for Additional Factors Affecting Staff Documentation in the EMR

Authors/Title	Setting/Participants/Interventions/Methods	Key Results	Strengths and Limitations
Whittaker et al. (2009) Barriers and facilitators to electronic documentation in a rural hospital	-Purposive sampling -11 RNs from oncology and medical-surgical units -Qualitative, descriptive study -Participants asked about personal characteristics, computer-related characteristics and contextual factors in regards to helping or hindering the implementation of EHR -Participants were asked about their experience and acceptance of the EHR	-Computer-related, nurse-related and contextual barriers and facilitators exist and need to be addressed or supported respectively if an EHR is to be adopted successfully	-Sample volunteered for the study -Potential bias -Good article: adequate literature review, clearly identified purpose

Table 3 (continued)

Literature Summary Table for Additional Factors Affecting Staff Documentation in the EMR

Authors/Title	Setting/Participants/Interventions/ Methods	Key Results	Strengths and Limitations
Yeh et al. (2009) Implementation and evaluation of a nursing process support system for long-term care: A Taiwanese study	-Quasi-experimental design with a one group pre/posttest -27 nurses within 5 nursing homes in Taiwan -Demographic questionnaire -Checklist = efficiency -Satisfaction Questionnaire	-4 obstacles identified: (1) Resistance by nurses, (2) Insufficient computer access, (3) Computerized records did not match paper records, and (4) Maintenance of system -8 min savings per 8 hour shift, not statistically significant -Overall satisfaction improved (Z=-2.40, p = 0.01)	-Reliability of the Satisfaction Questionnaire Cronbach's alpha = 0.92 Test-retest reliability = 0.90 Limitations: -Small sample size -More studies needed regarding the effect on patient care

Table 4

Literature Summary Table for EMR Training for Staff and Additional Factors Affecting Staff Documentation in the EMR

Authors/Title	Setting/Participants/Interventions/Methods	Key Results	Strengths and Limitations
Sockolow et al. (2014) Challenges and facilitators to nurse use of a guideline-based nursing information system: Recommendations for nurse executives	-Urban, non-profit, academic health system -NIS introduced in 2011 -A purposeful random sample of 12 RNs from 3 units from 2 hospitals -Qualitative study using scenario-testing	-Major themes: (1) Computer placement (2) Difficulty using NIS (3) Documentation completeness: efficiency (4) Time at bedside (5) Team communication (6) Training (7) Workflow changes (8) Perceived value of NIS	-Lack of participant demographic data to preserve anonymity -Specific situation and participants

Appendix C

Consultation Report

Memorial University of Newfoundland

School of Nursing

Master of Nursing Program

PRACTICUM: CONSULTATION REPORT

Student's Name:	Natalie Dale
Course Names and Numbers:	N6660
Supervisor:	Dr. Cindy Murray
Title:	Evaluation of a One-Day Meditech Magic Training Program for Registered Nurses and Licensed Practical Nurses in a Long Term Care Program
Date:	December 11, 2015

1. Background

The Long Term Care Eastern Health (LTCEH) Program within St. John's utilizes two different Meditech computer documentation systems: Meditech Magic 5.66 and Meditech Client Server 5.64. The former was introduced to the St. John's Long Term Care facility on March 25, 2014 and to Masonic Park on November 4, 2014. Prior to this, both of these facilities had been using Meditech Client Server 5.64. Computer documentation within the Long Term Care (LTC) Program involves the day-to-day documentation of care needs for residents in nursing homes, which includes documenting electronically on interventions, assessments, notes, allergies, and the Kardex. In addition,

Meditech Magic 5.66 includes an order entry module that allows staff to electronically send requests for various tests, meals, as well as referrals to various health care professionals. During orientation, all new Registered Nurses (RNs) and Licensed Practical Nurses (LPNs) receive a mandatory introductory Meditech education session.

Colleagues and frontline staff have commented informally to me that Meditech Magic 5.66 is less user-friendly than the former Meditech Client Server 5.64 system. Through informal assessments during Meditech Magic classes, and problem areas identified by staff and managers, it was determined that the computer documentation training in LTC for the Meditech Magic 5.66 system could be improved in order to better prepare staff to accurately document and retrieve information from the electronic chart. Since RNs and LPNs are involved with most of the day-to-day documentation and responsibility of residents within this setting, a One-Day Meditech Magic Training Program for RNs and LPNs in the LTC Program was developed. This one-day training module consists of a half-day of hands-on, instructor-led review of the system, with the afternoon consisting of staff having the opportunity to practice using the system.

The main purpose of this practicum project is to evaluate this new training program. An evaluation is needed to determine if this program is adequate since there is a legal obligation of staff to document care accurately, as well as obtain data from the system to plan care for residents. An evaluation of the teaching program is therefore required in order to determine if changes are needed to better prepare staff for the clinical area. In addition, support materials currently available for staff regarding Meditech Magic will also be examined in order to determine if improvements are needed to these resources.

2. Purpose and specific objectives for the consultation

The purpose of the consultations was to gather information from various stakeholders to develop an evaluation plan that would be both practical and meaningful to staff who are either documenting in Meditech Magic or are involved with the documentation process in LTC.

The following objectives were developed for the consultations:

1. By consulting with RNs and LPNs and the Clinical Lead Manager at the St. John's Long Term Care facility and Masonic Park, colleagues within my department in St. John's, and the Consolidation Team of Eastern Health, I will determine the documentation tasks in Meditech Magic that require additional education for RNs and LPNs in LTCEH, St. John's.
2. By consulting with colleagues within my department in St. John's, and the Consolidation Team of Eastern Health, I will obtain the types of evaluation methods previously used within the LTC Program, and by the Consolidation Team.
3. By consulting with colleagues within my department in St. John's, and the Consolidation Team of Eastern Health, I will obtain feedback on evaluation methods previously used within the LTC Program, and by the Consolidation Team.
4. During this consultation process, I will obtain feedback from RNs and LPNs, colleagues within my department in St. John's and management in order to determine factors that may affect an evaluation of the One-Day Meditech Magic Training Program, as well as possible strategies to deal with these factors.

5. During this consultation process, I will obtain feedback from RNs and LPNs, colleagues within my department in St. John's and management in order to determine the barriers and facilitators that affect electronic documentation.
6. During this consultation process, I will obtain feedback regarding the Meditech Magic support materials currently available for staff from RNs and LPNs, colleagues within my department in St. John's and management in order to make improvements to these resources.

3. Methods

Information sheets and consultation questionnaires were emailed to the Clinical Lead Manager at the St. John's Long Term Care facility and Masonic Park, colleagues within my department in St. John's, and the Consolidation Team of Eastern Health on November 13, 2015 (please see Appendices A through F for the information sheets and questionnaires sent to the Clinical Lead Manager, colleagues within my department and the Consolidation Team, respectively). I personally visited Masonic Park on November 12, 2015 and all LTC units of St. John's Long Term Care on November 13, 2015. During these visits, I asked for RN and LPN volunteers for the consultation process. The information sheets and questionnaires for the RN and LPN group were left on the units in order for staff members to freely choose to volunteer for the project (please see Appendices G and H for the information sheet and questionnaire respectively).

LPNs and RNs who volunteered for the consultation process were asked to complete a paper consultation questionnaire and return it to me via internal mail in the preaddressed envelope, which was provided with the questionnaire. I returned to Masonic

Park on November 24, 2015 and St. John's Long Term Care on November 26, 2015, to collect the unused questionnaires. It was found during this consultation process that some staff had inserted the completed questionnaire into the preaddressed envelope and had placed it back in the main envelope with the blank questionnaires. As a result, extra caution was used when collecting the unused surveys in order to ensure all completed questionnaires were collected. All emailed responses were kept electronically on an encrypted password-protected laptop, which is only used by me in my current position within Eastern Health. All paper consultation questionnaires were locked in a filing cabinet in my office at St. Patrick's Mercy Home, St. John's. In addition, paper consultation questionnaires were also scanned and saved on my work encrypted password-protected laptop.

4. Results

Data management and analysis for this consultation process involved descriptive statistics and conventional content analysis. A total of 85 RN and LPN consultation questionnaires were distributed. Seventy-five questionnaires or five surveys per unit for St. John's Long Term Care and 10 were left at Masonic Park. Eighteen RN and LPN consultation questionnaires were returned for a response rate of 21%. Four questionnaires were missing information regarding care provider, six questionnaires did not have a site identified, and seven questionnaires did not indicate the level of experience with Meditech Magic. The sample did contain responses from RNs and LPNs, and both St. John's Long Term Care and Masonic Park. No staff identified themselves as having less than 3 months experience with Meditech Magic. However, since in many of the

questionnaires this information was left blank, it cannot be determined whether or not this group of staff was adequately represented in the sample. Finally, 13 consultation questionnaires were distributed via email to the rest of the stakeholder group. A total of seven responses were received for a response rate of 54%.

All stakeholder groups were asked to identify areas of Meditech Magic that require additional education for staff by marking an "X" in the column next to the documentation task provided in the questionnaire (please see Appendix I for the frequency of documentation tasks requiring additional education for staff as indicated by stakeholders). The top three documentation tasks identified by stakeholders were, documenting on multiple residents at the same time, entering or editing the administrative data screen, and changing the levels of interventions. In addition, adding the basic plan of care and printing reports tied at 11 responses each. Finally, entering and editing allergies, deleting interventions no longer needed on the process intervention screen and undoing and editing documentation all had a frequency of 10 responses.

A similar pattern was noted when only the results for the RN and LPN stakeholder group were analyzed (please see Appendix J for the frequency of documentation tasks requiring additional education for staff as indicated by the RN and LPN group). As in the case above, the top documentation task identified was documenting on multiple residents at the same time. Entering or editing the administrative data screen and printing reports were tied in second place with 10 responses. Third, adding the basic plan of care had nine responses. This was followed by eight additional documentation tasks tied at eight responses each which included, entering or editing allergies, adding interventions to the process intervention screen, changing levels of interventions, deleting interventions from

the process intervention screen, undoing and editing documentation, entering lab and consult requisitions, and sending messages to dietary.

Conventional content analysis was used to examine information contained in the open-ended questions on the questionnaire. Conventional content analysis is appropriate when there is limited theory or research concerning the phenomena under study (Hsieh & Shannon, 2005). This method involves using the data to identify coding categories (Hsieh & Shannon, 2005). Five areas were analyzed using this method during the consultation process. These included (a) whether RNs and LPNs differed in their Meditech Magic educational needs, (b) examples of evaluation methods used in the past and feedback or advice regarding evaluation methods, (c) factors that may affect the evaluation and strategies to deal with these factors, (d) barriers and facilitators that affect electronic documentation, and (e) feedback regarding the Meditech Magic support materials.

The first area analyzed using this method was whether RNs and LPNs differed in their need for Meditech education (see Table 1 in Appendix K for the identified categories). Data analysis revealed a mixture of opinions regarding the scope of practice for these two groups of staff members. Some participants indicated that the two groups had different scopes of practice, whereas others stated that the practice of these two groups was very similar. Both RNs and LPNs are taught the allergy management module, how to add the basic care plan, entering and editing the administrative data screen, and order entry. However, throughout the questionnaires, participants had at times indicated that LPNs do not always complete the above documentation tasks. Instead, due to the RNs being directly involved with the admission of residents to the facility, these tasks are frequently completed by RNs. In addition, it was noted that since the RN is in a

leadership role in LTC, it is necessary for the RN to have a greater understanding of the system in order to help LPNs and Personal Care Attendants (PCAs) on the unit. Finally, during the consultation process, it was stated that both RNs and LPNs would benefit from training that involved practice in Meditech that could be directly applied to the practice setting. However, due to the changing roles and responsibilities of LPNs in LTC, it was also discussed that perhaps LPNs may benefit even more from additional guidance and support regarding the legal and professional importance of documentation.

The consultation process revealed that evaluation methods used in the past included convenience samples, questionnaires, observation, auditing and evaluation forms. General feedback and advice obtained from stakeholders included, using incentives to increase participation, being visible on the unit to promote the project, and consider interviewing staff if a low response rate is obtained from written surveys. In addition, one participant noted that the One-Day Meditech Magic Training Program contains a lot of information for one class and the system is hard to navigate. As a result, these two factors may affect the evaluation of the program. Finally, another participant cautioned that additional factors not related to the project might affect participation or feedback and, therefore, need to be considered since low response may not indicate that everything is satisfactory with the education session (please see Table 2 in Appendix K for a summary of the categories identified from the data regarding evaluation methods).

Third, data concerning factors affecting an evaluation and strategies to overcome these factors was analyzed (see Table 3 in Appendix K). The category of time was found to be the most common factor during this consultation process that may affect the evaluation. An additional factor related to time, was staffing levels on the units. Other

factors identified during the consultation process included poor usability of the system, the length of time between class and using the system, staff feeling feedback will not go anywhere, staff unaware that they need additional education, and finally, disinterest in the evaluation project. Possible strategies to deal with these factors include, visiting units at optimal times for staff members, incentives, allow for conversation on the units, and observe staff's actions during visits on the units. It was also noted that perhaps staff could return at 6-months to 1-year for a refresher course to evaluate learning needs regarding computer documentation.

The fourth topic examined by conventional content analysis included the barriers and facilitators to electronic documentation (see Table 4 in Appendix K). Again, the category of time was identified as the top barrier to affect electronic documentation. Additional barriers included system usability, inability to locate resources on the Intranet, technical skill of staff, limited training, and equipment on the units. In addition, participants indicated that being short-staffed as well as skill mix issues were also barriers that affected electronic documentation. Finally, updating staff members regarding changes, a lack of understanding of the importance of documentation, and the orientation schedule of new staff members may also be additional barriers to documentation. In contrast, the facilitators of electronic documentation were identified to be, staff available as a resource, organized hands-on-learning training sessions with practical case studies, and engaged managers.

The final topic covered during the consultation process was feedback regarding the Meditech Magic support materials. Two manuals currently exist as resources for staff regarding Meditech Magic. The LTC Meditech Magic User Guide is the main user

manual for Meditech Magic. The Long Term Care Meditech Magic Quick Reference Guide is a smaller manual that contains topics commonly used by staff members (please see Table 5 in Appendix K for categories from feedback on the support materials). With regards to the larger LTC Meditech Magic User Guide, a couple of participants had either forgotten about or were unaware that it existed. Participants also stated that they thought that it was too long. One participant suggested breaking up the manual into smaller components. In contrast, five participants indicated that they thought the smaller Long Term Care Meditech Magic Quick Reference Guide was okay, good or an excellent resource. Two participants were unaware of this resource.

With regards to both of these manuals, one participant added that staff members were more likely to use each other as a resource. It was also suggested to add both of these manuals to the LTC Intranet site. With regards to the Long Term Care Meditech Magic Quick Reference Guide, another participant added that time and environmental factors were barriers to staff using this resource. Finally, one participant suggested particular changes to these manuals. This participant stated to highlight the need to leave "Temporary Location" blank in both manuals, and have statements in the Long Term Care Meditech Magic Quick Reference Guide informing staff members to leave page 2 of Administrative Data Screen blank. This participant also suggested to add another statement in the Long Term Care Meditech Magic Quick Reference Guide advising staff members that a RN or Registered Dietitian can only enter diets.

The final resource explored in the consultation for staff was the Online Learning Modules. Eight participants indicated that they were not aware of or had not used this resource. Two participants stated that they could not find it or had difficulty locating it on

the Intranet. As stated earlier with regards to the manuals, one participant indicated that staff members were more likely to use each other as a resource, while another participant stated that these online modules should be added to the LTC Intranet site.

During the consultation process, it was noted that some of the questionnaires contained additional comments concerning the usability of the system. For example, one participant indicated that the Kardex was "busy looking," which made it difficult to locate needed information. Finally, another participant had asked for a footcare consult to be added to the Meditech system. These statements indicate that the current system may not be meeting the needs of staff members. This is important to note when evaluating the education program since usability of the system can greatly affect a staff member's ability to use the system effectively.

5. Conclusion

The Center for Disease Control and Prevention (CDC) framework was chosen to guide this practicum project. This framework includes six steps, which are (a) engage stakeholders, (b) describe the program, (c) focus the evaluation design, (d) gather credible evidence, (e) justify conclusions, and (f) ensure use and sharing of lessons (Farell et al., 2002). RN and LPN staff members working at St. John's Long Term Care and Masonic Park, management, colleagues within my department within St. John's, and the Consolidation Team of Eastern Health were the stakeholders identified for the consultation process of the evaluation.

According to stakeholders, the top three documentation tasks that require additional education are (1) documenting on multiple residents at the same time, (2)

entering or editing the administrative data screen, and (3) changing levels of interventions. Adding the basic plan of care, printing reports, adding and editing allergies, deleting interventions no longer needed on the process intervention screen, and undoing and editing documentation were also high on the list of documentation tasks that require additional education for staff members. Most of the following set of interventions that require additional Meditech education were interventions involving order entry. Adding interventions to the process intervention screen was listed among the order entry tasks. The top 14 documentation tasks listed in both Appendices I and J are identical. As a result, an evaluation using these 14 documentation tasks will be considered since evaluating all of the tasks would be impractical. Since both lists contain the same tasks only in a slightly different order, it was felt that this would be an appropriate list to develop the evaluation tool. Finally**,** by exploring the education needs of both RNs and LPNs, it was discovered that there are documentation tasks taught to LPNs that may not be regularly utilized by this group. As a result, this needs to be considered when evaluating the performance of LPNs on these tasks during the proposed project.

Various methods of evaluation were identified from the consultation process. I expect to use a convenience sample for the current project since I will be looking to enroll staff coming to either St. John's Long Term Care or Masonic Park into this particular practicum project. I plan on observing the accuracy of completing documentation tasks in a pretest/posttest format. I also plan on using a questionnaire to collect additional information regarding Meditech Magic training and support materials. Finally, I am considering using incentives during the evaluation process to increase participation.

Since "time" was identified as the most common factor to affect the evaluation of

the program, I plan on visiting the units to conduct the posttest and questionnaire during a time suggested by the participant. Another factor that was identified was the length of time between the class and the evaluation. As a result, the posttest and questionnaire will occur approximately two weeks after the pretest. This will give the staff member time to use the system, and still be in the orientation period for the participant.

Information regarding barriers and facilitators to electronic documentation will be used to help explain the results of the program evaluation. For example, lack of time, system usability, staff-shortages and issues concerning skill mix, the inability to locate resources on the Intranet, technical skill of staff, and quality and availability of equipment on the units are unrelated to the Meditech training session. However, it is important to be aware of these factors since they may indirectly affect the evaluation.

Finally, the consultation process was used to collect feedback regarding the Meditech Magic support materials. Overall it was noted that staff needed to be made more aware of these three resources. It was also identified that usability of the LTC Meditech Magic User Guide could be improved by breaking it up into smaller sections. Some improvements were also suggested which would aid staff in entering and editing information in the administrative data screen and additional information regarding diet entry. Finally, the resources will also be reviewed to ensure staff members are able to find information easily regarding the documentation tasks listed in both Appendices I and J.

As a result, this consultation process will be used to develop an evaluation plan for the One-Day Meditech Magic Training Program for RNs and LPNs in the LTC Program. In addition, the online modules, and user guides developed for staff will also be

carefully reviewed and improved. By consulting stakeholders, it is expected that the results of the evaluation will be useful and appropriate to use within the LTC Program.

Finally, according to the Health Research Ethics Authority Screening Tool found in Appendix L, the purpose of this project is quality/evaluation. As a result, this project does not require submission to a Research Ethics Board (REB).

6. References

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Appendix A

Information Sheet for Consultation with the Clinical Lead Manager

Dear (name),

I have chosen to complete an evaluation of the Meditech Magic education session for RNs and LPNs as part of a practicum project required for the successful completion of a Masters of Nursing degree from Memorial University. The main purpose of this practicum project is to evaluate this education program in order to determine if changes are needed to better prepare staff for the clinical area. As part of the evaluation process, I will be consulting various stakeholder groups to identify ways to evaluate staff learning with respect to Meditech Magic.

For this consultation process, a questionnaire was developed which should take approximately 10 minutes to complete. Group statistics or themes/categories will be used to summarize collected information and develop the evaluation plan for the Meditech Magic education sessions for RNs and LPNs. In addition, information collected during this project will also be used to improve support materials for staff concerning computer documentation. At the end of the practicum, information collected during this project will be summarized into a practicum report.

The completed questionnaire can be emailed to me at natalie.dale@easternhealth.ca. If you would rather contact me directly and answer the questions by phone, you may call me at 752-4531. All responses to these questions will be summarized with individual names removed to ensure confidentiality. Also, please feel free to omit questions that you are not comfortable in answering. Finally, several safeguards have been put in place to protect the data. All emailed responses will be kept on an encrypted password-protected laptop that is used only by me for my current position within Eastern Health. Also, completed paper questionnaires will be locked in a filing cabinet in my office at St. Patrick's Mercy Home, St. John's. All of the data collected will be deleted or destroyed one year after the completion of the practicum project.

Participation in this consultation process is voluntary and if you have any questions or concerns, please contact me by phone or email. Thank you for your help with this evaluation project.

Sincerely,

Natalie Dale BSC(Hon) BN RN
RAI-MDS Coordinator (Meditech), LTCEH
St. Patrick's Mercy Home, C310
146 Elizabeth Ave.
St. John's, NL AIB 1S5
Office – 752-4531
Cell – 685-7212
natalie.dale@easternhealth.ca

Appendix B

Information Sheet for Consultation with Members of my Department within St. John's

Dear colleagues,

I have chosen to complete an evaluation of the Meditech Magic education session for RNs and LPNs as part of a practicum project required for the successful completion of a Masters of Nursing degree from Memorial University. The main purpose of this practicum project is to evaluate this education program in order to determine if changes are needed to better prepare staff for the clinical area. As part of the evaluation process, I will be consulting various stakeholder groups to identify ways to evaluate staff learning with respect to Meditech Magic.

For this consultation process, a questionnaire was developed which should take approximately 10 minutes to complete. Group statistics or themes/categories will be used to summarize collected information and develop the evaluation plan for the Meditech Magic education sessions for RNs and LPNs. In addition, information collected during this project will also be used to improve support materials for staff concerning computer documentation. At the end of the practicum, information collected during this project will be summarized into a practicum report.

The completed questionnaire can be emailed to me at natalie.dale@easternhealth.ca. If you would rather contact me directly and answer the questions by phone, you may call me at 752-4531. All responses to these questions will be summarized with individual names removed to ensure confidentiality. Also, please feel free to omit questions that you are not comfortable in answering. Finally, several safeguards have been put in place to protect the data. All emailed responses will be kept on an encrypted password-protected laptop that is used only by me for my current position within Eastern Health. Also, completed paper questionnaires will be locked in a filing cabinet in my office at St. Patrick's Mercy Home, St. John's. All of the data collected will be deleted or destroyed one year after the completion of the practicum project.

Participation in this consultation process is voluntary and if you have any questions or concerns, please contact me by phone or email. Thank you for your help with this evaluation project.

Sincerely,

Natalie Dale BSC(Hon) BN RN
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Appendix C

Information Sheet for Consultation with the Consolidation Team

Dear Consolidation Team,

I have chosen to complete an evaluation of the Meditech Magic education session for RNs and LPNs as part of a practicum project required for the successful completion of a Masters of Nursing degree from Memorial University. The main purpose of this practicum project is to evaluate this education program in order to determine if changes are needed to better prepare staff for the clinical area. As part of the evaluation process, I will be consulting various stakeholder groups to identify ways to evaluate staff learning with respect to Meditech Magic.

For this consultation process, a questionnaire was developed which should take between 5 to 10 minutes to complete. Group statistics or themes/categories will be used to summarize collected information and develop the evaluation plan for the Meditech Magic education sessions for RNs and LPNs. In addition, information collected during this project will also be used to improve support materials for staff concerning computer documentation. At the end of the practicum, information collected during this project will be summarized into a practicum report.

The completed questionnaire can be emailed to me at natalie.dale@easternhealth.ca. If you would rather contact me directly and answer the questions by phone, you may call me at 752-4531. All responses to these questions will be summarized with individual names removed to ensure confidentiality. Also, please feel free to omit questions that you are not comfortable in answering. Finally, several safeguards have been put in place to protect the data. All emailed responses will be kept on an encrypted password-protected laptop that is used only by me for my current position within Eastern Health. Also, completed paper questionnaires will be locked in a filing cabinet in my office at St. Patrick's Mercy Home, St. John's. All of the data collected will be deleted or destroyed one year after the completion of the practicum project.

Participation in this consultation process is voluntary and if you have any questions or concerns, please contact me by phone or email. Thank you for your help with this evaluation project.

Sincerely,

Natalie Dale BSC(Hon) BN RN
RAI-MDS Coordinator (Meditech), LTCEH
St. Patrick's Mercy Home, C310
146 Elizabeth Ave.
St. John's, NL AIB 1S5
Office – 752-4531
Cell – 685-7212
natalie.dale@easternhealth.ca

Appendix D

Consultation with the Clinical Lead Manager for St. John's Long Term Care and Masonic Park

1. From the list below, to your knowledge, which areas of Meditech Magic do staff require additional education? (Directions: Please enter an X in the box next to the appropriate subject area).

	Documentation Activity	X for Area Requiring Extra Education
a.	Entering or Editing Information on the Administrative Data Screen	
b.	Entering or Editing Allergies	
c.	Adding the Basic Care Plan – LTC (populating the process intervention screen)	
d.	Use of the Kardex	
e.	Adding Interventions in the Process Intervention Screen	
f.	Adding/Changing a Direction/Frequency to an Intervention	
g.	Documenting (including back-dating care provided to a resident)	
h.	Adding Text under Interventions on the Process Intervention Screen	
i.	Changing the Levels of an Intervention (tailoring the process intervention screen to the resident)	
j.	Deleting Interventions from the Process Intervention Screen that are No Longer Required	
k.	Undoing/Editing Documentation	
l.	Viewing Documentation Entered into Meditech	
m.	Entering/Amending/Undoing Notes in Meditech	
n.	Printing Reports from Meditech	
o.	Order entry	
	Laboratory	
	Diagnostic Imaging (i.e. x-rays)	
	Requisitions for Cultures	
	Consults (i.e. physiotherapy)	
	Sending Messages to Dietary	
	Entering Diets (RNs only)	
p.	Process Intervention by Location (i.e. entering multiple glucometer results on different residents at the same time)	
q.	Other (Please specify):	

2. Do RNs and LPNs have similar educational needs with regards to Meditech? If not, please explain:

3. Are you aware of any documentation audits in the past year for St. John's Long Term Care or Masonic Park (yes or no)? If yes:

    a. What general Meditech issues have you or other managers discovered?

    b. How were the issues addressed (i.e. memos to staff, face-to-face meetings)?

4. Currently there are three Meditech Magic educational resources available for staff. In the space provided, please list any suggestions for revision or comments concerning barriers or facilitators to using these three resources.

    a. LTC Meditech Magic User Guide:

    b. Long Term Care Meditech Magic Quick Reference Guide:

    c. Online Learning Modules:

5. Please add any additional comments or concerns in the space below regarding Meditech Magic education for RNs and LPNs, including any barriers and facilitators to electronic documentation.

6. In the space below, please list:
    a. Any factors you feel will affect a staff member's ability to accurately evaluate the Meditech Magic education program for RNs and LPNs:

    b. Possible strategies to overcome these factors in order to obtain an accurate

evaluation:

Thank you for your help with this evaluation project.

If you have any questions or concerns regarding this project please contact:

Natalie Dale BSC(Hon) BN RN, RAI-MDS Coordinator (Meditech), LTCEH
Office – 752-4531/Cell – 685-7212/ natalie.dale@easternhealth.ca

Appendix E

Consultation with Colleagues within my Department in St. John's

1. From the list below, to your knowledge, which areas of Meditech Magic do staff require additional education? (Directions: Please enter an X in the box next to the appropriate subject area).

	Documentation Activity	X for Area Requiring Extra Education
a.	Entering or Editing Information on the Administrative Data Screen	
b.	Entering or Editing Allergies	
c.	Adding the Basic Care Plan – LTC (populating the process intervention screen)	
d.	Use of the Kardex	
e.	Adding Interventions in the Process Intervention Screen	
f.	Adding/Changing a Direction/Frequency to an Intervention	
g.	Documenting (including back-dating care provided to a resident)	
h.	Adding Text under Interventions on the Process Intervention Screen	
i.	Changing the Levels of an Intervention (tailoring the process intervention screen to the resident)	
j.	Deleting Interventions from the Process Intervention Screen that are No Longer Required	
k.	Undoing/Editing Documentation	
l.	Viewing Documentation Entered into Meditech	
m.	Entering/Amending/Undoing Notes in Meditech	
n.	Printing Reports from Meditech	
o.	Order entry	
	Laboratory	
	Diagnostic Imaging (i.e. x-rays)	
	Requisitions for Cultures	
	Consults (i.e. physiotherapy)	
	Sending Messages to Dietary	
	Entering Diets (RNs only)	
p.	Process Intervention by Location (i.e. entering multiple glucometer results on different residents at the same time)	
q.	Other (Please specify):	

2. Do RNs and LPNs have similar educational needs with regards to Meditech? If not, please explain:

3. Currently there are three Meditech Magic educational resources available for staff. In the space provided, please list any suggestions for revision or comments concerning barriers or facilitators to using these three resources.

    a. LTC Meditech Magic User Guide:

    b. Long Term Care Meditech Magic Quick Reference Guide:

    c. Online Learning Modules:

4. Please add any additional comments or concerns in the space below regarding Meditech Magic education for RNs and LPNs, including any barriers and facilitators to electronic documentation.

5. In the space below, please list:
    a. Any factors you feel will affect a staff member's ability to accurately evaluate the Meditech Magic education program for RNs and LPNs:

    b. Possible strategies to overcome these factors in order to obtain an accurate evaluation:

6. Have you completed any evaluation projects in the past that involved staff education? If so, please briefly explain:

    a. The education topic:

    b. The process you took to evaluate the education session (i.e. was it informal, did you use questionnaires, observation of staff, etc.):

    c. Any feedback on your evaluation or advice you have that would help with the evaluation of the Meditech Magic education program for RNs and LPNs in LTC:

Thank you for your help with this evaluation project.

If you have any questions or concerns regarding this project please contact:

Natalie Dale BSC(Hon) BN RN, RAI-MDS Coordinator (Meditech), LTCEH
Office – 752-4531/Cell – 685-7212/ natalie.dale@easternhealth.ca

Appendix F

Consultation with the Consolidation Team of Eastern Health

1. From the list below, to your knowledge, which areas of Meditech Magic do staff typically require additional education? (Directions: Please enter an X in the box next to the appropriate subject area).

	Documentation Activity	X for Area Requiring Extra Education
a.	Entering or Editing Information on the Administrative Data Screen	
b.	Entering or Editing Allergies	
c.	Adding the Basic Care Plan – LTC (populating the process intervention screen)	
d.	Use of the Kardex	
e.	Adding Interventions in the Process Intervention Screen	
f.	Adding/Changing a Direction/Frequency to an Intervention	
g.	Documenting (including back-dating care provided to a resident)	
h.	Adding Text under Interventions on the Process Intervention Screen	
i.	Changing the Levels of an Intervention (tailoring the process intervention screen to the resident)	
j.	Deleting Interventions from the Process Intervention Screen that are No Longer Required	
k.	Undoing/Editing Documentation	
l.	Viewing Documentation Entered into Meditech	
m.	Entering/Amending/Undoing Notes in Meditech	
n.	Printing Reports from Meditech	
o.	Order entry	
	Laboratory	
	Diagnostic Imaging (i.e. x-rays)	
	Requisitions for Cultures	
	Consults (i.e. physiotherapy)	
	Sending Messages to Dietary	
	Entering Diets (RNs only)	
p.	Process Intervention by Location (i.e. entering multiple glucometer results on different residents at the same time)	
q.	Other (Please specify):	

2. Have you completed any evaluation projects in the past regarding Meditech Magic education? If so, please briefly explain:

    a. The process you took to evaluate the education session (i.e. was it informal, did you use questionnaires, observation of staff, etc.):

    b. Any feedback on your evaluation or advice you have that would help with the evaluation of the Meditech Magic education program for RNs and LPNs in LTC:

Thank you for your help with this evaluation project.

If you have any questions or concerns regarding this project please contact:

Natalie Dale BSC(Hon) BN RN, RAI-MDS Coordinator (Meditech), LTCEH
Office – 752-4531/Cell – 685-7212/ natalie.dale@easternhealth.ca

Appendix G

Information Sheet for Consultation with RNs and LPNs within St. John's Long Term Care facility and Masonic Park

To Whom It May Concern:

I have chosen to complete an evaluation of the Meditech Magic education session for RNs and LPNs as part of a practicum project required for the successful completion of a Masters of Nursing degree from Memorial University. The main purpose of this practicum project is to evaluate this education program in order to determine if changes are needed to better prepare staff for the clinical area. As part of the evaluation process, I will be consulting various stakeholder groups to identify ways to evaluate staff learning with respect to Meditech Magic.

For this consultation process, a questionnaire was developed which should take approximately 10 minutes to complete. Group statistics or themes/categories will be used to summarize collected information and develop the evaluation plan for the Meditech Magic education sessions for RNs and LPNs. In addition, information collected during this project will also be used to improve support materials for staff concerning computer documentation. At the end of the practicum, information collected during this project will be summarized into a practicum report.

The completed questionnaire should be sealed and returned via internal mail in the envelope provided. If you would rather contact me directly and answer the questions by phone, you may call me at 752-4531. All responses to these questions will be summarized with individual names removed to ensure confidentiality. Also, please feel free to omit questions that you are not comfortable in answering. Finally, several safeguards have been put in place to protect the data. All completed paper questionnaires will be locked in a filing cabinet in my office at St. Patrick's Mercy Home, St. John's. The questionnaires will be shredded one year after the completion of the practicum project.

Participation in this consultation process is voluntary and if you have any questions or concerns, please contact me by phone or email. Thank you for your help with this evaluation project.

Sincerely,

Natalie Dale BSC(Hon) BN RN
RAI-MDS Coordinator (Meditech), LTCEH
St. Patrick's Mercy Home, C310
146 Elizabeth Ave.
St. John's, NL AIB 1S5
Office – 752-4531
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natalie.dale@easternhealth.ca

Appendix H

Consultation with RNs and LPNs within St. John's Long Term Care facility and Masonic Park

1. The following is a list of documentation tasks currently covered in the Meditech Magic RN/LPN class offered during orientation. From the list below, please enter an X in the box next to the subject area you feel you would benefit from additional education.

	Documentation Activity	X for Area Requiring Extra Education
a.	Entering or Editing Information on the Administrative Data Screen	
b.	Entering or Editing Allergies	
c.	Adding the Basic Care Plan – LTC (populating the process intervention screen)	
d.	Use of the Kardex	
e.	Adding Interventions in the Process Intervention Screen	
f.	Adding/Changing a Direction/Frequency to an Intervention	
g.	Documenting (including back-dating care provided to a resident)	
h.	Adding Text under Interventions on the Process Intervention Screen	
i.	Changing the Levels of an Intervention (tailoring the process intervention screen to the resident)	
j.	Deleting Interventions from the Process Intervention Screen that are No Longer Required	
k.	Undoing/Editing Documentation	
l.	Viewing Documentation Entered into Meditech	
m.	Entering/Amending/Undoing Notes in Meditech	
n.	Printing Reports from Meditech	
o.	Order entry	
	Laboratory	
	Diagnostic Imaging (i.e. x-rays)	
	Requisitions for Cultures	
	Consults (i.e. physiotherapy)	
	Sending Messages to Dietary	
	Entering Diets (RNs only)	
p.	Process Intervention by Location (i.e. entering multiple glucometer results on different residents at the same time)	
q.	Other (Please specify):	

2. Currently there are three Meditech Magic educational resources available for staff. In the space provided, please list any suggestions for revision or comments concerning barriers or facilitators to using these three resources.

    a. LTC Meditech Magic User Guide:

    b. Long Term Care Meditech Magic Quick Reference Guide:

    c. Online Learning Modules:

3. Please add any additional comments or concerns in the space below regarding Meditech Magic education for RNs and LPNs, including any barriers and facilitators to electronic documentation.

4. In the space below, please list:
    a. Any factors you feel will affect a staff member's ability to accurately evaluate the Meditech Magic education program for RNs and LPNs:

    b. Possible strategies to overcome these factors in order to obtain an accurate evaluation:

5. In order to summarize responses, please circle your site, care provider type and the most appropriate category that explains your experience with the Meditech Magic system (consolidated version) in the table below:

Primary Site	St. John's Long Term Care	**or**	Masonic Park
Care Provider Type	RN	**or**	LPN
*Experience with Meditech Magic (consolidated version)	Staff member **oriented in the last 3 months** to the Long Term Care Program to either St. John's Long Term Care or Masonic Park	**or**	Staff member **with more than 3 months of experience** in the Long Term Care Program in either St. John's Long Term Care, Masonic Park or a facility using the consolidated version of Meditech Magic outside of St. John's

*Note: The consolidated version of Meditech refers to Meditech Magic currently used in St. John's Long Term Care and Masonic Park as well as various facilities outside of St. John's within Eastern Health. Meditech consolidation occurred on March 25, 2014 for St. John's Long Term Care and Masonic Park on November 4, 2014.

Thank you for your help with this evaluation project.

If you have any questions or concerns regarding this project please contact:

Natalie Dale BSC(Hon) BN RN, RAI-MDS Coordinator (Meditech), LTCEH
Office – 752-4531/Cell – 685-7212/ natalie.dale@easternhealth.ca

Appendix I

Frequency of Documentation Tasks Requiring Additional Education for Staff as Indicated by All Stakeholders

Documentation Activity	Frequency
Process Intervention by Location	15
Entering or Editing Information on the Administrative Data Screen	13
Changing the Levels of an Intervention	12
Adding the Basic Care Plan – LTC (populating the process intervention screen)	11
Printing Reports from Meditech	11
Entering or Editing Allergies	10
Deleting Interventions from the Process Intervention Screen	10
Undoing/Editing Documentation	10
Order Entry-Laboratory	9
Order Entry-Consults (i.e. physiotherapy)	9
Order Entry-Sending Messages to Dietary	9
Adding Interventions in the Process Intervention Screen	8
Order Entry- Requisitions for Cultures	8
Order Entry- Diagnostic Imaging (i.e. x-rays)	8
Adding/Changing a Direction/Frequency to an Intervention	7
Entering/Amending/Undoing Notes in Meditech	7
Use of the Kardex	6
General Order Entry	5
Order Entry-Entering Diets (RNs only)	5
Adding Text under Interventions on the Process Intervention Screen	3
Viewing Documentation Entered into Meditech	3
Documenting (including back-dating care provided to a resident)	2
Other: Identifying assessments due quarterly Documenting on assessments specific to LTC	 1 1

Appendix J

Frequency of Documentation Tasks Requiring Additional Education for Staff as Indicated by RNs and LPNs

Documentation Activity	Frequency
Process Intervention by Location (i.e. entering multiple glucometer results on different residents at the same time)	12
Entering or Editing Information on the Administrative Data Screen	10
Printing Reports from Meditech	10
Adding the Basic Care Plan – LTC (populating the process intervention screen)	9
Entering or Editing Allergies	8
Adding Interventions in the Process Intervention Screen	8
Changing the Levels of an Intervention	8
Deleting Interventions from the Process Intervention Screen	8
Undoing/Editing Documentation	8
Order Entry-Laboratory	8
Order Entry-Consults (i.e. physiotherapy)	8
Order Entry-Sending Messages to Dietary	8
Order Entry- Requisitions for Cultures	7
Order Entry- Diagnostic Imaging (i.e. x-rays)	7
Adding/Changing a Direction/Frequency to an Intervention	6
Entering/Amending/Undoing Notes in Meditech	6
General Order Entry	5
Use of the Kardex	4
Adding Text under Interventions on the Process Intervention Screen	3
Order Entry-Entering Diets (RNs only)	3
Viewing Documentation Entered into Meditech	2
Documenting (including back-dating care provided to a resident)	1
Other: Identifying assessments due quarterly	 1

Appendix K

Table 1

Categories Regarding Differences in Meditech Education Needs of RNs and LPNs

Scope of Practice Differs	Scope of Practice is Similar	Changing LPN Scope of Practice
-Yes (i.e. RN adjusts the care plan 1) 2 -RNs are the leaders and therefore need to have a greater understanding in order to support LPNs and PCAs 1	-Yes (i.e. planning resident care and interaction with residents) 1	-Scope is similar but sometimes LPNs don't practice to full scope with regards to computer documentation since RNs directly involved with resident admission and usually enter in this information 1 -LPN role is changing: legal and professional importance regarding documentation needs to be reinforced with training directly linking with practice 1

Table 2

Categories Regarding Evaluation Methods

Previously Used Methods	Feedback/Advice
-Convenience samples 1	-A lot of information for one class, hard to navigate 1
-Questionnaires 2	-Be visible 1
-Observation 2	-Incentives 1
-Auditing 1	-Lack of participation/feedback not necessarily indicative that nothing needs to be changed
-Evaluation forms 1	(other issues may be affecting poor response) 1
	-Consider interviewing staff if written response rate low (quicker for them) 1

Table 3

Categories of Factors Affecting an Evaluation and Strategies to Overcome these Factors

Factors that May Affect an Evaluation of the Program	Possible Strategies to Deal with Factors that May Affect an Evaluation
-Poor usability of system 1	-Time 1
-Time 4	-Incentives 2
-Time between class and actual use of the system 2	-Return to a class 6 months to 1 year for refresher 1
-Staff may feel feedback is not going anywhere 1	-Being aware of staff responses/actions when on the unit
-Don’t know what they don’t know 1	(informal) 1
-Disinterest 1	-Visit units at optimal times 1
-Staffing levels 1	-Allow for conversation (venting) 1

Table 4

Categories Regarding Barriers and Facilitators to Electronic Documentation

Barriers	Facilitators
-Time 3	-Staff available as resource 1
-Usability 2	-Organized training 1
-Short-staffed 1	-Hands on learning with practical case studies 1
-Can't find resources on Intranet 1	-Engaged managers 1
-Updating staff regarding changes 1	
-Orientation schedule 12 vs 8 hour days 1	
-Skill mix –LPNs taught areas not used, RNs cover multiple floors 1	
-Quality/availability of equipment 1	
-Technical skill of staff 1	
-Lack of understanding of importance of documenting 1	
-Limited training time 1	

Table 5

Categories from Feedback on Support Materials

LTC Meditech Magic User Guide	Long Term Care Meditech Magic Quick Reference Guide	Online Learning Modules
-Forgot/unaware 2 -Too long/big 3 (i.e. create smaller sections 1) -Staff tend to use staff as resource 1 -Highlight: leave Temporary Location section blank 1 -Add to LTC Intranet site 1	-Unaware 2 -Okay/good/excellent 5 -Staff tend to use staff as resource 1 -Highlight: leave Temporary Location section blank 1 -Leave page 2 of Admin Data Screen blank 1 -Diets only entered by RN or RD 1 -Time/environmental factors barriers to use 1 -Add to LTC Intranet site 1	-Unaware/not used 8 -Staff tend to use staff as resource 1 -Can't find/difficult to find 2 -Add to LTC Intranet site 1

Appendix L

Health Research Ethics Authority Screening Tool

	Question	**Yes**	**No**
1.	Is the project funded by, or being submitted to, a research funding agency for a research grant or award that requires research ethics review		X
2.	Are there any local policies which require this project to undergo review by a Research Ethics Board?		X
	IF YES to either of the above, the project should be submitted to a Research Ethics Board. **IF NO** to both questions, continue to complete the checklist.		X
3.	Is the primary purpose of the project to contribute to the growing body of knowledge regarding health and/or health systems that are generally accessible through academic literature?		X
4.	Is the project designed to answer a specific research question or to test an explicit hypothesis?		X
5.	Does the project involve a comparison of multiple sites, control sites, and/or control groups?		X
6.	Is the project design and methodology adequate to support generalizations that go beyond the particular population the sample is being drawn from?		X
7.	Does the project impose any additional burdens on participants beyond what would be expected through a typically expected course of care or role expectations?		X
LINE A: SUBTOTAL Questions 3 through 7 = (Count the # of Yes responses) 0			
8.	Are many of the participants in the project also likely to be among those who might potentially benefit from the result of the project as it proceeds?	X	
9.	Is the project intended to define a best practice within your organization or practice?	X	
10.	Would the project still be done at your site, even if there were no opportunity to publish the results or if the results might not be applicable anywhere else?	X	
11.	Does the statement of purpose of the project refer explicitly to the features of a particular program, Organization, or region, rather than using more general terminology such as rural vs. urban populations?	X	
12.	Is the current project part of a continuous process of gathering or monitoring data within an organization?	X	

LINE B: SUBTOTAL Questions 8 through 12 = (Count the # of Yes responses) 5			
	SUMMARY **See Interpretation Below: HIGHLIGHT THE APPLICABLE ITEM**		

Interpretation:

- If the sum of Line A is greater than Line B, the most probable purpose is **research**. The project should be submitted to an REB.
- If the sum of Line B is greater than Line A, the most probable purpose is **quality/evaluation**. Proceed with locally relevant process for ethics review (may not necessarily involve an REB).
- If the sums are equal, seek a second opinion to further explore whether the project should be classified as Research or as Quality and Evaluation.

These guidelines are used at Memorial University of Newfoundland and were adapted from ALBERTA RESEARCH ETHICS COMMUNITY CONSENSUS INITIATIVE (ARECCI). Further information can be found at:
http://www.hrea.ca/Ethics-Review-Required.as

Appendix D

Meditech Definitions

Administrative Data Screen: This screen contains resident demographics and additional information required to care for the resident. Information from this screen populates the Kardex.

Process Intervention Screen: Contains a list of interventions used to document the day-to-day care of residents (see Appendix E for an example of this screen).

Plan of Care: Adding the plan of care populates the process intervention screen with required interventions.

Adding/Changing a Direction of an Intervention: Each intervention must have a direction. This determines how often the intervention is required to be charted by care providers. This direction should reflect the care needs of the resident.

Changing the Levels of an Intervention: For some interventions, staff must choose the most appropriate intervention from a list of similar interventions. These levelled interventions are designated with an "L" on the process intervention screen.

Deleting Interventions from the Process Intervention Screen: Interventions located on the process intervention screen must be removed if they are no longer applicable to resident care.

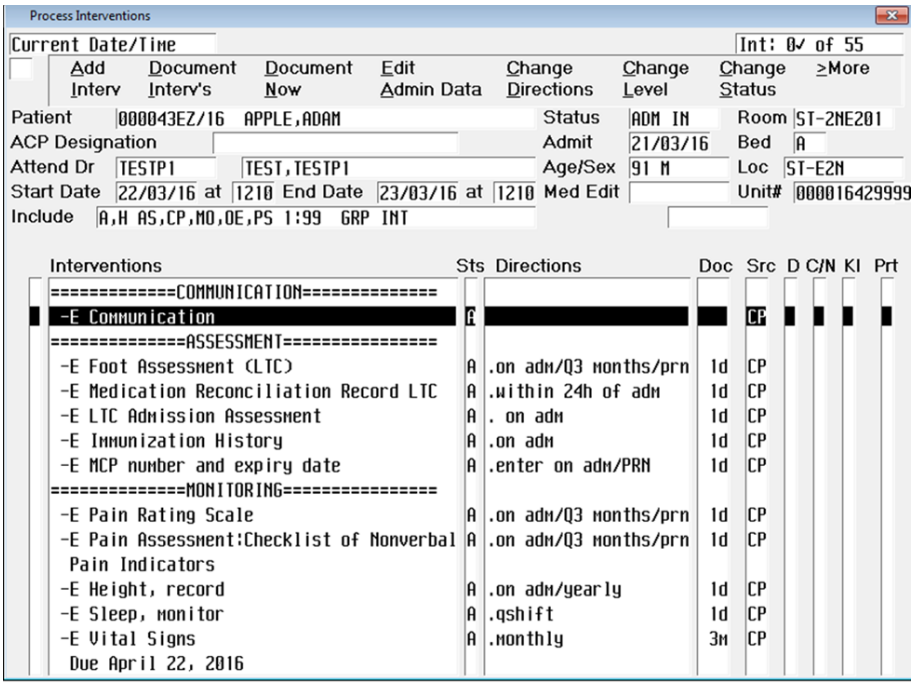
Edit Text: Allows staff to enter free text under the name of the intervention on the process intervention screen.

Process Interventions by Location/List: Allows staff to document on one intervention for multiple residents at the same time (see Appendix F for an example of this task).

*Note: Some of the information above can be found in the LTC Meditech Magic User Guide (2014) distributed by the Meditech Consolidation Team of Eastern Health. More detailed information regarding Meditech terminology and tasks can be found in this user manual.

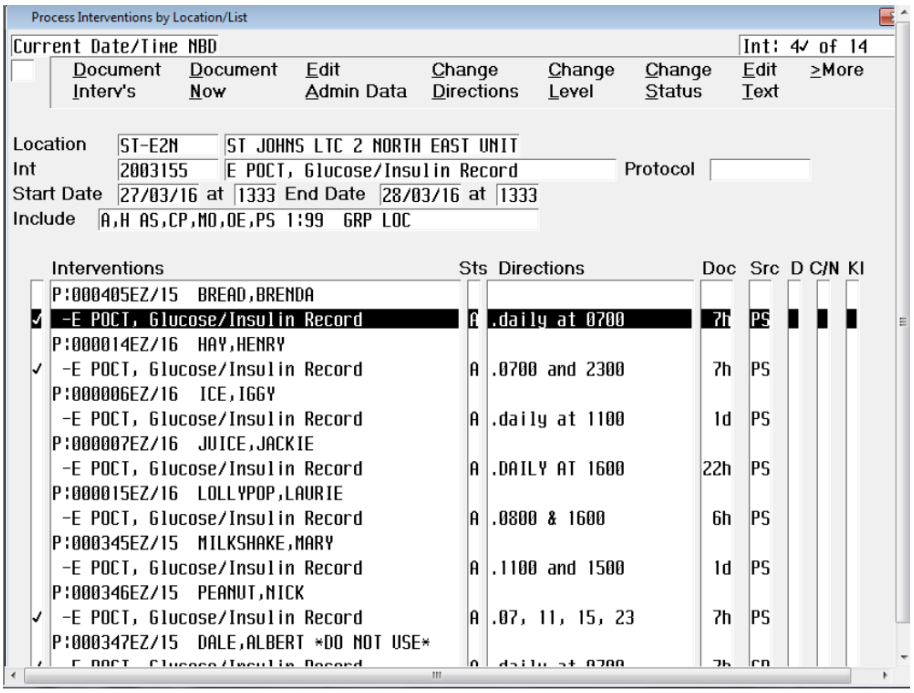
Appendix E

Screen Shot of Process Intervention Screen



Appendix F

Screen Shot of Process Interventions by Location/List



Appendix G

Pretest

Your Initials: _____ **Test Resident Name: _____**
The Last Three Digits of Your Employee Number: _____

1. The Administrative Data Screen was partially completed by nurses on the previous shift. Please edit this screen by adding in the SPRH information below:

   a. SPRH
      i. **Bed mobility:** Independent
      ii. **Reposition in chair:** Independent
      iii. **Sit on edge of the bed:** Independent
      iv. **Transfer from bed to chair:** One person with transfer belt
      v. **Walking:** One person support with transfer belt

2. Please enter the following two allergies for the TEST resident:

   a. Codeine (Reaction: Hives)
   b. Blue dye (Reaction: Swollen lips)

3. Add the basic care plan for Long Term Care

4. Resident requires glucometer checks every Tues at 1100.

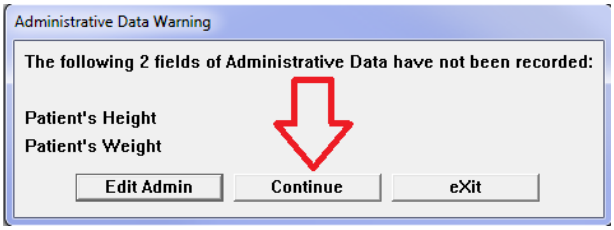
   a. Add the appropriate **Intervention** to the **Process Intervention** screen
   b. Add an appropriate **Direction** to the Intervention
   c. Document a glucometer reading of 7.5 at 1100 today

5. You accidently entered this glucometer reading on the wrong person. **Undo the above glucometer reading**. The next step would be to write a focus note. However, assume for this pretest that this was done.

6. Resident no longer needs glucometer checks. Complete this intervention to **remove it** from the **Process Intervention** screen.

7. Resident is a set-up for bathing (bed bath). Update the **Process Intervention** screen appropriately (Hint: Check Level)

Questions 8 and 9 involve Order Entry. Please click "continue" when prompted:



8. Check to see if the resident has uncoded allergies and send the appropriate message to dietary (if applicable). HINT: The ordering doctor is the same as the attending doctor.

9. The physician visited and wrote some orders. After the RN has transcribed the orders, you are asked to enter the orders. HINT: The ordering doctor is the same as the attending doctor.

    a. **Order for LBC (Lytes, BUN, Creatine)**
        i. The blood work is routine and will be collected tomorrow at 0900 by the nurse.

    b. **Order for a urine culture**
        i. The culture is routine and is collected by the nurse now. It needs to be entered into the computer now. This was a mid-stream sample. For the question: Hold specimen until collected (test query)? Enter N.

    c. **Order for a PT (Physiotherapy) consult**
        i. Priority is routine. The resident is a new admission to LTC. It is also important to include in the requisition that the resident usually forgets to wear their glasses.

    d. **Order for an X-Ray**
        i. The doctor ordered a routine x-ray of the resident's left ankle. The resident will be going to the Health Science Centre for this procedure. The resident is not on an insulin pump and will be transported by wheelchair. The resident does not require oxygen or suctioning and requires routine practices for infection prevention.

10. Print your TEST resident Kardex.

11. Using Process Intervention by Location, enter the following weights. Both of these residents are located on **ST-E1N**. Please use **Document Now** for this documentation.

    1. **Dale, Test 1** (U#12749999) weighed **150 pounds** by **wheelchai**r
    2. **Dale, Test 3** (U#8189999) weighed **200 pounds** by **wheelchair**

In order to summarize responses, please circle care provider type:

Care Provider Type	RN	**or**	LPN

Thank-you for your participation!

Appendix H

Posttest

Your Initials: _____ **Test Resident Name: _____**
The Last Three Digits of Your Employee Number: _____

1. The Administrative Data Screen was partially completed by nurses on the previous shift. Please edit this screen by adding in the SPRH information below:

    a. SPRH
        i. **Bed mobility:** 2 person with the draw sheet
        ii. **Reposition in chair:** stand aid lift
        iii. **Sit on edge of the bed:** 2 person with the transfer belt
        iv. **Transfer from bed to chair:** stand aid lift
        v. **Walking:** 2 person with the transfer belt

2. Please enter the following two allergies for the TEST resident:

    a. Toradol (Reaction: Hives)
    b. Yellow dye (Reaction: Swollen lips)

3. Add the basic care plan for Long Term Care

4. Resident requires glucometer checks daily at 1100.

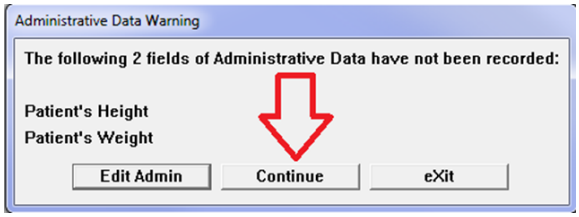
    a. Add the appropriate **Intervention** to the **Process Intervention** screen
    b. Add an appropriate **Direction** to the Intervention
    c. Document a glucometer reading of 12.5 at 1100 today

5. You accidently entered this glucometer reading on the wrong person. **Undo the above glucometer reading.** The next step would be to write a focus note. However, assume for this posttest that this was done.

6. Resident no longer needs glucometer checks. Complete this intervention to **remove it** from the **Process Intervention** screen.

7. Resident is an assist with for feeding. Update the **Process Intervention** screen appropriately (Hint: Check Level)

Questions 8 and 9 involve Order Entry. Please click "continue" when prompted:



8. Check to see if the resident has uncoded allergies and send the appropriate message to dietary (if applicable). HINT: The ordering doctor is the same as the attending doctor.

9. The physician visited and wrote some orders. After the RN has transcribed the orders, you are asked to enter the orders. HINT: The ordering doctor is the same as the attending doctor.

    a. **Order for a CBC**
        i. The blood work is routine and will be collected tomorrow at 0900 by the nurse.

    b. **Order for a stool culture**
        i. The culture is routine and is collected by the nurse now. It needs to be entered into the computer now. The resident has been having diarrhea (no blood) for the past 3 days. For the question: Hold specimen until collected (test query)? Enter N.

    c. **Order for OT (Occupational therapy) consult**
        i. Priority is routine. The resident is aware of this referral and is medically and psychiatrically stable. It was noted that a seating assessment is needed for this resident. It is also important to include in the requisition that the resident usually forgets to wear their glasses.

    d. **Order for an X-Ray**
        i. The doctor ordered a routine anterior posterior chest x-ray for this resident. The resident will be sent to the Health Science Centre for this procedure. The resident is not on an insulin pump and will be transported by wheelchair. The resident does not require oxygen or suctioning and requires routine practices for infection prevention.

10. Print the bowel report for unit **ST-E2N**. HINT: For this example you may choose any time range.

11. Using Process Intervention by Location, enter the following heights. Both of these residents are located on **ST-E1N**. Please use **Document Now** for this documentation.

    1. **Dale, Test 1** (U#12749999) height = 5 feet 5 inches
    2. **Dale, Test 3** (U#8189999) height = 5 feet 11 inches

In order to summarize responses, please circle care provider type:

Care Provider Type	RN	or	LPN

Thank-you for your participation!

Appendix I

Information Sheet

To Whom It May Concern:

I have chosen to complete an evaluation of the Meditech Magic education program for RNs and LPNs as part of a practicum project required for the successful completion of a Masters of Nursing degree from Memorial University. The main purpose of this practicum project is to evaluate this education program to determine if changes are needed to better prepare staff for the clinical area. As part of the evaluation process, I will be evaluating staff learning with respect to Meditech Magic, and gathering information that will be used to improve support materials available for users of the system.

Pretest and posttests that include Meditech Magic documentation tasks taught during the Meditech Magic education session will be used during this evaluation process. The pretest will take place during the orientation Meditech Magic session, immediately following the lecture portion of the education session. In approximately two weeks, I will contact participants to complete the second portion of the evaluation project. In addition to the posttest, participants will be asked to complete a questionnaire, which should take approximately five minutes to complete. Also, please feel free to omit questions that you are not comfortable in answering. Participants will then begin the posttest that will be in a format similar to the pretest. This posttest is expected to take approximately 45 minutes to 1 hour to complete.

Participants will be asked to include their initials and the last three digits of their employee number on these tests in order for me to complete appropriate statistics on the data. Individual results of pretests and posttests will not be used by anyone other than me for this particular project. Instead, the results of the tests and responses obtained from the questionnaires will be summarized into group statistics and themes/categories with identifiers removed. Finally, participation in this project is expected to benefit staff due to increased practice with the Meditech Magic system.

At the end of the practicum, information collected during this project will be summarized into a practicum report. Also, several safeguards have been put in place to protect the data. All completed paper questionnaires and tests will be locked in a filing cabinet in my office at St. Patrick's Mercy Home, St. John's and kept on my personal work encrypted, password-protected laptop. The questionnaires and tests will be shredded one year after the completion of the practicum project, as well as deleted from my computer. Participation in this evaluation is voluntary and if you have any questions or concerns, please contact me in person, by phone or email. Thank you for your help with this evaluation project.

Sincerely,

Natalie Dale BSC(Hon) BN RN
RAI-MDS Coordinator (Meditech), LTCEH
St. Patrick's Mercy Home, C310
146 Elizabeth Ave.

St. John's, NL AIB 1S5
Office – 752-4531
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Appendix J

Questionnaire

Please answer the following questions:

1. Directions: For each of the following, please circle the number that best describes your ability to complete each of the tasks below. 1=Poor, 2=Fair, 3=Good, and 4=Excellent:

	Documentation Tasks	Rank			
a.	Entering or Editing Information on the Administrative Data Screen	1	2	3	4
b.	Entering or Editing Allergies	1	2	3	4
c.	Adding the Basic Care Plan – LTC (populating the process intervention screen)	1	2	3	4
d.	Use of the Kardex	1	2	3	4
e.	Adding Interventions in the Process Intervention Screen	1	2	3	4
f.	Adding/Changing a Direction/Frequency to an Intervention	1	2	3	4
g.	Documenting (including back-dating care provided to a resident)	1	2	3	4
h.	Adding Text under Interventions on the Process Intervention Screen	1	2	3	4
i.	Changing the Levels of an Intervention (tailoring the process intervention screen to the resident)	1	2	3	4
j.	Deleting Interventions from the Process Intervention Screen that are No Longer Required	1	2	3	4
k.	Undoing/Editing Documentation	1	2	3	4
l.	Viewing Documentation Entered into Meditech	1	2	3	4
m.	Entering/Amending/Undoing Notes in Meditech	1	2	3	4
n.	Printing Reports from Meditech	1	2	3	4
o.	Order entry				
	Laboratory	1	2	3	4
	Diagnostic Imaging (i.e. x-rays)	1	2	3	4
	Requisitions for Cultures	1	2	3	4
	Consults (i.e. physiotherapy)	1	2	3	4
	Sending Messages to Dietary	1	2	3	4
	Entering Diets (RNs only, LPNs please skip this question)	1	2	3	4
p.	Process Intervention by Location (i.e. entering multiple glucometer results on different residents at the same time)	1	2	3	4

2. Directions: For each of the following questions, please circle the number that best describes your response. 1=Strongly agree, 2=Agree, 3=Disagree, and 4=Strongly disagree:

	Question	Rank			
a.	The training I received for Meditech Magic was sufficient	1	2	3	4
b.	Meditech Magic is easy to use	1	2	3	4
c.	I do not feel confident in my ability to use Meditech	1	2	3	4
d.	I am able to identify staff who can assist me with Meditech if necessary	1	2	3	4
e.	I have excellent computer skills	1	2	3	4
f.	I find it difficult finding a computer to document care	1	2	3	4
g.	It is difficult to find time during the day to document electronically	1	2	3	4
h.	It is important to document care in a timely manner	1	2	3	4

For the following questions, please circle Yes or No:

3. Have you used the LTC Meditech Magic User Guide?
    a. Yes (if Yes, proceed to question 4)
    b. No (if No, proceed to question 5)

4. The LTC Meditech Magic User Guide is a useful resource:
    a. Yes
    b. No
    Comments: _____

5. Have you used the Long Term Care Meditech Magic Quick Reference Guide?
    a. Yes (if Yes, proceed to question 6)
    b. No (if No, proceed to question 7)

6. The Long Term Care Meditech Magic Quick Reference Guide is a useful resource:
    a. Yes
    b. No
    Comments: _____

7. Have you used the Online Learning Modules?
    a. Yes (if Yes, proceed to question 8)
    b. No (if No, proceed to question 9)

8. The Online Learning Modules are a useful resource:
    a. Yes
    b. No
    Comments: _____

9. Please feel free to add any additional comments concerning Meditech Magic education in the space below:

In order to summarize responses, please circle your care provider type:

Care Provider Type	RN	or	LPN

Thank-you for your participation!

Appendix K

Answer Key for Pretest

*Critical information
If not entered correctly, no marks given for parts entered following the error

Documentation Task	Circle Number of SPRH Information Entered Correctly:	Comments
Editing Information on the Administrative Data Screen	1 2 3 4 5	
Documentation Task	**Circle the Allergy Information Entered Correctly:**	**Comments**
Entering a Coded Allergy	*Name: Codeine	
	*Allergy	
	Severity: Blank or unknown	
	Verified: Yes	
	Reaction: Hives	
Entering an Uncoded Allergy	*Name: Blue dye	
	*Allergy	
	Severity: Blank or unknown	
	Reaction: Swollen lips	
Allergy List Confirmed	Yes	

Total: Administrative Data Screen ___/5

Total: Allergy Documentation ___/10

Documentation Task	Place an "X" in the Box Below if Correct	Place an "X" in the Box Below if Incorrect	Comments
Adding the Basic Care Plan – LTC *-Correct care plan entered -N for Conf			
Adding Intervention in the Process Intervention Screen *-E POCT			
Adding a Direction/Frequency to an Intervention *-Correct direction -Fitting in the space			
Backdating			
Documenting			
Changing the Level of an Intervention			
Deleting Interventions from the Process Intervention Screen			
Undoing Documentation			
Printing Reports from Meditech			

Total: Care plan _/2
Total: Adding intervention _/1
Total: Adding direction _/2
Total: Backdating _/1
Total: Documenting _/1
Total: Changing the level _/1
Total: Deleting interventions _/1
Total: Undoing _/1
Total: Printing reports _/1

Documentation Task	Circle the OE Information Entered Correctly:	Comments
OE-Sending Messages to Dietary	*Category: DSN	
	*Procedure: COMMENT	
	Priority: S	
	Date: T	
	Time: N	
	*Ordering Site: ST	
	Comment: Allergy to blue dye	
OE-Laboratory	*Category: LAB	
	*Procedure: LBC	
	Priority: R	
	Date: T+1	
	Time: 0900	
	Collected by Nurse? Y	
	*Ordering Site: ST	
	Diagnosis: Resident's diagnosis	

Total: Order Entry for DSN ___/7

Total: Order Entry for LAB ___/8

Documentation Task	Circle the OE Information Entered Correctly:	Comments
OE-Culture	*Category: MICRO	
	*Procedure: URINCU	
	Priority: R	
	Date: T+	
	Time: N	
	*Ordering Site: ST	
	Collected by Nurse? Y	
	Suspected Infections: Unknown or appropriate response	
	Source: Urine	
	Description: Midstream	
	Collected by Invasive Method: N	
	Clinical Information: Appropriate information entered	

Total: Order Entry for MICRO = ___/12

Documentation Task	Circle the OE Information Entered Correctly:	Comments
OE-Consult	*Category: PT	
	*Procedure: PTR	
	Priority: R	
	Date: T or T+1 (both correct)	
	*Ordering Site: ST	
	Diagnosis: Resident's diagnosis	
	Anticipated Date of Discharge: Not Applicable	
	Reason for Referral: New Admission to LTC	
	Comments/Special Considerations: Resident usually forgets to wear glasses.	

Total: Order Entry for PT Consult = ___/9

Documentation Task	Circle the OE Information Entered Correctly:	Comments
OE-X-ray	*Category: DIRAD	
	*Procedure: ANKL	
	Priority: R	
	*Ordering Site: H	
	Pt on Insulin Pump: N	
	Pt Transport: Wheelchair	
	O2/Suction Required: None	
	Infection Prevention: Routine Practices (RP)	
	Pregnant: No or unknown	
	If No, date of LMP: LEAVE BLANK	
	Clinical History: Appropriate information entered	

Total: Order Entry for DIRAD = ___/11

Appendix L

Answer Key for Posttest

*Critical information
If not entered correctly, no marks given for parts entered following the error

Documentation Task	Circle Number of SPRH Information Entered Correctly:	Comments
Editing Information on the Administrative Data Screen	1 2 3 4 5	
Documentation Task	**Circle the Allergy Information Entered Correctly:**	**Comments**
Entering a Coded Allergy	*Name: Toradol	
	*Allergy	
	Severity: Blank or unknown	
	Verified: Yes	
	Reaction: Hives	
Entering an Uncoded Allergy	*Name: Yellow dye	
	*Allergy	
	Severity: Blank or unknown	
	Reaction: Swollen lips	
Allergy List Confirmed	Yes	

Total: Administrative Data Screen ___/5

Total: Allergy Documentation ___/10

Documentation Task	Place an "X" in the Box Below if Correct	Place an "X" in the Box Below if Incorrect	Comments
Adding the Basic Care Plan – LTC *-Correct care plan entered -N for Conf			
Adding Intervention in the Process Intervention Screen *-E POCT			
Adding a Direction/Frequency to an Intervention *-Correct direction -Fitting in the space			
Backdating			
Documenting			
Changing the Level of an Intervention			
Deleting Interventions from the Process Intervention Screen			
Undoing Documentation			
Printing Reports from Meditech			

Total: Care Plan _/2
Total: Adding intervention _/1
Total: Adding direction _/2
Total: Backdating _/1
Total: Documenting _/1
Total: Changing the level _/1
Total: Deleting interventions _/1
Total: Undoing _/1
Total: Printing reports _/1

Documentation Task	Circle the OE Information Entered Correctly:	Comments
OE-Sending Messages to Dietary	*Category: DSN	
	*Procedure: COMMENT	
	Priority: S	
	Date: T	
	Time: N	
	*Ordering Site: ST	
	Comment: Allergy to yellow dye	
OE-Laboratory	*Category: LAB	
	*Procedure: CBC	
	Priority: R	
	Date: T+1	
	Time: 0900	
	Collected by Nurse? Y	
	*Ordering Site: ST	
	Diagnosis: Resident's diagnosis	

Total: Order Entry for DSN ___/7

Total: Order Entry for LAB ___/8

Documentation Task	Circle the OE Information Entered Correctly:	Comments
OE-Culture	*Category: MICRO	
	*Procedure: STOOCU	
	Priority: R	
	Date: T+	
	Time: N	
	*Ordering Site: ST	
	Collected by Nurse? Y	
	Suspected Infections: Unknown or appropriate response	
	Description: SD	
	Collected by Invasive Method: N	
	Clinical Information: Appropriate information entered	

Total: Order Entry for MICRO = ___/11

Documentation Task	Circle the OE Information Entered Correctly:	Comments
OE-Consult	*Category: OT	
	*Procedure: OTAPHR	
	Priority: R	
	Date: T or T+1 (both correct)	
	*Ordering Site: ST	
	Diagnosis: Resident's diagnosis	
	Client Aware of Referral: Y	
	Client Medically/psychiatrically stable: Y	
	Reason for Referral: Seating	
	Anticipated Date of Discharge: Not Applicable	
	Comments/Special Considerations: Resident usually forgets to wear glasses.	

Total: Order Entry for OT Consult = ___/11

Documentation Task	Circle the OE Information Entered Correctly:	Comments
OE-X-ray	*Category: DIRAD	
	*Procedure: CHEAP	
	Priority: R	
	*Ordering Site: H	
	Pt on Insulin Pump: N	
	Pt Transport: Wheelchair	
	O2/Suction Required: None	
	Infection Prevention: Routine Practices (RP)	
	Pregnant: No or unknown	
	If No, date of LMP: LEAVE BLANK	
	Clinical History: Appropriate information is entered	

Total: Order Entry for DIRAD = ___/11

Appendix M

Table 1

Wilcoxon Matched-Pairs Signed Rank Test for Pretest and Posttest Total Scores

	N	Mean Rank	Sum of Ranks	Z	Significance (2-tailed)
Negative Ranks	6	5.17	31.00	-1.820[a]	0.069
Positive Ranks	2	2.50	5.00		
Ties	0				
Total	8				

[a]based on positive ranks

Table 2

Wilcoxon Matched-Pairs Signed Rank Test for Diagnostic Imaging Pretest and Posttest Scores

	N	Mean Rank	Sum of Ranks	Z	Significance (2-tailed)
Negative Ranks	6	5.33	32.00	-1.975[a]	0.048*
Positive Ranks	2	2.00	4.00		
Ties	0				
Total	8				

[a]based on positive ranks

*$p < 0.05$