The University of San Francisco
USF Scholarship: a digital repository @ Gleeson Library | Geschke Center

Master's Projects and Capstones | Theses, Dissertations, Capstones and Projects

Summer 8-15-2016

Liver Transplant Education and Training for Medical Surgical ICU Nurses

Matthew Redila
University of San Francisco, mattredila@me.com

Follow this and additional works at: https://repository.usfca.edu/capstone

 Part of the Critical Care Nursing Commons

Recommended Citation
Redila, Matthew, "Liver Transplant Education and Training for Medical Surgical ICU Nurses" (2016). *Master's Projects and Capstones*. 380.
https://repository.usfca.edu/capstone/380

This Project/Capstone is brought to you for free and open access by the Theses, Dissertations, Capstones and Projects at USF Scholarship: a digital repository @ Gleeson Library | Geschke Center. It has been accepted for inclusion in Master's Projects and Capstones by an authorized administrator of USF Scholarship: a digital repository @ Gleeson Library | Geschke Center. For more information, please contact repository@usfca.edu.

Liver Transplant Education and Training for Medical Surgical ICU Nurses

Matthew Redila

University of San Francisco

NURS 653, Internship: Clinical Nurse Leader

Professor Carlee Balzaretti

August 8, 2016

Abstract

This project focuses on the CNL curriculum element of *Nursing Leadership* and explores the need for appropriate education and training for liver transplant as a new patient population for Medical Surgical ICU nurses. The transplant experience for these nurses currently include critically ill Bone Marrow Transplant, as well as stable heart and lunch transplant. The methods used to implement the project were to develop an education curriculum, a clinical orientation program, and a process to ensure proper communication occurs between all parties prior to clinical orientation. The competency-based orientation document, which is still being drafted, is used to determine clinical competency. Although the education and training will be ongoing, 22 nurses are expected to be considered competent by the completion of this project. As of the time of this writing, 50 nurses have attended the liver transplant education class with another 12 registered for the final summer class. A pre-test was completed prior to the class by all registrants, while only 15 nurses have completed the post-test and six nurses have obtained some clinical orientation. This paper reviews articles published on nursing care immediately post operation, education and learning methods, and effectiveness of structured orientation.

Keywords: liver transplant, clinical competency

Clinical Leadership Theme

This project focuses on the CNL curriculum element of *Nursing Leadership.* The CNL role function is Advocate. As the CNL, I will be utilizing the resources from the multidisciplinary team and serve as the leader for this project. As the leader for this project, I will be assessing the staffing needs and requirements for the new Intensive Care Unit (ICU). I will also be collaborating with another department for an education and orientation process to properly train the nurses from my unit to provide safe and competent care for a new patient population. The current project group consists of myself as the project leader, two nursing educators, an ICU Clinical Nurse Specialist (CNS), and the abdominal transplant Nurse Practitioner (NP), with the abdominal transplant pharmacist and surgeons providing feedback.

Statement of the Problem

In October 2016, the healthcare system will be opening its new facility. As the organization grows, several services will be relocating from the older facility in the downtown area to this new building, which is located across the city. One service that will have a large presence in the new building will be the abdominal transplant service. These patients are currently cared for immediately post-operatively in the Surgical Intensive Care Unit (SICU) in the downtown facility. With the transition to the new building, these patients will be expected to be cared for by the current Medical Surgical Intensive Care Unit (MSICU) nurses. Education, training, and competency gaps exist due to MSICU nurses not having any experience with abdominal transplant patients. Developing an education and orientation plan to ensure clinical competency with the MSICU nurses is critical in maintaining patient safety through early and accurate assessment of immediate post-liver transplantation complications including graft non

function, acute organ rejection, infection, biliary leaks, and hepatic artery thrombosis (Fullwood, Jones, & Lau-Walker, 2011).

Project Overview

Three separate goals were developed to ensure adequate education and training was provided to the MSICU nurses. First, the group needed to determine the educational requirements for caring for the post-operative abdominal transplant patient. The group decided to focus the education and clinical orientation on the liver transplant patient population because the clinical status immediately after surgery requires ICU level of care. In comparison, kidney and pancreas transplant patients are able to be cared for in the Progressive Care Unit (PCU) after surgery. In addition to liver transplantations, a lecture on kidney and pancreas transplantations are also included in the didactic session. A pharmacology lecture is then presented to explain the importance of medication administration and adverse side effects. A pre-test will be completed prior to attending the didactic session to determine the nurses' baseline knowledge of liver transplants. Clinical knowledge will then be assessed with the completion of a post-test. A passing grade will be considered at least 80%, which will be required for the nurse to progress through the liver transplant training and begin clinical orientation at the bedside.

The second goal is to develop a clinical orientation program that is to be completed after the didactic session. This clinical orientation program must be structured, yet flexible, to accommodate the emergent scheduling for a patient's transplant surgery. The project group agreed that the time immediately post-operatively, during the patient's admission into the ICU, is the most valuable learning experience. When discussing the orientation process, it was noted that there is no structured competency-based orientation in place for the SICU nurses. To ensure the MSICU nurses receive similar experiences during clinical orientation, a document tailored to the

competency-based orientation must be developed. The project group decided a nurse is considered competent once the document is completed with at least 12 clinical orientation hours. For budgetary purposes, the ICU nurses are being asked to not utilize more than 24 hours for clinical orientation, but we will remain flexible and understand if overtime accrues due to a learning opportunity that presents itself in a unique fashion.

The third goal is operationalizing the clinical orientation because the two facilities are located in different areas of the city. The emergent nature of transplantation creates difficulty with scheduling. The MSICU nurses will be signing up for available dates, in addition to their schedule shift requirements, within a document located in the unit's SharePoint site. When a liver transplantation is anticipated, the SICU Charge Nurse will notify the MSICU Charge Nurse with the patient's estimated time of arrival and with updates as appropriate. The MSICU Charge Nurse will then identify who is available for clinical orientation. Upon confirmation, the MSICU Charge Nurse will then report back to the SICU Charge Nurse on which nurse will be receiving the orientation. The MSICU nurse experiencing the clinical orientation will be asked to bring their copy of the orientation document to complete as the tasks are performed, along with an orientation hours tracking log, which will be verified and signed by the precepting SICU nurse.

The volume of liver transplant patients is anticipated to be an average daily census (ADC) of three patients per day. Due to the critical nature of these patients and the use of interventions such as continuous renal replacement therapy (CRRT), they are typically assigned on a one nurse-to-one patient ratio. In addition to the acuity of these three patients requiring a one nurse-to-one patient ratio, the Charge Nurse and Resource Nurse must also be considered competent to provide adequate break relief. To properly staff each shift with five competent nurses, it will require a total of 22 nurses from the current MSICU staffing to cover patient care

and break relief on a daily basis, given the projected ADC. The aim of this project is to educate and train at least 22 competent MSICU nurses to the liver transplant patient population by the opening of the new facility in October 2016. This projects aims to address the global need of educational and training requirements for a new patient population that will be cared for by the MSICU nurses.

Rationale

MSICU is a 12-bed ICU that cares for the critically ill general medical and surgical patient populations. The nurses will sometimes care for patients who have received a bone marrow, heart, or lung transplant. The oncology PCU cares for the bone marrow transplant (BMT) patient after transplantation, however, the BMT patient is admitted to MSICU for complications or adverse events after transplantation including sepsis and graft-versus-host disease. The heart and lung transplant patients are cared for in the Cardiovascular ICU (CVICU) immediately after transplantation. These patients are admitted to the MSICU when the CVICU has bed capacity issues. At this point of their care, the heart and lung transplant patients are no longer on continuous infusions and are diagnosed with failure to wean. Although the MSICU nurses have some experience caring for a transplant patient, the liver transplant patient will require a different skillset to be considered competent, especially immediately post-operatively.

A root cause analysis (RCA) was performed (see Appendix A for a fishbone diagram) to determine the cause for the untrained nurses. As mentioned, this is a new patient population the MSICU nurses will be caring for. Liver transplantations often require massive transfusions utilizing a fluid warmer that the MSICU nurse is not familiar with. In the rare situation, the Level 1 Rapid Infuser will be required to resuscitate the patient. This equipment is one that does not get utilized in the MSICU. Because the MSICU nurse does not have experience with this patient

population and minimal to no experience with equipment typically used for the postoperative liver transplant patient, the MSISU nurse does not meet the criteria to be considered competent based on the competency document.

Further analyses were completed (see Appendix B for SWOT analysis and Appendix C for stakeholder analysis) to determine the strengths, weaknesses, opportunities, and threats to the project, along with the key stakeholders and their impact on the project. It will be important to focus on the need to promote patient safety and staff engagement. For the project to be effective and efficient, the MSICU and SICU leadership teams need to be heavily involved to be able to encourage their respective nurses on the importance of developing competent nurses. Other key players noted for the project include organizational leadership and the abdominal transplant team.

It is important for an education and training plan to be initiated and implemented to ensure competency for the MSICU nurses. Failure to do so has financial and safety implications. The financial implications can occur due to a delay in licensing the new facility. Patients cannot be cared for in the new facility if the building does not get licensed. American Hospital Directory (2015) notes that facilities in the area can have a gross patient revenue of over $10,000 per day.

In addition to the financial implications, this education and training project promotes patient safety. Approximately 6,000 liver transplants are performed in the United States annually (American Liver Foundation, 2015). Each transplant has the potential for post-operation complications. Fullwood (2011) notes the importance of hemodynamic monitoring, laboratory value monitoring, and assessment skills for post-operative complications. The inability to appropriately care for these patients can have a negative impact on the patient's outcome.

The implementation of this project is financially feasible. The cost analysis (see Appendix D for a cost analysis table) is based off the current staffing of 70 Registered Nurses (RN) with a mean hourly wage of $50.40, the six-hour didactic session, average of 18 clinical orientation hours, and one-hour annual education for each subsequent year. A salary increase of 3% is anticipated and taken into account for year two. For the first year, the project team would like to educate all 70 RNs to the new patient population, the potential complications, and the treatment plan required for care. Out of the 70 RNs, there will be an emphasis to train 22 RNs to ensure adequate staffing for the first day the facility is open. The total cost for year one is anticipated to be $41,126.

For the second year, we will assume no changes to the abdominal transplant ADC, the unit's total ADC, and a turnover of five nurses who will also need the six-hour didactic session. The turnover of five nurses is an assumption based on the actual turnover rate from Fiscal Year 2016. During the second year, the plan will be to provide clinical orientation to those who did not complete it in year one. In addition to the new education and clinical orientation, an annual one-hour education module will be provided to the RNs who received the education in year one. This is to ensure nurses remain current with best practice. The total cost for year two is anticipated to be $49,781. The total cost for both years is anticipated to be $90,907, which is the equivalent of delaying the licensing of the new facility by approximately nine days. From a financial perspective, it is imperative the education and training project is implemented.

Methodology

This project utilized Kotter's 8-step change model (see Appendix E for individual steps). This change theory was chosen because the nature of the project required a new skillset, as

opposed to change a process already ingrained within a department. Applebaum, Habashy, Malo, and Shafiq (2012) note Kotter's change model is appropriate as an implementation planning tool.

As of March 2016, MSICU leadership has created a sense of urgency by reaching out to staff on the reality of caring for this new patient population. This was accomplished through monthly staff meetings and weekly huddles. This project taskforce was then developed to create an education and training plan to ensure clinical competency for the MSICU nurses. The following month, April 2016, I presented to the MSICU staff meeting on the proposed plan, which included the didactic session, as well as the process for clinical orientation (see Appendix F for a process map to determine clinical competency).

Staffing and scheduling obstacles were eliminated by providing flexibility to the nurses who have taken the liver transplant class. In addition to their already-scheduled shifts, these nurses sign up for days they are not working but are willing to work extra in the SICU to complete their clinical orientation. This sign-up sheet is centrally located within the unit's SharePoint site, where information is easily accessible from home or the unit. Although the budget is taken into consideration, overtime hours are approved for clinical orientation due to the limited availabilities of liver transplants. When possible, we encourage the nurses who have experience with a liver transplant patient to share their experience with the rest of the staff. Sharing their experiences has helped to build excitement within the unit regarding a new patient population. The project group understands that each shift of clinical orientation is one shift closer to reaching the goal. The project group has recurring biweekly meetings to discuss issues that surface and processes that may need adjustments. This change will then be ingrained into the unit's culture as it will be the expectation for every RN to be competent to care for this patient population.

The key data that will be assessed are the completed competency-based orientation documents. These documents will be signed off during the clinical orientation after the MSICU nurse performs certain tasks, such as having hands-on time with the Level 1 Rapid Infuser and properly assessing the contents of the bulb suctions. Although the project goal is to have 22 MSICU nurses trained and considered competent, I anticipate 11 MSICU nurses to have their orientation documents completed. The average volume of liver transplantations has slightly decreased, which combined with the MSICU nurses' availabilities, could lead to a decrease in training for the MSICU nurses.

In the event there are not enough MSICU nurses to be considered competent to care for the liver transplant patient population, there is a contingency plan in place to trade nurses with SICU to allow for enough nursing care coverage for the bedside nurse and for the break relief nurse. The clinical orientation process will then continue at the new facility until there are enough nurses considered competent staffed from MSICU.

Data Source and Literature Review

For the purpose of this project, I focused on the skillset of competency to care for the liver transplant patient population within the MSICU nurses. Due to the patient population being new for the MSICU nurses, the focus is to develop an education and training program that ensures the MSICU nurses are competent in caring for the immediate postoperative liver transplant patient.

The articles included in this literature review describe the nursing care required immediately post-operatively, the psychosocial aspects that need to be considered, and the support for an education and training program to determine competency. A search of the Cumulative Index to Nursing and Allied Health Literature (CINAHL) database was conducted

using the PICO search strategy of *education, liver transplant nursing, liver transplant competency,* and *liver transplant orientation*. Three articles related to immediate post-operative nursing care with dates ranging from 2008 to 2014 were found. Although only two articles are timely, all three are selected for review. Another three articles related to the psychosocial aspects of a liver transplant with dates ranging from 2012 to 2014 were found. These two articles are timely and will be selected for review. In addition, two articles related to an education and training program with dates ranging from 2015 to 2016 were found and will be selected for review. These articles will be utilized in the development of the training and education program for this project.

Fullwood, Jones, and Lau-Walker (2011) summarize the care required for a liver transplant patient immediately postoperatively. The summary includes hemodynamic monitoring, lab monitoring, post-operative complication assessment, pharmacology related to immunosuppression, and preparation for discharge. It is also important to consider self-care and other factors that could influence recovery and the patient's outcome. The article also provides simple, yet effective, advice for the healthcare provider to teach the patient to promote the best possible outcome.

In the article, "Liver transplantation: Evidence for nursing care," Mendes and Galvao (2008) discuss interventions in the preoperative phase of liver transplantation including the efficacy of soapsuds enemas compared to tap water enemas, the transjugular portosystemic shunt (TIPS) procedure to promote the patient's quality of life, and the importance of an accurate detailed history assessment to determine potential complications from fulminant hepatic failure (FHF). Intraoperative interventions include the prevention of pressure ulcers, monitoring the surgical procedure, as well as the accurate intake and output of fluids. The postoperative

interventions are aimed at close monitoring of potential post-transplantation complications. Immunosuppresive drugs, their actions, and their side effects are also discussed for these patients. In addition to nursing care and appropriate medication administration, adequate nutritional and emotional support are also considered to be important to the success of the transplant.

In the article, "Developing the Australasian Hepatology Association's consensus-based guidelines for the nursing care of patients with liver disease," Richmond, Wheeler, Warner, and Mason (2014) reviewed the consultations, methodology, and outcomes achieved by creating a guideline for patients with liver disease. The guiding principles obtained were patient-centered care, non-discriminatory practice, culturally competent nursing care, working within one's scope of practice, and the importance of collaboration and partnerships.

In the article, "Investigation of adaptation after liver transplantation using Roy's Adaptation Model," Ordin, Karayurt, and Wellard (2013) studied to understand the adaptation behaviors causing the adverse effects. Liver transplant recipients, especially those who receive a living donor liver transplant, may undergo problems related to their physical, psychological, and social well-being after transplantation. It is suggested these negative effects can manifest from a fear of organ rejection, depression, and anxiety. The psychological impact from a liver transplantation is just as important as the physiological impact.

Weng et al. (2014) describe the effects liver transplantation can have on the patient's employment status in the article, "The effect of self-efficacy, depression and symptom distress on employment status and leisure activities of liver transplant recipients." It is suggested that a patient's employment status can be affected by gender, family income, pre-transplantation employment, work ability, depressive symptoms, and symptom distress. Healthcare providers

can assist by increasing the patient's confidence, decreasing depressive symptoms, and monitoring the severity and progression of treatment-related symptoms.

In the article, "The power of the liver transplant waiting list: A case presentation," Hansen and Rosenkranz (2014) review a case study to highlight the difficulties and struggles the patient with End-Stage Liver Disease and their families battle while waiting for a liver transplant. It is noted that the psychosocial aspect of nursing is a key factor in caring for these patients and their families. Because nurses have a tremendous impact on patients and families in reducing their inner turmoil, nurses must able to connect and allow the patient and family to express their feelings to improve their experience in the ICU. Communication within the multidisciplinary team is an important aspect of the patient's experience during their hospitalization.

Iglesias-Parra et al. (2015) conclude that the structured Nursing Interventions Classification (NIC) is a reliable method to acquire skills and develop competency through a standardized and comparable way in the article, "Design of a competency evaluation model for clinical nursing practicum, based on standardized language systems: Psychometric validation study." The structured competency document provides a formative assessment and acts as an evaluation system through the use of a Likert-type system for the student to judge their clinical competencies. This document allows for an appropriate evaluation of the nurse's clinical abilities and skills with the use of a standardized format.

In the article, "An educational plan for nursing staff in the procedural treatment unit of the Sulipizio Cardiovascular Center," Lee and Daugherty (2016) underwent the opening of a new facility and found success in a multimodal approach to their education and training for the staff. The multimodal approach consisted of didactic, experiential, and mixed methods for teaching.

The education plan by Lee and Daugherty (2016) not only consisted of various methods of teaching, the material was also distributed to staff by various outlets. Other forms of teaching, such as online learning, were also utilized to meet the diverse needs of the staff.

The data retrieved indicates that utilizing a multimodal approach to learning the immediate postoperative nursing needs can develop competent nurses. Implementing this project will allow for competent care to be provided to all liver transplant patients in the new facility. Competency will also be able to be verified with the use of a competency document that all nurses will need to complete prior to providing primary care to these patients.

Timeline

There are three major steps with respective objectives for this project to be successful (see Appendix G for a Gantt Chart timeline). The first step is to develop the education and training plan. For this to occur, the project group first met in April 2016. After this initial meeting, we agreed to have a recurring biweekly phone conference to provide updates. The project group initially consisted of the Clinical Nurse Specialist (CNS), Certified Nurse Educator (CNE), and Nurse Manager of MSICU, as well as the SICU's CNS and CNE. I took the role as project lead. The abdominal transplant Nurse Practitioner (NP) later joined the group to provide input. The SICU leadership reached out to the abdominal transplant surgeons to determine availability and presentation materials. After the agenda was set, I distributed the pre-class materials, which included a liver failure article, a PowerPoint presentation on pharmacology, and a pre-test to determine baseline (see Appendix H for the title page of the liver failure article, Appendix I for the PowerPoint title slide, and Appendix J for the first page of the pre-test).

The second step of this project is to educate the staff with the use of the didactic sessions. The first session was held on May 26, 2016. A pre-requisite to attending the class was having the

pre-test completed. One week after the class, a follow-up email was sent to those who attended the class. Attached to the email was the post-test, which included the questions from the pre-test with questions related to the material addressed in the didactic session, and instructions on how to obtain clinical orientation. The post-tests were graded and feedback was given to staff.

The final step is to provide clinical orientation to the MSICU nurses. After completion of the post-test, the MSICU nurse is to log on to the unit's SharePoint site and sign up for days the nurse is available to orient. When a liver transplantation surgery is anticipated, the SICU and MSICU Charge Nurses will coordinate an MSICU nurse to receive orientation. The nurse will then be considered competent upon completion of the competency document. This orientation process will continue through the opening of the new facility in October 2016. The orientation process will then be modified after the workflow is established in the new facility.

Expected Results

We expect to have the majority, if not all, of the MSICU nurses to attend the didactic session. We also anticipate a 100% return rate of the post-test of those who attended the class before the new facility opens. Although we expect to have 22 nurses complete their clinical orientation at the bedside before the new facility is open, we understand that this may not be possible given the time constraints. For this time frame, we are hopeful to have 13 nurses trained. With this education and training, we expect the MSICU team to build the same type of trust and confidence from the abdominal transplant service that the SICU team has built.

In addition to the training of the MSICU nurses, we also expect to formalize the process of competency-based orientation for transplantation patients, and other interventions that require education and training, for the organization. The document is relatively new and the process continues to be modified.

Nursing Relevance

This project will contribute to the importance of education, collaboration, and mentorship for the field of nursing. There are high expectations for transplant nurses. To meet these high expectations, Russell (2014) suggests continued education to remain current with their practice, collaboration with the transplant teams to promote teamwork, and mentorship by the experienced nurses to help develop the novice nurses. Also, transplant nurses are likely to come across ethical concerns (Brown & Finell, 2015). Continued training and education will help with moral development and consequently affect patient care by improving patient advocacy.

Summary Report

10. The summary report will include a narrative of what you actually did, the results, and what you learned. How will it be used? It must also include data and evaluations from the unit, personnel/patients involved and your conclusions.
    a. Restate the objectives (aim) of the CNL Internship Project.
    b. Describe your actual population and setting.
    c. Describe the methods used to implement your project, and any changes made from the prospectus. Include a description of the baseline data and how that data showed a need for the project.
    d. Identify any published materials, teaching aids, etc., that were used.
    e. Describe the evaluation and conclusions. In the discussion of the evaluation, discuss the data collected and how it compared to your projections. State your conclusions and base them on the data collected. Include a copy of the evaluation tool/s in the appendices and the data collected during the project.
    f. Discuss your sustainability plan for maintaining the change after you have completed the practicum.

References

American Association of Colleges of Nursing. (2013). *Competencies and curricular expectations for Clinical Nurse Leader education and practice.* Retrieved June 1, 2016, from http://www.aacn.nche.edu/cnl/CNL-Competencies-October-2013.pdf.

American Hospital Directory. (2015). *Individual hospital statistics for California.* Retrieved June 21, 2016, from https://www.ahd.com/states/hospital_CA.html.

American Liver Foundation. (2015). *More about organ donation.* Retrieved June 20, 2016, from http://www.liverfoundation.org/patients/organdonor/about/.

Applebaum, S. H., Habashy, S., Malo, J., & Shafiq, H. (2012). Back to the future: Revisiting Kotter's 1996 change model. *Journal of Management Development, 31*(8), 764-782. doi: 10.1108/02621711211253231.

Brown, C. S., & Finell, D. S. (2015). Provisions of the Code of Ethics for nurses: Interpretive statements for transplant nurses. *Nephrology Nursing Journal, 42*(1), 37-43.

Fullwood, D, Jones, F., & Lau-Walker, M. (2011). Care of patients following liver transplantation. *Nursing Standard, 25*(49), 50-56.

Hansen, L., & Rosenkranz, S. J. (2014). The power of the liver transplant waiting list: A case presentation. *American Journal of Critical Care, 23*(6), 510-515. doi: http://dx.doi.org/10.4037/ajcc2014399.

Iglesias-Parra, M. R., García-Guerrero, A., García-Mayor, S., Kaknani-Uttumchandani, S., León-Campos, Á., & Morales-Asencio, J. M. (2015). Design of a competency evaluation model for clinical nursing practicum, based on standardized language systems: Psychometric validation study. *Journal of Nursing Scholarship, 47*(4), 371-376 6p. doi:10.1111/jnu.12140

Lee, E., & Daugherty, J. (2016). An educational plan for nursing staff in the procedural treatment unit of the Sulipizio Cardiovascular Center. *Journal of PeriAnesthesia Nursing, 31*(2), 134-145. doi: http://dx.doi.org/10.1016/j.jopan.2014.11.015

Mendes, K. D. S., & Galvao, C. M. (2008). Liver transplantation: Evidence for nursing care. *Revista Latino-Americana de Enfermagem, 16*(5), 915-922.

Mitchell, G. (2013). Selecting the best theory to implement planned change. *Nursing Management, 20*(1), 32-37.

Ordin, Y. S., Karayurt, Ö, & Wellard, S. (2013). Investigation of adaptation after liver transplantation using Roy's Adaptation Model. *Nursing & Health Sciences, 15*(1), 31-38. doi: 10.1111/j.1442-2018.2012.00715.x.

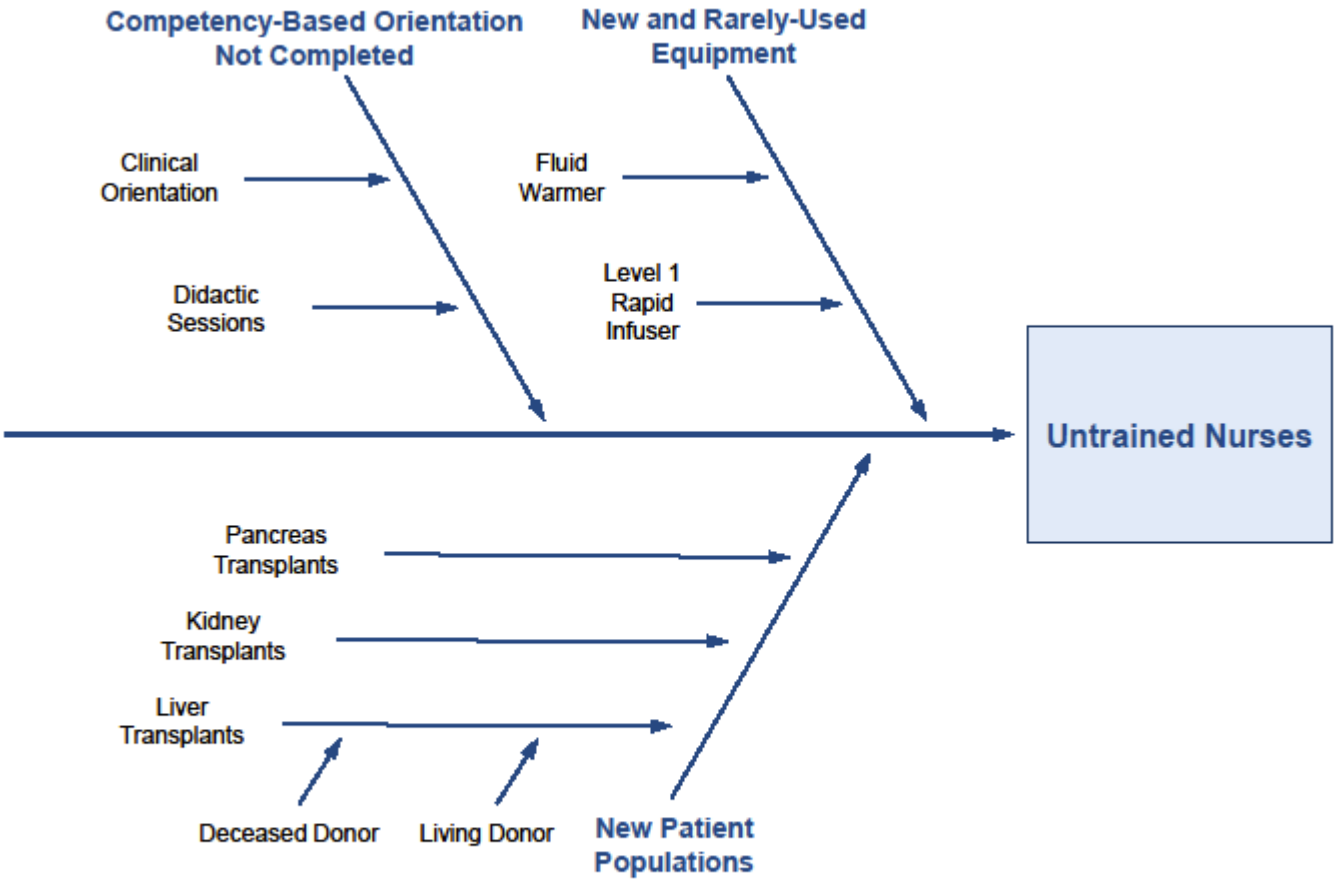
Richmond, J., Wheeler, E., Warner, S., & Mason, S. (2014). Developing the Australasian Hepatology Association's consensus-based guidelines for the nursing care of patients with liver disease. *Contemporary Nurse: A Journal for the Australian Nursing Profession, 48*(1), 36-45. doi: 10.5172/conu.2014.48.1.36.

Russel, C. L. (2014). Transplant nursing: Changing scope of practice. *Transplant Journal of Australasia, 23*(2), 5-7.

Weng, L., Huang, H., Wang, Y., Lee, W., Chen, K., & Yang, T. (2014). The effect of self-efficacy, depression and symptom distress on employment status and leisure activities of liver transplant recipients. *Journal of Advanced Nursing, 70*(7), 1573-1583. doi:10.1111/jan.12315

Appendix A

Root Cause Analysis



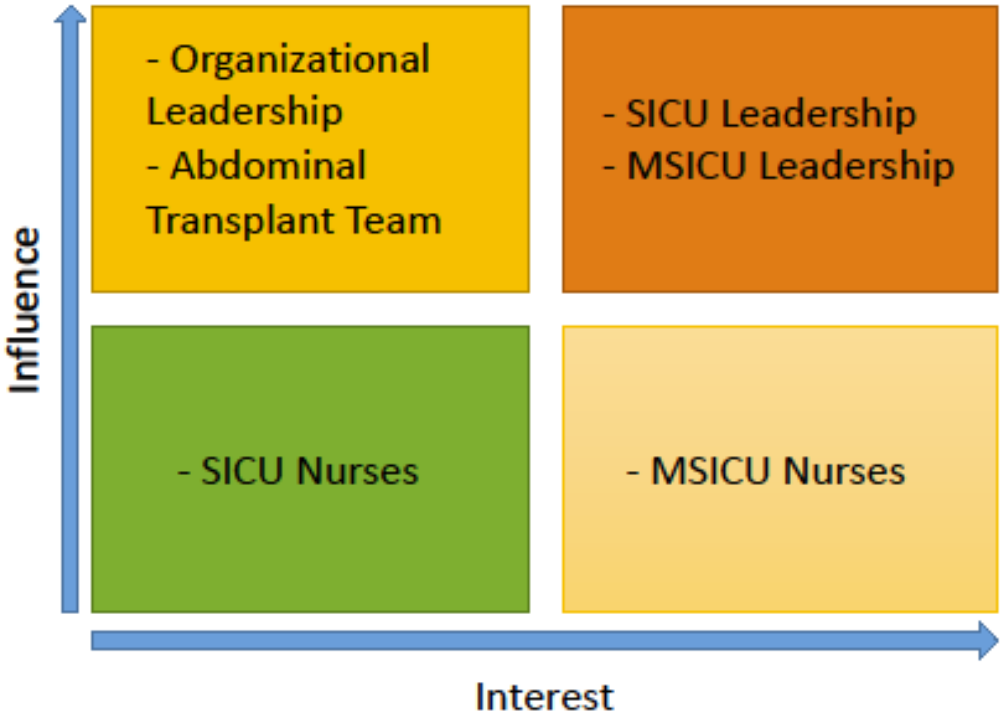
Appendix B

SWOT Analysis

Strengths	Weaknesses
- Staff engagement - Improve staff knowledge to become experts - Promotes safety - Prevents delay in facility licensing	- Operationalizing the orientation process - Rely on others as experts in the field - Staff sick calls
Opportunities	**Threats**
- Occurrence of living donor transplants - Improved access to care by the Affordable Care Act	- Quantity limitations of liver transplants - Time limitations - Competing nearby hospitals

Appendix C

Stakeholder Analysis



Appendix D

Cost Analysis

Education & Orientation	**First-Year Costs**	**Second-Year Costs**
Didactic Sessions	$50.40/hour x six hours x 70 RNs = $21,168	$51.91/hour x six hours x 5 RNs = $1,557
Clinical Orientation	$50.40/hour x 18 hours x 22 RNs = $19,958	$51.91/hour x 18 hours x 48 RNs = $44,850
Annual Education	N/A	$51.91/hr x one hour x 65 RNs = $3374
Total Cost Per Year	$41,126	$49,781

Note. The second-year costs include a 3% salary increase per RN. Each subsequent year should anticipate an hourly annual education module with a 3% salary increase per RN. The cost for years one and two is $90,907.

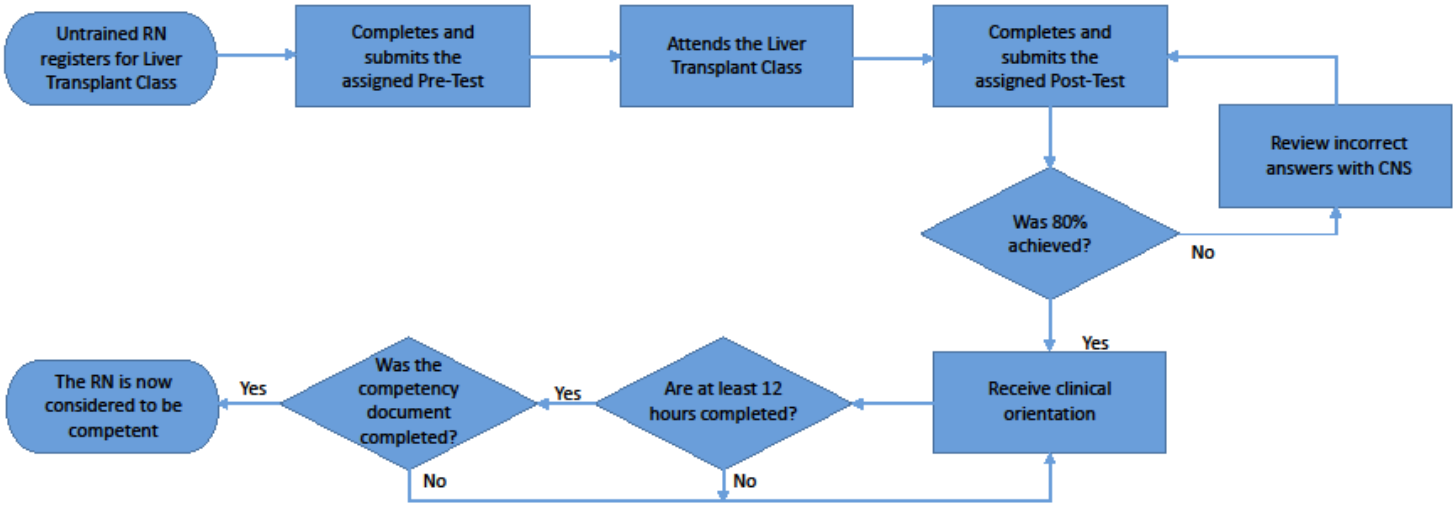
Appendix E

Kotter's 8-Step Change Model

1. Establish a sense of urgency
2. Create a guiding coalition
3. Develop a vision and strategy
4. Communicate the change vision
5. Empower broad-based action
6. Generate short-term wins
7. Consolidate gains & produce more change
8. Anchor new approaches in the culture

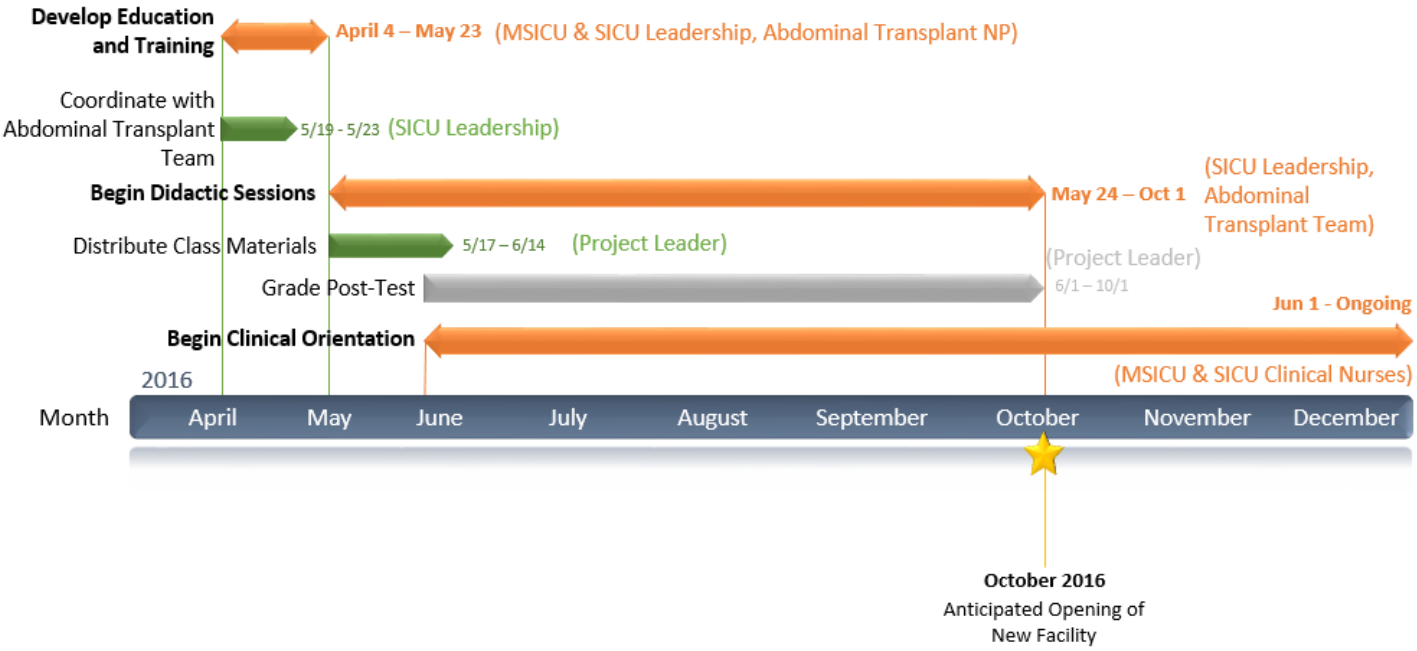
Appendix F

Process Map for Clinical Competency



Appendix G

Gantt Chart



Appendix H

Liver Failure Article

When your patient is in liver failure

Find out what leads up to liver failure, how it's diagnosed, and how to care for your patient.

BY KIM WHITEMAN, RN, CCRN, MSN, AND CRYSTAL McCORMICK, RN, CCTN

CE 2.5 ANCC/AACN CONTACT HOURS

EACH YEAR, 1 in 10 Americans is diagnosed with liver disease; 25,000 die of liver disease complications. Untreated or refractory liver disease can lead to liver failure, defined as the loss of 80% to 90% of liver function. Liver failure can come on quickly (for example, from fulminant hepatitis) or slowly (for example, from alcoholic cirrhosis). In this article, we'll look at the disorders that can lead up to liver failure (see *Common liver diseases in adults*) and discuss how to assess and manage liver disease. For more on the structure and function of the liver, see *Liver lowdown*.

Liver disease: The beginning

Liver disease falls into two main categories: *hepatocellular*, such as viral hepatitis or alcohol- or drug-related liver disease, and *cholestatic*, or obstructive disease, such as that caused by gallstones, malignancy, or primary biliary cirrhosis. All can lead to liver failure.

Liver failure, also known as end-stage liver disease, can be caused by an acute injury (also called fulminant liver failure) or result from a chronic disease. Fulminant liver failure might follow an infection (hepatitis) or an acetaminophen overdose, or it could result from hepatic vein obstruction (Budd-Chiari syndrome). Fulminant liver failure is characterized by coagulopathy and encephalopathy that develop within 8 weeks of the injury or start of an illness. Prompt treatment based on the underlying problem is key.

Symptoms of liver failure occur later in patients with chronic liver disease. Alcohol abuse and viral hepatitis are among the diseases that can lead to cirrhosis, a nonuniform scarring and fibrosis of the liver that can lead to liver failure.

Some patients with well-compensated chronic liver disease may experience an acute decline in liver function after an infection or gastrointestinal (GI) bleeding. This is referred to as acute-on-chronic liver failure. These patients may return to baseline liver function with supportive treatment and not need an emergency liver transplant.

Appendix I

Pharmacology PowerPoint Presentation Title Slide

Liver + Kidney Transplantation
Pharmacotherapy & Pharmacoeducation

Appendix J

Liver Transplant Pre-Test

Name_____ Unit_____ Class Date_____

Liver Transplant Test May 2016

1. 75% of the blood flow IN to the liver comes through which blood vessel:
    a. Hepatic Artery
    b. Hepatic Vein
    c. Portal Artery
    d. Portal Vein

2. The liver is responsible for many processes in the body, including: (Select all that apply)
    a. Excretion/detoxification of alcohol
    b. Excretion/detoxification of ibuprofen
    c. Converting glycogen to glucose
    d. Synthesis of bile
    e. Synthesis of von Willebrand's factor

3. The liver is responsible for synthesizing many compounds in the body, including albumin. Which of the following is NOT a complication of hypoalbuminemia?
    a. Increased right atrial pressure
    b. Peripheral edema
    c. Ascites
    d. Hepatic hydrothorax

4. A pattern of diffuse nodules and non-uniform scarring in the liver is called
    a. Hepatitis
    b. Cirrhosis
    c. Budd-Chiari syndrome
    d. Hepatocellular carcinoma

5. Expected cardiovascular findings in ESLD include: (Select all that apply)
    a. Cool, clammy skin
    b. Bounding Pulses
    c. Hypertension
    d. Hypotension
    e. Tachycardia
    f. Bradycardia

6. Which of the following statements about portal hypertension is FALSE:
    a. Scarring and fibrosis of the liver predicates portal hypertension.
    b. Collateral circulation to and around the liver is formed as a result of the increased pressure of portal hypertension.
    c. An endoscopic retrograde cholangiopancreatography (ERCP) can be performed to treat portal hypertension.
    d. A transjugular intrahepatic portosystemic shunt (TIPS) can be employed to manage portal hypertension

7. Liver failure can be caused by which of the following (Select all that apply)
    a. Hepatocellular disease (ex. Hepatitis)
    b. Cholestatic disease (obstruction of the ducts around the liver)
    c. Fulminant failure (ex. Acetaminophen overdose)
    d. Autoimmune disorders (ex. Primary sclerosing cholangitis)