Evaluation of an Educational Intervention to Improve Nurse Managers' Understanding of and Self-Assessed Competence with Personnel Budgeting

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Practice Inquiry Project Report: Evaluation of an Educational Intervention to Improve Nurse Managers’ Understanding of and Self-Assessed Competence with Personnel Budgeting

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University of Kentucky College of Nursing, August 6, 2015

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Teresa Centers, Director of UKHC Fiscal Planning and Analysis-Clinical Mentor
Dedication

To my family and friends who have been with me on this journey with me every step of the way.

Their love and support have strengthened me and meant so much to me.
Acknowledgements

I would like to thank my academic advisor and committee chair, Dr. Nora Warshawsky for always pushing me to do my best. I have learned so much from her along the way. She has helped me to achieve this degree and has guided me with wisdom throughout my program. I would also like to thank Dr. Debbie Hampton for agreeing to be on my committee. Her support and feedback have been so valuable throughout the process. She has vast real world experience in leadership and has had a very positive impact on my career as a Doctor of Nursing Practice student. I am honored and grateful to have had the benefit of her experience and encouragement.

I thank Teresa Centers, Director of Fiscal Planning and Analysis at the University of Kentucky Healthcare for agreeing to be my clinical mentor. Teresa has years of very valuable experience in healthcare finance. She provided me with the tools and guidance I needed to do my capstone work, and has always made time in her busy schedule when I needed her.

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Chapter 1

Practice Inquiry Project Report: Introduction
Introduction

This practice inquiry project is comprised of three manuscripts, the first of which explores nurse managers’ competence with the financial management aspects of their roles. Many nurse managers are hired for their clinical acumen, and lack the needed education and training to be successful in nurse management roles (Douglas, 2010; Omoike et al., 2011). Even after years of experience and training, many still lack confidence with the financial skills needed for their role as nurse managers (Baxter & Warshawsky, 2014).

The second manuscript explores Constructivist Learning Theory as a framework for educating nurse managers. Constructivism is attributed to Jean Piaget, a Swiss developmental psychologist and to Lev Vygotsky, a Russian social psychologist (Brandon & All., 2010). They espouse that individuals construct knowledge through interaction with their environments and in social interactions (Brandon & All, 2010; Getha-Eby, Beery, Xu, & Obrien, 2014). By assimilating new information, learners link new information with their existing framework of knowledge and beliefs. New information that is in conflict with previous knowledge and beliefs will need to be adapted and accommodated to fit into one’s cognitive framework (Handwerker, 2012). Constructivist learning methods are experiential, reflective, active and engage the learner (Heiman et al., 2013; Josephsen, 2013; Kantar, 2014). This contrasts to traditional methods of teaching in a lecture style format, where using one way communication, the teacher conveys information and knowledge to the students (Brandon & All, 2010; Handwerker, 2012; Pettigrew, 2015).

The third and final manuscript describes an educational intervention used with nurse managers at the University of Kentucky Chandler Hospital. The project was to evaluate the effect of the intervention on nurse managers’ knowledge and self-assessed competence with
financial management of their units’ budgets before and after the educational intervention. The results of this project will be presented to the nursing faculty and finance personnel of UK and shared with the Chief Nurse Executive. Due to a small sample size, the results are not generalizable, but may be used to support future study and intervention to help develop nurse managers and maintain their competence.
Chapter 2

Manuscript 1:

Nurse Managers’ Competence with Financial Management
Abstract

Objective: To explore the professional nursing literature to obtain information about nurse manager knowledge and competence with financial management.

Background: Many nurse managers are not formally educated to their roles and lack the needed support and competencies to succeed. Formal training programs and graduate level education may help nurse managers to be more confident and competent, resulting in higher quality outcomes and decreased staff turnover. Many nurse managers rank financial management competence as the most difficult and challenging to acquire. Nursing personnel need to be more educated and engaged in financial matters in order to drive quality, safety and fiscal outcomes in their organizations.

Methods: CINAHL, PubMed and Medline databases were searched using various combinations of the following search terms: nurse managers, nursing, nurse leaders, finance financial management, competencies, competence, education, and knowledge. The search returned 68 articles. After reviewing the articles for relevance and reviewing the reference lists for applicable articles, the search resulted in 15 journal articles, two web references and one book. Articles which addressed nurse manager or nurse leader general competencies and nurse manager financial competencies were included.

Results: The articles in this review can be divided into themes related to competency development in general, the need for financial competence of nurse managers, and studies and interventions that address the acquisition of these competencies.

Conclusion: Because nurse managers have the greatest impact on organizational outcomes, they need to have formal leadership development to be able to lead both the clinical and business aspects of healthcare.
Background

The Institute of Medicine (IOM) report, *The future of Nursing: Leading Change,* *Advancing Health* (2011) emphasizes the need for nurses to practice to the fullest extent of their education and work as full partners with physicians and other healthcare leaders to redesign the United States Healthcare system. The report encourages nurses to attain higher degrees and to become active in policy setting. Because of nurses’ sheer numbers and experience, they are positioned well to lead change. What is not mentioned is that nursing needs to standardize and set minimum requirements for competency and education applicable to all levels of nursing leadership. Advanced practice nurses in clinical domains have already set minimum education requirements for their fields, and nursing leaders need to do likewise (Yoder-wise, Scott, & Sullivan, 2013).

Many terms are used to refer to frontline nurse leaders in healthcare systems. For the purpose of consistency, the term nurse manager will be used throughout this paper to denote frontline, unit level nurse leaders. Nurse managers are vital to their unit’s functioning; managers set the tone for the work environment and impact staff turnover and patient satisfaction (Titzer, Phillips, Tooley, Hall, & Shirey, 2013; Baxter & Warshawsky, 2014; Hadji, 2015). Sanford (2011) reported that one survey conducted indicated that 56% of staff nurses cited poor frontline management as one of the primary reasons for leaving their positions. It is vital, therefore that managers are supported and developed to assure success in healthcare organizations.

Nurse managers are generally chosen because of their stellar performance in the clinical domain (Douglas, 2010; Omoike, Stratton, Brooks, Ohlson, & Storfjell, 2011; Sanford, 2011; Titzer et al., 2013). They are seen as leaders, and it is assumed they will transition effectively to a management role. However, many nurse managers report that they did not receive formal
education and orientation to their roles, and that what they did learn was acquired from on the job experience (Muller, 2013; Yoder-Wise et al., 2013; Hadji, 2015). Because of feelings of incompetence and frustration with their role, nurse manager turnover at one health system was reported to be 10% (Fennimore & Wolf, 2011).

Nurse manager turnover often leads to staff turnover, which can cost an organization from $65,000 to 130,000 per position (Sanford, 2011). Warshawsky et al. (2013) found that nurse manager turnover was associated with higher rates of hospital acquired pressure ulcers (HAPU) in two hospitals studied. Not only was there a cost associated with replacing the manager, but also the expense of treating a pressure ulcer at a cost of $17,495 to $28,272 (Fuller et al., 2009). Price Waterhouse (2010) reported that every one percent of turnover can cost an organization up to $300,000.00 per year. In addition to staff turnover, nurse manager turnover can lead to decreased morale, loss in productivity, and staff nurse dissatisfaction and turnover (Fennimore & Wolf, 2011). Preparation of nurse managers can lead to improved quality, safety and fiscal outcomes as well as healthier work environments (Sanford, 2011; Titzer et al., 2013).

The literature contains many examples of competencies necessary for nurse managers to be successful (Omoiike et al., 2011; Hadji, 2015) in the increasingly complex healthcare environment. Through a collaboration between the American Organization of Nurse Executives (AONE) and the American Association of Critical Care Nurses (AACN) the Nurse Manager Leadership Partnership [(NMLP), AONE, 2006] identified and categorized nurse manager competencies in the Learning Domain Framework [(LDF) AONE, 2006]. The LDF best summarizes all of the competencies recommended by nursing experts into three learning domains (Titzer et al., 2013; Baxter & Warshawsky, 2014). The Art domain encompasses the art of leading people. The Science domain includes competencies needed to manage the business
and finances of healthcare, and the Leader Within domain pertains to nurse managers’ self-development both personally and professionally (Table 1.) The objective of this literature review was to review the available evidence describing nurse managers’ self-assessed competence with and knowledge about financial management concepts.

Table 1. Learning Domain Framework

<table>
<thead>
<tr>
<th>NURSE MANAGER LEADERSHIP PARTNERSHIP</th>
<th>LEARNING DOMAIN FRAMEWORK (AONE, 2006)</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>THE ART:</strong> Leading the people</td>
<td><strong>THE SCIENCE:</strong> Managing the business</td>
</tr>
<tr>
<td>• Human resource leadership skills</td>
<td>• Financial management</td>
</tr>
<tr>
<td>• Relationship management &amp; influencing behaviors</td>
<td>• Human resource management</td>
</tr>
<tr>
<td>• Diversity</td>
<td>• Performance improvement</td>
</tr>
<tr>
<td>• Shared decision making</td>
<td>• Foundational thinking skills</td>
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<td></td>
<td>• Technology</td>
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<td></td>
<td>• Strategic management</td>
</tr>
<tr>
<td></td>
<td>• Clinical practice knowledge</td>
</tr>
</tbody>
</table>

Methods

Search terms were entered into PubMed, Medline, and CINAHL databases. The following terms in various combinations were used: nurse managers, nursing, nurse leaders, finance, financial management, competence, competency, knowledge, education. Initially 68
articles were returned. The date of the search was limited from 2010 to 2015 and only scholarly or peer reviewed sources were searched. Once duplications were accounted for, articles were culled for relevance and 12 articles were chosen. The reference lists of the applicable articles were mined for more references, and the final review yielded 15 articles, two web based resources and one book. The articles contained one literature review, five expert opinions, four evidence based intervention reports, one quasi experimental quantitative study, two pilot studies, and two qualitative studies. The web references and book were classified as expert opinion.

Findings

Two broad themes emerged from this literature review. First, eight articles addressed nurse manager competencies and education generally. The remaining seven articles were focused on nurse managers and their competence with financial matters. Within each of these broad categories are studies and evidence based project reports that offer insights and recommendations regarding nurse manager competence. Follows is a synthesis of the expert literature and study findings from each group of articles.

Overall competencies of nurse managers

The Institute of Medicine (IOM, 2011) believed that nurses must practice to the fullest extent of their education and work as equals with physicians and other healthcare leaders to create high quality, safe, effective and efficient healthcare. Recommendation #2 of the IOM report stated that healthcare leaders and nursing organizations must expand opportunities for nurses to lead healthcare improvement efforts and redesign systems to produce better patient and organizational outcomes. Based on the recommendations of the IOM report, Yoder-Wise et al., (2013) asserted that nurses in management roles should be prepared with graduate degrees. The authors believed that nursing leaders were the ones required to lead the needed changes in
healthcare and thus should increase their education. Nursing leaders needed to establish minimum levels of education for every level of leadership as their clinical counterparts have done (Yoder-Wise et al., 2013).

Nursing leadership roles and titles are not standardized across the industry which creates a barrier in relation to educational preparation. There are many names for frontline managers and no standard educational expectations. Yoder-Wise et al. (2013) proposed that nurse managers should be prepared at the master’s level in nursing administration. Graduate education was necessary to drive the needed change in healthcare by creating new and innovative approaches to quality and safety initiatives, care processes, productivity and more. Murphy, Scott, and Pawlak (2013) agreed that nurse managers and leaders above them needed to be prepared with master’s level educations or higher. The authors compared the American Association of Colleges of Nursing (AACN) Baccalaureate Essentials to the content of two national certification exams aimed at nurse managers. They found areas of overlap, but after analysis ultimately concluded that baccalaureate education in nursing lacked the breadth and depth required of nurse managers. Therefore they concluded that the master’s level was the educational level that should be required of nurse managers.

Pawlak, Scott, & Murphy (2013) added support to their first analysis by comparing AACN’s Master’s Essentials of nursing to the content of two national nurse manager certifications. Their findings supported that nurse managers should be prepared at the master’s level. Master’s prepared nurses are taught to lead interdisciplinary teams and to be knowledgeable of healthcare policy and organizational systems leadership. The depth of master’s education in nursing is much more appropriate for nurse managers because finance,
business, change leadership, systems theory and complexity science are included in the curriculum.

Not all nursing experts advocate for a master’s degree in nursing administration, but have rather identified an accepted group of competencies necessary for nurse managers to achieve in order to succeed in their roles (Omoike et al., 2011). Several authors approached their studies using the competencies outlined in the NMLP LDF presented earlier (Fennimore & Wolf, 2011; Baxter & Warshawsky, 2014). The LDF was used to outline orientation expectations and to conduct a gap analysis to identify areas of educational support needed for individual managers. Fennimore and Wolf (2011) reported on a nurse leadership development initiative using the LDF competencies, while Baxter and Warshawsky (2014) used the LDF and its accompanying Nurse Manager Skills Inventory to measure managers’ self-assessed competence.

Fennimore and Wolf (2011) reported that the nurse leaders at the University of Pittsburgh Medical Center (UPMC) recognized that some quality indicators were not being met and that these indicators could best be impacted by focusing on development of managers’ skills. UPMC used the NMLP to develop its leadership program for nurse managers. Prior to the implementation of the educational program, new nurse turnover was about 17 percent at six to 12 months and overall nurse turnover was about 10 percent, including nurse managers. Two years following the educational intervention, 92 percent of the participating nurse managers remained in their positions, reflecting a decrease in nurse manager turnover. The nurse managers evaluated themselves using the NMLP Nurse Manager Skills Inventory tool and noted an overall increase in self-perceived competence from 20 to 27 percent.

Baxter and Warshawsky (2014) used the NMLP self-inventory tool to survey nurse managers with varying levels of experience to understand their self-assessed competence time
using Benner’s five point Novice to Expert Scale. They compared nurse managers from the University of Kentucky, an academic medical center and the Lexington VA hospital. The findings among the institutions were similar. Of note was that it took about six years of experience for most managers to reach a level of 3-competent in most areas of competence. Clinical Knowledge the competency that most nurse managers scored the highest. Most did not reach the level of 4-proficient when scoring financial management competencies, regardless of the nurse managers’ years of management experience. Fennimore and Wolf (2011) noted similar findings with regard to financial management. After leadership education, they too assessed self-perceived competence of the nurse managers, and financial management was rated the lowest of all the competencies.

Omoike et al. (2011) reported on a nurse manager certificate program offered at the University of Illinois, Chicago’s academic medical center, in cooperation with the university. The certificate program was built on competencies which were consistent with the NMLP. They measured pre and post education self-perceived competence as well as importance of each area of competence. They noted, as Baxter and Warshawsky (2014) did, that nurse managers rated unit level competencies at a higher level of importance than system level ones. The nurse managers improved in their self-assessed competence in all areas following education. These managers rated their competence with financial management lower than all other areas.

Omoike et al. (2011) and Fennimore and Wolf (2011) emphasized the need for administrative support for the development of frontline leaders, citing their impact on staff and patient satisfaction, staff turnover rates, quality, safety, and fiscal outcomes, as well as the health of the work environment. Baxter and Warshawsky (2014) recommended competency based programs to assist in development of nurse managers, citing the same impact of this key role.
Whether a master’s degree program or a competency based orientation or certificate program, these authors all acknowledge the importance of developing nurse managers in this changing and increasingly complex healthcare environment.

**Findings pertaining to nursing and finance**

As healthcare becomes increasingly complex in the environment of the Affordable Care Act and accountable care initiatives, it is imperative that nurse managers understand and actively participate in financial matters that affect every aspect of their daily work. Traditionally, the relationship between nurses and finance personnel has been strained, largely due to a lack of understanding and a difference in focus (Douglas, 2010; Studer, 2010; Allegretto & Michelson, 2014). From a nursing perspective, financial personnel are seen as very inflexible and simply concerned with money, not quality, safety and human lives (Douglas, 2010). Nursing departmental goals seem too intangible from a finance department perspective (Douglas, 2010). Thus, how do we get nursing and finance, seemingly disparate departments of healthcare together to accomplish the goals of healthcare organizations?

Several authors cite examples from healthcare organizations that have successfully forged partnerships and achieved some impressive outcomes. Allegretto and Michelson (2014) reported on hospital initiatives which focused on creating collaborative relationships between finance and nursing departments in order to address quality and budget variances. Nurse leaders at Yale New Haven developed an innovative way to help the two departments speak a similar language by referring to quality variance indicators (QVI) rather than budget variances. Showing clinicians how variations in practice led to poorer quality and safety outcomes was helpful. By redesigning clinical processes, patients did better overall and the organization performed better fiscally. As a result of nursing and finance personnel working together to identify areas of needed
improvement, Yale New Haven Hospital realized savings of $1.9 million due to care redesign and improved outcomes.

Madigan and Harden (2012) and Allegretto and Michelson (2014) reported on UNC Chapel Hill’s success by appointing an Associate CNO to be in charge of all nursing fiscal matters. Through several regularly scheduled educational and collaborative sessions, nurse managers were empowered to address budget variances and be accountable for their units’ budgets. At the same time, finance personnel were taught to look at the overall goals of the organization to balance patient outcomes with financial targets. As Madigan and Harden (2012) pointed out, too many nursing hours cost more than necessary to the organization. Likewise, too few nursing hours can be detrimental to patient outcomes and therefore more costly. Nurse managers need to be partners with financial personnel in order to balance the needs and outcomes of the organization. UNC Chapel Hill saw a decrease in nursing personnel expense of 7.6 percent following their efforts to improve collaboration between nursing and finance departments and improved education and support of nurse managers.

Douglas (2010), Studer (2010), and Valentine, Kirby, and Wolf (2011) also discussed examples from several healthcare systems that committed to developing collaborative relationships between finance and nursing departments. Valentine, Kirby, & Wolf, 2011 asserted that commitment at the leadership level to support and educate nurse managers was vital to the successes seen at Spectrum Health in Michigan and Yavapai Regional Medical Center in Prescott, AZ. Douglas (2010) shared the story of collaboration at Northwestern Memorial in Chicago. The CNO took the development of financial competence of her nurse managers very seriously and forged a relationship with the finance department to facilitate ongoing achievement
of organizational and unit level goals. Not only did productivity improve, but quality, safety and satisfaction metrics improved. Nurse turnover and satisfaction were also positively impacted.

Studer (2010) emphasized the same commitment and collaboration at three other hospitals in Texas, Tennessee, and California. He explained that through true collaboration and understanding the “why” of both the nursing and the finance perspective helped these organizations make progress toward their fiscal and quality goals. Studer reported such outcomes as decreased staff turnover and top performance with quality and safety indicators and successful programs implemented by nursing departments to capture patients leaving the Emergency Department without being seen (Studer, 2010). By presenting a business case for an extra nurse rounding in the ED one hospital recouped over 480,000 dollars and prevented 600 patients from leaving without being seen (Studer, 2010). This showed a complete return on investment plus a large amount of recouped revenue. Had the nurse manager not been prepared to present a business case for the nursing position, this achievement could not have happened.

Studer (2010), Douglas (2010), and Valentine et al. (2011) also espoused the importance of providing nurse managers with useful, meaningful tools which will help them to measure and meet their productivity and quality goals more easily and in real time. These authors also emphasized ongoing regular opportunities to have questions answered and to have collaborative discussions with the finance department regarding variances in budget performance. The nurse managers were able to find variances that they were unaware of prior to these initiatives, such as incremental overtime pay resulting from nurses staying beyond their shifts to chart or not coming and going on time (Douglas, 2010). The nurse managers also learned to explain acceptable variances, related to patient care needs, and the importance of presenting a business case for staffing initiatives (Studer, 2010).
Learning to speak a common language and educating nurses and finance personnel to the other side’s concerns can result in cost avoidance and savings overall. Studer (2010) cited savings of 3 to 4 percent in overtime usage once the “why” was explained to staff. They were able to free up a million dollars which was converted to capital dollars as a result, and was used to update the monitors on a unit, as just one example of how savings can help improve the healthcare environment. Valentine et al. (2011) reported on Mainline Health in Pennsylvania. Mainline Health, like UNC Hospital in Chapel Hill, hired a nursing leader to be the finance liaison for the department of nursing. Through education, transparency, accountability and sharing a common language with the finance department, they were able to realize a two million dollar savings in productivity over a two year period.

Studer (2010) cited savings on productivity, increased patient satisfaction, decreased hospital acquired conditions, decreased length of stay and increased nurse manager engagement and alignment with organizational and fiscal goals as positive outcomes in the three hospitals he reported on. By giving clinicians the tools needed to understand and be accountable to their units’ budgets, and providing ongoing leadership support and education, nurse managers were able to see positive outcomes for their patients.

There were several common themes and recommendations to develop nursing’s relationship with healthcare finance (Table 2). Organizational commitment to the development of nurse managers and creation of meaningful education and tools was present in all of the studies regarding nurse managers and financial matters. Ongoing collaboration and cooperation between the departments of nursing and finance needs to be an expectation and facilitated by leadership on both sides. According to Muller (2013), nurse managers need to have an understanding of revenue vs. cost centers and expense per patient day or other operational
efficiency metrics. Nurse managers need to understand the benchmarking that is done with peer organizations and how this relates to their units’ performance. It is vital that this understanding is continually discussed and reinforced (Studer, 2010; Valentine, Kirby, & Wolf, 2012).

Table 2. Key Recommendations for Developing Nurse Managers

<table>
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<tr>
<th>Recommendations</th>
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<tr>
<td>Provide competency based education and orientation to nurse managers</td>
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<td>Standardized expectations industry wide for nurse leaders at all levels</td>
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<td>Require Master’s level education for nurse managers</td>
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<tr>
<td>Promote a collaborative relationship between Nursing and Finance departments</td>
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<tr>
<td>Create meaningful tools to help managers monitor financial metrics</td>
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<tr>
<td>Provide leadership support for the development and education of nurse managers</td>
</tr>
<tr>
<td>Establish accountability and ownership of organizational goals (fiscal, quality, safety)</td>
</tr>
<tr>
<td>Provide ongoing finance education and support for nurse managers</td>
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</tbody>
</table>

**Limitations**

There were a limited number of studies reporting outcomes and there was a lack of standardization across studies. While some studies used the competencies from AONE’s (2006) LDF, others used similar lists obtained from reviews of the literature. Each of the studies and EBP reports involved samples from single institutions or small samples from two institutions. All but one study referenced individual hospitals or health systems within a single region that formed their own evidence based education systems for their nurse managers. The challenge for nursing leadership is create and adopt an evidence-based national standard for education of nurse leaders uniformly implement competency expectations.
Discussion

This literature review reinforces the need to support and develop nurse managers as the frontline leaders of healthcare units. Nurse managers impact nurse and patient satisfaction and organizational outcomes related to patient outcomes at the unit level. By investing in nurse manager development, healthcare organizations can address issues of staff satisfaction and turnover, quality of care and processes of care metrics impacting the bottom line. In the current culture of healthcare reform in the United States, clinicians and hospital leaders are challenged to conserve funds and work smarter. When nurse managers understand healthcare financial management as well as how to lead change at the unit level, they will work more collaboratively and efficiently with the finance department. Education of nurse managers is only a part of helping to develop these leaders. Managers need ongoing support and information, meaningful reports and tools to help them achieve success. They need leaders above them who value and respect the role of nurse manager enough to support and develop it.

The examples of nurse manager competency development mentioned in some of the articles pointed out that the nurse managers who completed didactic education were still not sure they were comfortable with financial management (Omoike et al., 2011; Valentine et al., 2011). Baxter and Warshawsky (2014) found that managers assessed their financial management skills as competent once they had 6 to 9 years of experience and never assessed themselves at the proficient level as they did in other domains of competency, as one would expect. The managers who underwent financial competency development seemed to be more successful in that they had leaders committed to the ongoing relationship between nurses and finance personnel (Studer, 2010; Valentine et al., 2011; Madigan & Harden, 2012). They also had ongoing support, forums for discussion of questions related to budgets and finance and meaningful tools and reports.
Conclusion

Nurse managers are valuable members of healthcare organizations who have not received needed supportive education and training in the recent past. Much attention has been focused on the attainment of needed competencies by nurse managers. In the last five years, growing evidence related to institutions’ attempts to support and develop nurse managers has been published. Some organizations realized that they were developing the leaders at levels above nurse managers and were not addressing nurse managers’ needs (Fennimore & Wolf, 2011; Allegretto & Michelson, 2014). As a result these organizations were missing some of their fiscal and quality targets. There is wide acceptance of the nurse manager’s effect on the work environment and their key role in impacting outcomes at all levels (Douglas, 2010; Omoike et al., 2011; Sanford, 2011; Titzer et al., 2013). In summary, evidence supports the need for focused education and support of the nurse manager role.

While there are not yet nationally mandated competency requirements for nurse managers, AONE and AACN have made an effort through their development of the LDF. The competencies listed in the LDF are comprehensive and widely accepted by the professional community of nurse leaders, but are not being implemented consistently. Standardizing practice and education is yet to be implemented consistently. This would be the next logical step for nursing as a profession. Just as clinical nurse practitioners have developed minimum standards for their education and practice, so too should leadership in nursing at all levels.

As the IOM (2011) states, nurses are greatest in numbers of all healthcare personnel and because of their primary role with patients and sheer numbers, are uniquely qualified to partner with healthcare leaders to implement the necessary changes to improve and sustain our healthcare system. Nurse managers should therefore be better prepared to take up this task. Furthermore, because quality and safety and fiscal matters are more linked together than ever
before (Studer, 2010; Fennimore & Wolf, 2011; Allegretto & Michelson, 2014), it is imperative that nurses are well versed in finance and quality.

There is support for ongoing education and competency based development of nurse managers. That said it seems that financial management competencies present the largest challenge and can have the greatest impact on healthcare organizations (Omoike et al., 2011; Sanford, 2011). Nurse managers are responsible for the largest workforce in healthcare and need to understand how to manage efficiently to sustain healthcare organizations. That being the case, nurse managers require this type of knowledge and ability to engage in the planning of initiatives at all levels of healthcare organizations. Nurse managers have the ability to directly impact outcomes and the bottom line and should be involved in redesigning care processes and making positive changes throughout their organizations.
Chapter 3

Manuscript 2:

Exploring Constructivist Learning Theory and its Methods for Teaching Nurse Managers
Abstract

Objective: To explore the existing professional nursing literature for applicability of constructivist learning theory to education of nurse managers.

Background: Constructivist learning theory is student-centric rather than teacher-centric, asserts that learning is active and knowledge is acquired as a result of social interactions and engagement with experiential learning activities. Some strategies used are clinical narratives, case studies, discussion and debate, field trips, guided experimentation, peer tutoring, problem based learning, and simulation.

Methods: Used CINAHL and ProQuest and PubMed databases. Key words used in various combinations were: constructivism, learning theory, nursing education, nurse managers and continuing education. Initially, 38 articles were returned. After culling these for relevance and filtering for articles from 2010 to present, and only from peer reviewed sources and scholarly journals, ended with 15 articles and two book chapters. There were only two articles returned related to learning theory and teaching nursing managers until the search was expanded to include the years 2000 and later. This returned one relevant article. The final total was 16 articles and two book chapters.

Results: There is wide support for using constructivist learning theory for clinical and didactic nursing education and limited literature which supports the use of a constructivist approach to educate nurse managers.

Conclusion: A constructivist approach may be appropriate to teach nurse managers. There is much written about necessary manager competencies, but methods for knowledge and competency acquisition need to be developed and tested using a theoretical base.
Background

Constructivist learning theory espouses that the acquisition of knowledge does not rely upon behaviors such as reading or memorization of facts, but rather a complex process of constructing knowledge from individual experiences and interactions (Getha-Eby et al., 2014). Constructivism is considered student-centric, where the student must be actively engaged in the process, rather than teacher-centric where all knowledge is conveyed from a lecture platform (Brandon & All, 2010). The purpose of this paper is to explore the professional nursing and educational literature for evidence regarding the applicability of constructivist learning theory to the education of nurse managers. This paper will explore constructivist learning theory and related teaching methods supported by this theory, report common themes and findings, and make recommendations for application of this theory in educating nurse managers.

According to a review of the professional nursing literature, many nurse educators continue to teach as they were educated; using traditional content-heavy lecture formats (Brandon & All, 2010; Handwerker, 2012; Pettigrew, 2015). The concern, however, is that many nursing graduates enter the professional practice environment well educated with factual knowledge, and yet have difficulty with synthesis and application of their knowledge (Josephsen, 2013; June, Yaacob, & Kheng, 2014; Kantar, 2012). Many new graduates have difficulty with critical thinking and are not prepared to recognize and respond to changes in patients’ clinical conditions. This can lead to adverse patient outcomes (Getha-Eby, Beery, Xu, & O’Brien, 2014) due to inadequate experience with application of concepts. For instance, a new nurse may identify a lung sound as crackles, yet not be able to connect this to the underlying issue of congestive heart failure, thus failing to anticipate its potential sequelae. Because of this, the
patient may decline further before necessary interventions are implemented, resulting in a poor outcome.

Most nurses are accustomed to the type of education experienced commonly in undergraduate programs. Traditionally, nursing school classrooms are lecture based and teacher-centric. This means that students are not actively engaging in the teaching and learning process, but receiving content from the teacher. Getha-Eby et al. (2012) stated that theories of learning from the 1940s and 50s such as the Tyler model were heavy with content and teacher driven, not allowing students the time to cognitively process concepts in a way that would be applicable in real life situations.

Accrediting bodies such as the Commission on Collegiate Nursing Education (CCNE) and The National League of Nursing (NLN) rely on Tylerian type methods because they are easily measurable and they clearly define learning goals by categories of content to be delivered (Handwerker, 2012). Handwerker (2012) acknowledged the use of lecture formats and teacher-driven learning to be necessary in some instances so that new content may be delivered. However, memorization of facts was not deemed to be adequate on its own to create the type of deeper learning needed to apply such facts. Hence, teaching methods which created authentic experiences through the use of interactive, collaborative methods were recommended (Handwerker, 2012; Heiman, 2013; Pettigrew, 2015).

There is a general consensus among authors that nursing education needs to shift from traditional teacher-driven, teacher-centric curricula to student-centric models (Handwerker, 2012; Kantar, 2013; Pettigrew, 2015). Many constructivist learning techniques have been explored and found to be effective means for knowledge acquisition and for improving critical thinking skills. Kantar (2014) stated that new nurse graduates must have a body of knowledge
and the ability to use this knowledge to effectively transition and problem-solve in clinical practice settings. Similarly, nurses transitioning to management roles have difficulty assimilating and acquiring the type of education and orientation which will help them succeed in their new roles (Omoike, Stratton, Brooks, Ohlson, & Storfjell, 2011). Thus, an exploration of constructivist learning theory and its methods may prove fruitful for nursing student education as well as for continuing education of registered nurses acquiring new knowledge and skills (Dumchin, 2010).

Methods

Databases searched were CINAHL, PubMed and ProQuest. Key words used in various combinations were: constructivism, learning theory, nursing education, nurse managers and continuing education. Searches were limited to articles from scholarly sources and peer reviewed journals, and only documents from the last five years. Articles which addressed constructivism and its related techniques used for nursing education at any level were included. Articles and studies which were not related to the education of nurses or nursing students were eliminated. Thirty eight articles were culled for relevance, and the net result was 15 articles and two book chapters. Because there were only two articles directly related to nurse manager education, the search was expanded to the year 2000. This yielded one more article for a final total of 16 articles and 2 book chapters. The articles included 6 studies (two qualitative case studies, two quasi experimental pretest/posttest, one pilot study, and one qualitative action research), three reviews of literature, three concept analyses, two expert opinion, and two EBP case reports. Finally, studies and tools referred to by the authors of these articles and studies were cited in the references of this paper as well.
Findings

There were several themes which emerged in the literature. First, constructivism was defined as a theory and its historical context in education discussed (Brandon & All, 2010; Dumchin, 2010; Handwerker, 2012). Second, Getha-Eby et al., 2014 and Handwerker, 2012, recommended the use of constructivism to guide role transition of nursing students to practice and experienced nurses to management and other new roles. Third, multiple teaching methods associated with constructivism and their application in real life circumstances with nursing students (four studies) and nurse managers (two studies) were identified and described (Hanson, 2013; Garrity et al., 2014; June et al., 2014). The sections that follow will report findings according the themes outlined above.

Defining Constructivist Learning Theory

Constructivism is a theory which asserts that learning is an active process in which learners construct new knowledge by linking new concepts to their own knowledge and experiences (Brandon & All, 2010; Dumchin, 2010). Constructivism has its roots in social and cognitive psychology, and research regarding the ways in which individuals learn (Brandon & All, 2010). Swiss developmental psychologist Jean Piaget is credited with cognitive constructivist theory, while Russian social psychologist Lev Vygotsky is associated with social constructivism (Handwerker, 2012).

Jean Piaget described learning in terms of assimilation and accommodation. Assimilation involves taking on new ideas into one’s existing mental framework, while accommodation is the cognitive process the learner goes through to incorporate new information that is in disagreement with past knowledge and experience (Brandon & All, 2010; Handwerker, 2012). Individuals make adjustments in their thinking in order to create new knowledge that makes sense to them.
Piaget is said to have observed children learning and posited that humans learned through interacting with the environment and within authentic life situations. He described learning as a cognitive process where one gained new perspectives and constructed new knowledge through these interactions (Hunter, 2010).

Vygotsky’s perspective on learning was derived from social psychology, where new knowledge and mental frameworks developed as a result of social interactions (Brandon & All, 2010; Dumchin, 2010; Heiman et al., 2013). Through discussion and comparison of ideas with others, students learned to consider a variety of perspectives and truths, thereby constructing new mental models. Vygotsky posited that humans were life-long learners, who transformed and were transformed by social relationships (Brandon & All, 2010; Handwerker, 2012; Heiman, 2013).

While Piaget and Vygotsky differed in their beliefs as to what influenced knowledge construction, their theories were essentially similar. Unlike traditional teaching and learning methods which focused on teachers handing down knowledge to students in a lecture style format, constructivist education assumed that the learner was an active participant in and creator of teaching and knowledge (Brandon & All, 2010). Constructivist learning strategies promoted active and meaningful learning grounded in real life situations that the student might later encounter in their careers (Heiman, 2013; Josephsen, 2013; Kantar, 2014). This type of learning facilitated transition from the theory learned in class to practice in real situations (Getha-Eby et al., 2014).

Constructivist techniques are learner-centric, not educator-centric (Heiman et al., 2013). These techniques enable the learner to construct knowledge based on the individual learner’s experiences and social interactions. Knowledge is therefore not conveyed by the educator, but developed within and between learners. Learners need the interactive techniques advocated by
constructivism in order to make the information meaningful and relevant to their daily practice. Dumchin (2010) and Brandon and All (2010) noted that this was where adult learning theory intersected and was closely linked to constructivism. Adult learners demand that education be applicable and relevant to their daily work (Dumchin, 2010). These collaborative, active techniques enable the learner to acquire higher knowledge, not just understand memorized facts that are not contextualized (Getha-Eby, 2014; Handwerker, 2012; Hagler & Morris, 2013).

Curriculum redesign using constructivist learning methods

There are many collaborative or active learning techniques which may be used to enhance knowledge construction (see table 3). Hanson (2013) reports success in the use of clinical narratives as an in-class tool for sharing thoughts and opinions, while still valuing traditionally used psychomotor (skills based) and cognitive (fact based) domains. Students read excerpts from Tilda Shalof’s (2004) book A Nurse’s Story: Life, Death and In-between in an Intensive Care Unit, and used reflective questions and dialogue to enhance knowledge as well as the development of attributes such as empathy, caring, valuing, advocating, and other affective attributes central to the nursing role. This activity helped students experience the intensive care (ICU) environment and the nursing role vicariously and was effective as measured by Krathwohl’s Stages of Affective Learning (Hanson, 2013). The author cites nursing theorist Patricia Benner’s (2010) support for discussion of clinical narratives as helpful in reducing the theory-to-practice gap.

Other techniques which encouraged social and peer interaction were the use of blogging (Garrity, Jones, VanderZwan, De la Rocha, & Epstein, 2014) and media such as YouTube videos (June et al., 2014) as novel, interactive, constructivist methods to enhance knowledge uptake. Some interactive methods to enhance knowledge transfer and improve nurses’ critical thinking
and self-reflection included the use of case studies, simulation, problem-based learning (Baker, 2000), discussion, debate, contextual (Josephsen, 2013), and concept based teaching (Handwerker, 2012).

Problem-based learning, case studies, and simulation are all methods which add context to fact based knowledge (Holtslander, Racine, Furniss, Burles, & Turner, 2012; Heiman et al., 2013; Kantar, 2014). Learning by using these methods goes beyond simple understanding to higher levels of comprehension and application, making learning more meaningful (Kantar, 2014). Meaningful learning happens when a learner translates new information into a form that makes sense to her and connects this information to preexisting knowledge, enabling application to real world problem solving (Getha-Eby et al., 2014; Pettigrew, 2015). Students are able to understand concepts more deeply by applying them to authentic situations (Josephsen, 2013). Methods used in clinical nursing education are supported by constructivist theory and techniques and may be beneficial to classroom learning as well (Dumchin, 2010; Heiman et al., 2013; Pettigrew, 2015).
<table>
<thead>
<tr>
<th><strong>CONSTRUCTIVIST LEARNING METHODS AND EXAMPLES:</strong></th>
<th><strong>ASSOCIATED THEORETICAL ASSUMPTIONS</strong></th>
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| **Blogging**                                    | • Learning occurs through collaboration and dialogue  
| • Online discussion forums                      | • Stimulates reflection and learner engagement  
|                                                 | • Learning is a social process             |
| **Concept-based teaching**                      | • Considers the thinking process of the learner  
| • Teaching financial concepts and tying them to everyday nursing scenarios | • Facilitates understanding through making associations between concepts and related scenarios  
| • Teaching fluid and electrolyte concepts and tying these with clinical scenarios such as CHF, renal disease, post-operative hyper or hypovolemia | • Encourages foundational thinking and critical thinking skills  
|                                                 | • Encourages deeper, more meaningful learning |
| **Problem-based learning**                      | • Student centered  
| • Reality-based scenarios given without all the answers so that the learners have to look for more information | • Experiential  
| • Model patients in medical school classrooms: Students must assess, diagnose and devise treatment plans. | • Evokes active learning  
|                                                 | • Increases engagement  
|                                                 | • Increases social interaction and collaboration  
|                                                 | • Causes learners to organize facts in meaningful ways  
|                                                 | • Increases critical thinking and clinical reasoning |
| **Transformative questioning**                   | • Discussion and reflection are constructivist methods which can convey real life experiences and provide context for factual knowledge  
| • Use of clinical narratives to stimulate reflection | • Allows students to vicariously experience and develop understanding of real scenarios |
| • Questions used to cause students to question beliefs and transform them as a result of reviewing Shalof’s book | |
| **Experiential learning**                       | • Provides direct or vicarious experience to reinforce and apply content learned  
| • Clinical rotations                            | • Assists with knowledge transfer  
| • Simulation laboratories                       | • Increases active engagement  
| • Videos, discussion and reflection              | • Increases Clinical reasoning and critical thinking |
Research Study Findings

**Studies focused on new nurse transition to practice.** Two qualitative studies revealed that many new nursing graduates lacked critical thinking skills needed to transition from the theory based environment of the classroom to the real world of clinical practice (Kantar, 2012; June et al., 2014). June et al. (2014) reported that Malaysian nursing graduates were not entering the professional environment with the intelligence, leadership, communication skills and creative thinking ability that employers wanted in a new nurse. Similarly, Kantar (2012) reported the same lack of preparation and thus poor retention of new graduate nurses in Lebanon. Because of the difficulty with role transition, many new nurses left their jobs within the first year, and some even left the profession altogether. Both studies explored methods of addressing these deficiencies through employing constructivism and its active learning techniques.

June et al. (2014) explored the use of YouTube videos and other interactive activities such as role play and recording and reviewing class sessions aimed at stimulating critical thinking and engagement. Students responded favorably, stating they were more interested and engaged during these interactive classes. They showed greater levels of interaction with peers, and demonstrated increased problem solving ability after the interactive learning techniques were used (June et al., 2014). Students who were actively engaged seemed more likely to retain and be able to apply the information.

Kantar (2012) surveyed preceptors of nurse graduates to identify major themes at play during new graduates’ transition to clinical practice. Survey questions were guided by Tanner’s (2006) Judgement Dimensions which described four areas of judgement employed by nurses regarding patient assessment: 1) noticing, 2) interpreting, 3) responding, and 4) reflection. Nurses assess patients and must notice the characteristics of their patients’ assessments, have the
ability to interpret this data and respond appropriately. Similar to the nursing process where nurses evaluate outcomes, nurses must engage in continual reflection in order to discern if what is being done for patients is effective. The implication of the study was that preceptors of the new graduate nurses were able to evaluate the nurse graduates using these four phases of judgement, and based on this, found that many nurses had difficulty interpreting patient assessment data beyond the “noticing” phase. According to Kantar (2012), nursing education needed to address higher level learning so that new graduates not only had knowledge, but the ability to apply that knowledge in the care of their patients.

June et al. (2014) and Kantar (2012) found that new nurses responded best to a variety of collaborative learning approaches. For example, through the use of simulated scenarios and case studies that mirrored real life practice, novice nurses were able to move beyond lower levels of learning such as identifying and defining to higher levels such as application and interpretation of facts (Kantar, 2012). The use of these collaborative learning methods created better critical thinking, engagement and the ability to transfer knowledge and facilitate a smoother transition from school to practice (Kantar, 2012; June et al., 2014).

**Studies focused on the application of constructivist theory and methods in nursing curricula.** Several authors demonstrated positive results using constructivist pedagogies in nursing curricula. (Hunter & Krantz, 2010; Holtslander, Racine, Furniss, Burles, & Turner, 2012). Constructivist teaching methods were used to develop courses on cultural competence (Hunter & Krantz, 2010) and qualitative research methods (Holtslander et al., 2012). Both courses were taught in person and online. Students demonstrated improved knowledge in the given subject areas when authentic experiential learning techniques such as case studies, discussing of cultural autobiographies, role play and problem solving scenarios, and immersion
in real life practice situations were implemented (Hunter & Krantz, 2010; Holtslander et al., 2012). Students had significant improvements in knowledge in the subject areas. Using collaborative learning techniques, students were immersed in real life experiences that promoted self-reflection (Hunter & Krantz, 2010), collaboration, and the ability to problem solve (Holtslander et al., 2012). Furthermore, the positive results post-education were consistent whether the education took place in person or online.

Holtslander et al. (2012) used the Four Component Instructional Design (4C/ID) model to guide their qualitative research methods course design. This design included four key concepts that resonated with both adult learning and constructivist learning theories: 1) Learning tasks should be authentic and applied to real world tasks; 2) Students should be given supporting information; 3) Information should be provided at the time needed; and 4) Students need opportunities for “part-task” practice. In other words, tasks could be divided into smaller parts to gradually build skill and confidence. The belief was that utilizing authentic experiences would foster the kind of complex learning required to master course content. In spite of a lack of evidence to support nursing student-centered pedagogy to develop online courses, they used 4C/ID and other constructivist approaches such as online discussions and online collaboration opportunities with the professors in order to help students solidify their understanding of course content. Ultimately, students in the classroom as well as the students taking the course online effectively learned and applied the new knowledge (Hunter & Krantz, 2010; Holtslander et al., 2012).

Hunter and Krantz (2010) evaluated a cultural competence course which used student-centric active learning techniques, and experiential learning activities guided by Campinha-Bacote’s (2003) Constructs of Cultural Competence. The researchers sought to determine
whether using these constructivist techniques would support the acquisition of cultural awareness, desire, knowledge, skill and encounters (Campinha-Bacote, 2003). Learning modules were focused on each of these constructs. Effectiveness of constructivist methods was measured using a tool developed by Campinha-Bacote (2002): Inventory Assessing the Process of Cultural Competence Among Healthcare Professional Revised (IAPCC-R). Using a pretest/posttest model, Hunter and Krantz (2010) found that there was upward movement in all constructs post education. Furthermore, the sample was divided between an online and face-to-face delivery, and no difference in the outcomes of these classes was noted.

**Studies focused on nurse manager education.** Two studies addressed frontline clinical leaders or nurse managers’ acquisition of competence (Phillips & Byrne, 2013; Omoike et al., 2011). The authors recognized that frontline leadership was vital to the work environment as well as patient safety and quality and sought to develop competency focused courses to assist in manager development. Methods used were online and classroom learning (Omoike et al., 2011) to teach concepts and skills, and a combination of classroom and action learning (Phillips & Byrne, 2013) to enhance the leaders’ ability to apply what had been learned. Action learning involves addressing an issue or problem, reflecting on the results of the action taken, and then making changes based on the reflection (Phillips & Byrne, 2013). Each leader undertook a practice based innovation or project and did an evaluation of the innovation. The overall response to the both courses was positive. Phillips and Byrne (2013) noted increased alignment with organizational goals, higher motivation and teamwork, and greater collaboration among frontline managers. Omoike et al. (2010) found their subjects had increased knowledge and self-perceived competence in all areas except financial management post education (Omoike et al., 2011).
Unfortunately, Omoike et al. (2011) did not address actual learning theories or methods, but only the content requirements. The coursework content was driven by the competencies that needed to be developed in managers. The authors did address the need for further study to evaluate best teaching methods in the future. They also acknowledged that a mix of academic and experiential learning could enhance knowledge and skill acquisition. This study supports the need for further study into best theoretical and pedagogical approaches for teaching nurse managers new skills, and especially to address their further educational and experiential needs with regard to financial management.

**Limitations**

Most studies and articles were focused on nursing education and new graduate transition rather than continuing education and role transitions of experienced nurses. Furthermore, studies occurred in single organizations, included small sample sizes and thus results were not generalizable. Most studies pointed to a need for further research based on learning theory and nursing curricula. Of four articles related to nurses already in practice, one was an expert opinion and concept analysis of constructivist approaches to educate nurses transitioning to an operating room environment. Two studies addressed competencies for nurse managers and educational programs for achieving said competencies, but only one presented a course based on constructivist theory (Phillips & Byrne). The final article was an expert opinion of necessary components of a graduate degree program for nurse managers.

**Discussion**

Nursing education must address increasingly complex demands of patients in the present day. Nurses must be able to integrate skills with knowledge as well as application of concepts. Often nurses transition from the classroom to the clinical environment and are unable to bridge
the gap between the list of facts they have learned in the classroom and the implications of these facts as they relate to the practice environment (June, 2014; Kantar, 2014). Therefore, education of nurses needs to address real life situations and the ability to collaborate and simulate practice based scenarios, an opinion that is supported by constructivist theory.

According to Handwerker (2012), in addition to teaching nursing students facts and skills, educators must teach them to “be” nurses through cases, simulations, peer interaction, and other interactive techniques which help link skills and knowledge with real life practice. Nursing education needs to address not just content, but context, in order to make the content “come to life.” Therefore, rather than teaching only the theory and principles behind nursing, educators need to facilitate knowledge transfer through the use of concept based application in real scenarios. For example, the concept of fluid balance may be linked to cases of congestive heart failure and hypovolemia to illustrate the concept in different situations. This enhances understanding and application of this concept. The ultimate goal is to create confident, competent nurses, able to integrate knowledge in the care of patients.

Aside from the articles focused on nursing students, the limited studies and articles cited in this paper do not contain enough information about constructivist theory on their own to make an argument for or against the use of related pedagogies for educating nurse managers. That said, the body of literature as a whole compels one to consider the possible benefits of using constructivist techniques to connect concepts to the daily work of nurse managers.

Implications for practice

While most of the literature dealt with undergraduate nursing education and the transition from classroom to clinical practice, the principles of constructivism and its collaborative techniques may be applied to experienced nurses learning new skills such as
perioperative nursing (Dumchin, 2010), and to nurses transitioning to management roles (Phillips & Byrne, 2013). National nursing organizations have recommended that learner-centered pedagogies be instituted to facilitate knowledge transfer and application (Handwerker, 2012; Kantar, 2014; Pettigrew, 2015). This trend toward meaningful, contextual learning is very applicable to ongoing staff development in hospitals, preceptorship of new nurses and even nurses transitioning to new roles such as nurse management positions.

Concept Based Learning (table 3) is a constructivist technique that could be used to convey new knowledge and principles to nurse transitioning to management roles. For instance, showing nurse managers what finance terms mean and how these concepts can be interpreted in terms of nurses’ daily work would be more meaningful to them. Role playing and simulated scenarios might be effective in teaching conflict resolution and to illustrate how this might happen in the practice environment. Teaching transformational questioning and self-reflective techniques could be valuable in helping nurse managers address their own self and professional development. These are a few examples of how actively engaging managers in constructivist learning might be beneficial to acquiring management competence in a variety of areas.

**Conclusion**

Further study and validation of constructivist learning techniques must be tested with nurse managers, as there is a dearth of literature tying learning theory to continuing education of nurse managers. The literature presented, while largely applicable to nursing students, may transfer to education of nurse managers. The value of theoretical frameworks for education is prevalent in the academic nursing community, as illustrated by the greater number of articles addressing nursing student pedagogy.
The connection between new knowledge and experiential learning to solidify and apply knowledge seems to be universally beneficial according to the experts in nursing education, and could be as well for nurse managers. Nurses transitioning to new roles would likely benefit from a variety of experiential and didactic techniques, which bring a context to their new roles and link concepts with real scenarios. More study of nurse manager education and orientation needs to be undertaken to determine if constructivist approaches will yield positive results. Education from a theoretical perspective has not been widely reported for nurse managers so far. Most of the available literature focuses more on the needed competencies for nurse managers and not on the methods for facilitating acquisition of these. Constructivism can be a valuable and applicable theory for educating nurse managers to new knowledge and skills and should be studied further.
Chapter 4

Manuscript 3:

Practice Inquiry Project Report:

Evaluation of an Educational Intervention to Improve Nurse Managers’ Understanding of and Self-Assessed Competence with Personnel Budgeting
Abstract

**Purpose:** The purpose of this paper is to report on the process and outcomes of a DNP practice inquiry project.

**Design:** The design is a pretest posttest comparative evaluation.

**Setting:** The University of Kentucky Healthcare Chandler, Samaritan, and KY Children’s hospitals.

**Subjects:** A voluntary convenience sample of nurse managers was obtained (n=10)

**Intervention:** The intervention was a 2 hour didactic session and an individualized one-on-one educational session focused on general healthcare finance terms and more specifically on personnel budgeting and productivity metrics

**Measures:** The pretest and posttest consisted of 20 questions obtained from healthcare finance texts and preparatory materials for national certification exams. The pre and post self-assessment used the finance portion of the Nurse Manager Leadership Partnership’s (NMLP) Nurse Manager Skill Inventory (AONE, 2006)

**Results:** A paired sample t test was used to determine if there was a significant difference in means pre and post education. There was a significant (p=0.001) difference in posttest scores as compared to pretest scores. Pre and post education self-assessed competence questions (11 questions) were divided between unit level financial competence (six questions) and system level financial competence (five questions). Both means showed significant differences post education.

**Conclusions:** Because the sample size was very small and was a convenience sample, these results may be attributed to chance. The results obtained while not generalizable, do point to the potential effectiveness of a hospital based financial management course aimed at nurse managers.
using similar material and teaching techniques. These materials and methods should be studied using multiple institutions and regions to validate the use of the content as well as the constructivist techniques and tools.

Key words: Nurse managers, nurse leaders, financial management, financial knowledge, competency.
Nurses transitioning to manager roles often do not have orientations structured around competencies needed to function in this new role. (Fennimore & Wolf, 2011) Even with experience and education many nurse managers still do not rate themselves as competent, especially with regard to financial matters (Omoike, 2011; Baxter & Warshawsky, 2014; Douglas, 2014). Financial management is linked to quality and safety outcomes in healthcare organizations. It is imperative that nurse managers understand the economics of healthcare and achieve basic competence with financial management in order to achieve the goals of their patient care units and healthcare organizations (Studer, 2010; Sanford, 2011).

Nurse managers are generally chosen because of their stellar performance in the clinical domain (Douglas, 2010; Omoike, Stratton, Brooks, Ohlson, & Storfjell, 2011; Sanford, 2011; Titzer et al., 2013). They are seen as leaders, and it is assumed they will transition effectively to a management role. However, many nurse managers report that they did not receive formal education and orientation to their roles, and that what they did learn was acquired from on the job experience (Muller, 2013; Yoder-Wise, Scott, & Sullivan, 2013; Hadji, 2015). The nurse manager role is pivotal in achieving organizational outcomes, healthy work environments, staff and patient satisfaction (Titzer, Phillips, Tooley, Hall, & Shirey, 2013; Baxter & Warshawsky, 2014; Hadji, 2015). It is vital, therefore that these managers are supported and developed to assure success in healthcare organizations.

**Background and Significance**

In several studies of nurse manager competence, many reported feeling least competent with financial management knowledge and skills (Fennimore & Wolf, 2011; Omoike et al., 2011; Baxter & Warshawsky, 2014). As healthcare becomes increasingly complex in the environment of the Affordable Care Act and accountable care initiatives, it is imperative that
nurse managers understand and actively participate in financial matters that affect every aspect
of their daily work. Traditionally, the relationship between nurses and finance personnel has
been strained, largely due to a lack of understanding and a difference in focus (Douglas, 2010;
Studer, 2010; Allegretto & Michelson, 2014). From a nursing perspective, the finance
department is seen as very inflexible and simply concerned with money, not quality, safety and
human lives (Douglas, 2010). Nursing’s goals seem too intangible from a finance department
perspective (Douglas, 2010). Because financial matters are linked to quality and safety metrics
more than ever before, it is vital that nurses and finance personnel learn to speak a common
language (Studer, 2010; Valentine, Kirby, & Wolf, 2012).

Several institutions achieved positive outcomes in quality, safety and fiscal metrics as
well as increased satisfaction of nurse managers and staff nurses following focused financial
education and ongoing support of nurse managers (Douglas, 2010; Studer, 2010; Allegretto &
Michelson, 2014). Organizational commitment to the development of nurse managers and
creation of meaningful education and tools were common themes present in all of the studies
regarding nurse managers and financial matters. Ongoing collaboration and cooperation between
the departments of nursing and finance was an expectation and facilitated by leadership on both
sides. According to Muller (2013), nurse managers need to have an understanding of revenue vs.
cost centers and expense per patient day and other operational efficiency metrics. Nurse
managers need to understand the benchmarking that is done with peer organizations and how this
relates to their units’ performance. It is vital that healthcare financial concepts are continually
discussed and reinforced with nurse managers (Studer, 2010; Valentine, Kirby, & Wolf, 2012).
Theoretical Framework

While many agree on the types of competencies necessary to achieve success as a nurse manager, the method of conveying knowledge needs to be explored using a theoretical framework. Constructivism is a theory which asserts that learning is an active process in which learners construct new knowledge by linking new concepts with their own knowledge and experiences (Brandon & All, 2010; Dumchin, 2010). Constructivism has its roots in social and cognitive psychology, as well as in the research regarding the ways in which individuals learn (Brandon & All, 2010). Unlike traditional teaching and learning methods which focus on teachers conveying knowledge to students in a lecture style format, constructivist education assumes that the learner is an active participant in teaching and creator of knowledge (Brandon & All, 2010). Constructivist learning strategies promote active and meaningful learning grounded in real life situations that the student might later encounter in their careers (Heiman, 2013; Josephsen, 2013; Kantar, 2014). This type of learning facilitates transition from the theory learned in class to practice in real situations (Getha-Eby et al., 2012).

There are many collaborative or active learning techniques which may be used to enhance knowledge construction. Problem-based learning, case studies, and simulation are all methods which add context to fact based knowledge (Baker, 2000; Hanson, 2013; Heiman et al., 2013; Kantar, 2014). Learning by using these methods goes beyond simple understanding to higher levels of comprehension and application, making learning more meaningful. Meaningful learning happens when a learner translates new information into a form that makes sense to her and connects this information to preexisting knowledge, enabling application to real world problem solving (Getha-Eby et al., 2014; Pettigrew, 2015). Students are able to understand concepts more deeply by applying them to authentic situations (Josephsen, 2013). This evidence
based practice inquiry project will demonstrate the use of didactic lecture and discussion formats as well as interactive, scenario-based techniques. These constructivist techniques should enhance the nurse managers’ ability to understand and apply financial knowledge and terms to everyday nursing scenarios such as staffing and productivity.

**Purpose Statement**

The objective of this project was to evaluate the impact of an educational intervention on nurse managers’ knowledge and self-assessed competence (2 one-hour didactic sessions, and a two hour one-on-one session) with the financial aspects of staff budgeting.

**Evaluation Questions**

1) Does focused didactic education consisting of 2 one-hour sessions, PLUS a 2 hour, one-on-one scenario-based training session improve nurse manager knowledge about the meaning of financial terms and calculations required for management of staffing budgets?

2) Do nurse managers have greater self-assessed competence with financial management competencies after participation in focused financial education?

**Methods**

**Design**

This project was evaluated using a pretest/posttest design. The program was developed to be delivered in two or three parts. All sessions were taught by the principal investigator, a DNP student who has certification as a nurse executive (NE-BC) through the American Nursing Credentialing Center (ANCC, 2006), experience as a nurse manager, and has completed graduate coursework in healthcare finance. First the PI developed an evidence-based two hour didactic session containing lecture and group problem solving, guided by PowerPoint slides. The participants had the option to attend two one hour classes, but all opted to combine the two hours
The second part was a two-hour one-on-one session using the managers’ unit budgets and HPPD reports to clarify and demonstrate material learned in didactic sessions. The first aim to be evaluated, nurse manager knowledge of financial terms and calculations after the educational intervention was measured by determining the differences in test scores pre and post education. The second aim to be evaluated, nurse manager self-assessed competence with financial management knowledge and skills was measured using a pre and post education self-assessment tool.

**Instruments**

To measure nurse managers’ self-assessed competence with financial knowledge competencies, the American Organization of Nurse Executives (AONE, 2006) Nurse Manager Skills Inventory Tool, derived from the Nurse Manager Learning Partnership (NMLP) Learning Domain Framework [(LDF) AONE, 2006] was used. The LDF is a result of the collaboration of the AONE and the American Association of Critical Care Nurses (AACN, 2006) and combines their collective expertise in identifying a set of competencies nurse managers need for success. These competencies are divided into three domains: The Art, The Science and The Leader Within (Table 1). The Nurse Manager Skills Inventory is divided into self-assessment questions related to the three domains. The self-assessment questions for financial knowledge were used for this project (AONE, 2006). These eleven questions addressed unit level financial matters (six questions) and system level financial matters (five questions). The skills inventory scoring is based on Benner’s (1984) Novice to Expert scale: 1=novice, 2= advanced beginner, 3= competent, 4= proficient and 5= expert.
Nurse managers’ knowledge of healthcare finance concepts was measured using questions from healthcare finance texts as well as from the Nurse Executive Board Certification exam preparation materials [American Nurses Credentialing Center (ANCC), 2006; Finkler, Kovner, & Jones, 2007; Gapenski, 2012]. Questions were chosen to be congruent with the the financial self-assessment in the Nurse Manager Skills Inventory (AONE, 2006). The same texts and materials were used to develop the educational intervention so that the self-assessment, pretest, intervention and posttest were all congruent. The tests and intervention were focused on
personnel budgeting concepts primarily and general healthcare finance concepts second. See table 4 for a summary of measures and tools used

Table 4. Table of Measures

<table>
<thead>
<tr>
<th>Variable name</th>
<th>What is measured</th>
<th>When measured</th>
</tr>
</thead>
<tbody>
<tr>
<td>Knowledge of finance and productivity terms</td>
<td>20 test questions obtained from healthcare finance texts and certification exam preparatory materials. Each question is worth 5 points. Pretest and posttest questions are comparable.</td>
<td>Pre and post education</td>
</tr>
<tr>
<td>and concepts related to personnel budgeting</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Manager self-assessed competence with financial management</td>
<td>Scores on financial questions on the NMLP Nurse Manager Skills Inventory Tool. Uses 5 point Benner’s Scale. Average of the scores on these questions will be measured.</td>
<td>Pre and post education</td>
</tr>
</tbody>
</table>

Sample and Setting

After the University of Kentucky (UK) Institutional Review Board (IRB) and the Chief Nurse Executive Approved the project proposal, an email invitation was extended to all of the patient care managers at UK Chandler, Samaritan, and KY Children’s hospital. UK Healthcare is an academic medical system of over 900 beds.

The desired sample size was ten to 20 participants, and of 38 invited, a total of 11 participants volunteered; ten were able to complete the project. One volunteer did not begin the project for personal reasons. The participants (n=10) were all female and Caucasian nurse managers. They had a range of experience in nursing of seven to 30 years with a mean of 17.75 years’ nursing experience. The range of nurse manager experience ranged from 0.25 years to 20 years and a mean of 4.68 years’ experience. Nurse managers had either bachelor’s degrees (80%) or
Master’s degrees (20%) and two (20%) had national certifications in nursing management (Table 5).

Table 5. Participant Demographics

<table>
<thead>
<tr>
<th>Variable</th>
<th>n</th>
<th>Range</th>
<th>Mean/SD</th>
<th>Percent</th>
</tr>
</thead>
<tbody>
<tr>
<td>Years in nursing</td>
<td>10</td>
<td>7-30 yrs</td>
<td>17.75 yrs/ 8.2234</td>
<td></td>
</tr>
<tr>
<td>Years as manager</td>
<td>10</td>
<td>.25 – 20 yrs</td>
<td>4.68 yrs / 6.52339</td>
<td></td>
</tr>
<tr>
<td>Gender m/f</td>
<td>10</td>
<td></td>
<td></td>
<td>100% female</td>
</tr>
<tr>
<td>Race</td>
<td>10</td>
<td></td>
<td></td>
<td>100% Caucasian</td>
</tr>
<tr>
<td>Degree BSN/MSN</td>
<td>10</td>
<td></td>
<td></td>
<td>80% BSN / 20% MSN</td>
</tr>
<tr>
<td>National Certification yes/no</td>
<td>10</td>
<td></td>
<td></td>
<td>20% yes/ 80% no</td>
</tr>
</tbody>
</table>

Intervention

Informed consent (Appendix A) was obtained during the months of December 2014 and January 2015. The participants completed a pre education financial self-assessment (Appendix B) as well as a basic demographic form (Appendix C). The financial self-assessment questions were taken from the AONE (2006) NMLP Nurse Manager Skill Inventory. Six of the questions addressed financial competencies that were of importance at the unit level, and five of the questions were focused on financial competencies at the system level. Once all of the participants provided consent and completed their baseline self-assessments and demographic surveys, they were provided with their choice of class dates, times and locations to allow for maximum flexibility.

During the first classroom session, the participants completed the 20 question pre-test (Appendix D). The outline for the didactic portion of the education (Appendix E) covered basic healthcare finance terms such as cost center, revenue, expense, fixed and variable budgets,
productive and non-productive hours, indirect and direct productive hours, flex budget, and budget variances, with emphasis on personnel budgets and hours per patient day (HPPD, Appendix F) productivity metrics. Didactic sessions and individual sessions were conducted during February 2015 through the end of March 2015. At the end of the didactic sessions, the pretest was reviewed and answers explained and discussed to enhance understanding.

During one-on-one sessions with the nurse managers, HPPD reports (Appendix F) for the individual units were reviewed line by line to assure the managers understood the terms and values on the report. Each HPPD report contained one week of information for a given nursing unit. The reports used Full Time Equivalents (FTE) rather than actual number of nursing hours to reflect nursing hours worked each day. The midnight census reflected the number of patients for whom care was provided each day during the week reflected. The direct care HPPD targets were shown on the report to reflect bedside staffing. The report contained further information about indirect hours and nonproductive hours. These terms were defined and discussed in class, and clarified further by analyzing the HPPD reports one on one. Staffing plans were compared to the HPPD targets and nurse managers were shown how the financial terms used on the HPPD reports related directly to staffing and other paid nursing hours for their units. Furthermore, scenarios which created budget variances were illustrated and discussed.

Interactive Excel® spreadsheets (Appendix G) were created for each unit’s staffing and level of care so that managers could visualize and understand how the financial reports and staffing were linked. The sheets contained calculations, and by simply entering the patient census and number of staff working the managers could determine on a daily basis how their units were performing with regard to productivity targets (Appendix G). By the end of the one-
on-one sessions, participants were asked to complete their post education self-assessment (Appendix B) and 20 question knowledge posttest (Appendix D) within 2 weeks.

**Results**

The pretest knowledge scores ranged from 35 to 80 percent with a mean score of 61 percent (SD 16.6333). The posttest knowledge scores ranged from 75 to 100 percent with a mean of 86.5 percent (SD 7.4722). Using IBM SPSS version 22 (IBM Corp: Armonk NY), paired sample t tests were performed to determine if there were significant differences in knowledge test score and self-assessed competence score means pre and post education. There was a significant (p=0.001) difference in pretest knowledge scores (mean score 61 percent) as compared to posttest knowledge scores (mean score 86.5 percent; table 6). Pre and post education self-assessed competence questions (11 questions) were divided between unit level financial competence (6 questions) and system level financial competence (5 questions) to see if there was improvement in one versus the other. Both showed statistically significant differences post education (table 7) with unit based competency mean change from 1.649 pre to 2.366 post (p=.0003) and system level competency mean change from 1.56 pre to 2.0 post (p=0.009).

Table 6. Differences in Pretest and Posttest Means

<table>
<thead>
<tr>
<th>Test</th>
<th>Range of scores</th>
<th>Mean</th>
<th>Standard deviation</th>
<th>Level of significance using paired t test</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pretest</td>
<td>35 – 80 %</td>
<td>61%</td>
<td>16.6333</td>
<td>p= 0.001</td>
</tr>
<tr>
<td>Posttest</td>
<td>75 – 100%</td>
<td>86.5%</td>
<td>7.4722</td>
<td></td>
</tr>
</tbody>
</table>
Table 7. Difference in Self-Assessment Means Pre and Post Intervention

<table>
<thead>
<tr>
<th>Unit level Finance</th>
<th>Mean</th>
<th>Standard deviation</th>
<th>Level of significance using paired t test</th>
</tr>
</thead>
<tbody>
<tr>
<td>Self-assessment</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Pre education</td>
<td>1.6490</td>
<td>0.77748</td>
<td>p= 0.000311</td>
</tr>
<tr>
<td>self-assessment</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Post education</td>
<td>2.3660</td>
<td>0.71271</td>
<td></td>
</tr>
<tr>
<td>self-assessment</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>System level Finance</th>
<th>Mean</th>
<th>Standard deviation</th>
<th>Level of significance using paired t test</th>
</tr>
</thead>
<tbody>
<tr>
<td>Self-assessment</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Pre education</td>
<td>1.560</td>
<td>0.6786</td>
<td>p= 0.009</td>
</tr>
<tr>
<td>self-assessment</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Post education</td>
<td>2.00</td>
<td>0.8844</td>
<td></td>
</tr>
<tr>
<td>self-assessment</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Discussion

Nurse managers do not consistently receive education and support from their superiors to gain knowledge and competence with financial management. Even with years of experience, many nurse managers do not reach competence or proficiency with financial management (Omoike et al., 2011; Baxter & Warshawsky, 2014). So while the education offered in this evidence based project improved nurse managers’ knowledge and self-assessed competence with financial management, they still did not assess themselves at the competent level.

It is vital that nursing educators and administrators study further to find what approach will increase self-assessed competence and knowledge with financial management, to help nurse managers achieve proficiency and expertise with financial management. Nurse leaders at the University of Pittsburgh Medical Center (UPMC) and University of North Carolina, (UNC) Chapel Hill hospitals showed promising progress through the employment of a nurse
administrator dedicated to nursing fiscal affairs and ongoing development of nurse leaders’ understanding of fiscal matters in their institution (Allegretto & Michelson, 2014; Madigan & Harden, 2012). Through the use of regular collaborative meetings with nursing and finance leaders, nurse managers became more competent with financial management. The recommendations that came from nurse leaders at UPMC and UNC were that nurse managers and finance department personnel need regular collaboration and a common language; nurse managers need regular and ongoing mentoring and development in the area of financial management in order to gain greater competence (Allegretto & Michelson, 2014). Nurse managers also need meaningful tools to assist with monitoring of their daily productivity (Douglas, 2014). Because the Affordable Care Act has resulted in quality metrics being linked with reimbursement, nurse managers need to drive quality and safety performance as well as financial performance (Studer, 2010; IOM, 2011). Staffing levels affect quality of care and therefore patient outcomes, so financing appropriate staffing levels is also of great import (Madigan & Harden, 2012).

The AONE (2006) and AACN (2006) developed a framework of competencies necessary for nurse managers to be successful and effective. Yoder-Wise et al. (2013), recommended graduate education at least to the master’s degree level for any level of nursing leadership from frontline manager up to higher levels of administration. However, our national licensing boards have not enforced minimum requirements for education and skills needed at these levels, nor have healthcare organizations and centers of higher education in nursing implemented the standards consistently.

Yoder-Wise et al. (2013) recommend a master’s in nursing in order to be prepared to manage at the unit level. These authors posit that the MSN essentials are most congruent with
the competencies required for nursing management or other leadership roles. Further study comparing outcomes of nursing units led by master’s prepared managers vs. bachelor’s prepared managers could yield greater information. Furthermore, education may not be the only answer to the problem of nurse managers’ lack of competence with financial management. Large scale studies involving formal education as well as ongoing organizational programs for leader development such as the ones at UPMC and UNC need to be conducted to determine the best methods for developing nursing managers and leaders.

Constructivist methods need to be studied further as well. Within this small evidence based intervention, it seems that using concept based, experiential methods did help the nurse managers to understand their unit personnel budgets better and to link financial terms with nursing concepts used in daily practice. By showing nurse managers their staffing patterns, and explaining them in terms used on their budget reports, they were able to gain a greater understanding of the regularly used financial terms, such as FTE and HPPD.

Limitations

This educational intervention was short in duration relative to college courses or even certificate courses and leadership development modules delivered in hospitals. Ideally, the intervention would be more comprehensive and involve ongoing support and development. This project’s results were consistent with the findings of studies and articles indicating that financial management is one of the most difficult skills to attain and that many nurse managers still do not feel competent after many years in the management role (Omoike et al., 2011; Baxter & Warshawsky, 2014). However, the study sample was too small to extend this assumption to the population level. Sixty percent (n=6) of the subjects were nurse managers with less than two years of experience. There were only two managers (20%) with greater than 10 years’
experience. Furthermore, all managers came from the same health system, with the same type of orientation and exposure to financial metrics. While many of these metrics are used throughout the industry, such as HPPD, there is no measure to account for organizational variables experienced within an individual health system.

Another limitation of the project is that HPPD as a financial metric has not been proven to be the best metric for productivity of nursing units, even though HPPD is widely used throughout the U.S. (Douglas, 2014; Kirby, 2015). HPPD cannot account for changes in acuity and nurse experience levels. An experienced nurse will work more efficiently than a novice nurse (Benner, 1984; Kirby, 2015). Some patients are very ill, but do not require intensive nursing care hours (Kirby, 2015). HPPD cannot account for individual patient characteristics which can make a nurse’s day extremely difficult and can cause a more intensive care requirement than another. However, HPPD is widely used by healthcare organizations to benchmark based on average staffing patterns for specific patient populations. While it is not the best reflections of what individual patients require in terms of nursing hours per day, it is the metric many nurse leaders must use for now, and mastering HPPD will enable nurse managers to understand how their budgets and staffing patterns are created as well as how to monitor productivity.

Conclusion

The use of constructivist methods such as concept based and problem based learning were effective in teaching this group of managers how financial reports and jargon applied to their daily work. The terms learned were applicable to weekly HPPD reporting and monitoring and helped these managers to better understand the terms and what circumstances in their daily work caused variances to the positive or negative. The managers left the education with a better
understanding of what causes some budget variances and how to discuss and report on some unavoidable and inevitable variances in terms familiar to finance personnel.

For the future, constructivist methods and standardized educational content need to be explored for use in developing nurse managers. In keeping with the findings of the literature, financial education needs to be delivered and then supported by nursing and finance department leaders on a regular and ongoing basis. Simply delivering the material in a classroom setting is not enough. Nurse managers need to have mentors and ongoing support and the ability to have questions answered in a non-threatening environment (Douglas, 2010; Fennimore & Wolf, 2011; Allegretto & Michelson, 2014). Furthermore, constructivist methods which emphasize interactive learning and meaningful tools which help with knowledge transfer should be considered for use in clinical practice. Minimal educational standards may need to be required for nursing leadership as well so that nurse managers and their superiors are meeting evidence based standard of practice. As leaders, we are to uphold the standards for the industry, yet we do not have our own required curricula and competency standards at this point. In this increasingly complex healthcare environment, nurses must have support and education to make the mastery of financial management more attainable.
Chapter 5

Practice Inquiry Project Conclusion
Project Conclusion

Nurse Managers’ competence is vital to creating healthy work environments and impacts staff and patient satisfaction, patient quality and safety outcome measures and fiscal outcomes (Baxter & Warshawsky, 2014). Staff turnover is often linked to dissatisfaction with the frontline nurse manager (Sanford, 2011). Staff turnover as well as manager turnover can lead to lapses in patient care consistency and decreased quality of care (Warshawsky et al., 2013). Thus, turnover is expensive to organizations both in staff replacement costs as well as in patient outcomes (Fennimore & Wolf, 2011). Poor patient outcomes are undesirable and impact healthcare organizations’ reimbursement (Douglas, 2010). Addressing nurse manager competence can help improve the health of the work environment, satisfaction, quality and fiscal outcomes.

Nurse managers are often selected based on clinical performance and are not adequately prepared to succeed in the manager role (Douglas, 2010; Omoike et al., 2011; Sanford, 2011; Titzer et al., 2013). Even Managers who have been in practice for a long time, and those who have undergone leadership courses often feel financial management competencies are the most difficult to attain, and do not feel competent (Omoike et al., 2011; Baxter & Warshawsky, 2014). In light of the complexity of the healthcare environment today, and the cost of healthcare at an all-time high, it is vital that nurse managers receive competency based orientations, education and ongoing support in their roles.

Some nurse experts advocate for nurse managers to attain a master’s level education (Pawlak, Scott, & Murphy, 2013; Yoder-Wise et al., 2013). Other experts advocate for competency based orientation along with ongoing support and collaboration with finance personnel and leadership support as vital to nurse managers’ development and ongoing competency in financial management (Douglas, 2010; Fennimore & Wolf, 2011; Madigan &
Harden, 2013; Allegretto & Michelson, 2014). Because personnel costs make up the largest part of the budget nurse managers are accountable for (Douglas, 2010), this was the focus of the practice inquiry project.

The pretest/posttest project design addressed nurse manager knowledge and self-assessed competence with financial management of their personnel budgets. The results point to a positive outcome using constructivist methods such as problem based and concept based learning. While the sample size was too small to be clinically significant, the test scores and self-assessed competence scores did demonstrate a statistically significant difference in means.

Larger scale studies are necessary to determine best practices for educating nurse managers to new roles such as management. Further study into whether master’s level education, competency based orientations and ongoing support and collaboration with finance are truly best practices. Further study of the HPPD metric vs. acuity based or other ways of budgeting for staffing are also needed.
Appendix A

Informed Consent form

Consent to Participate in a Research Study

Evaluation of the impact of an educational intervention on nurse managers' understanding of and self-assessed competence with managing nursing personnel budgets

WHY ARE YOU BEING INVITED TO TAKE PART IN THIS RESEARCH?
You are being invited to take part in this research study focused on nurse manager knowledge about and self-assessed competence with the unit personnel budget. You are being invited to take part in this research study because you are a nurse manager in a University of Kentucky Healthcare (UKHC) Enterprise facility. If you volunteer to take part in this study, you will be one of up to 20 people to do so.

WHO IS DOING THE STUDY?
The person in charge of this study is Sue McFarlan BSN, RN, CCRN, NE-BC, a graduate student in the DNP program of the University of Kentucky College of Nursing. She is being guided in this research by Nora Warshawsky PhD RN. There may be other people on the research team assisting at different times during the study.

WHAT IS THE PURPOSE OF THIS STUDY?
This study will test the impact of a focused educational intervention (including didactic as well as individual scenario-based training) on nurse managers’ knowledge and self-assessed competence with managing their personnel budgets.

WHERE IS THE STUDY GOING TO TAKE PLACE
Subjects will be managers from UKHC Chandler, Good Samaritan, and Kentucky Children’s Hospitals. Classroom sessions will be offered at each facility at a variety of times. Classroom time will total 2 hours and will be divided into two sessions. Individual sessions may vary and can range from 1 to 2 hours depending on the needs of the individual manager and units managed. The total amount of time you will be asked to volunteer is 4-6 hours between December 2014 and May 2015.

WHAT WILL YOU BE ASKED TO DO?
All subjects will be asked to complete a measure of financial self-assessed competence before and after the educational sessions. During the January 2015 -March 2015 timeframe, you will be asked to attend 2 – 1-hour classroom sessions where you will take a financial knowledge pretest before education. You will be asked to participate in one individual session that will focus on simulated work-related situations; you may choose to participate in additional sessions as desired. After completion of the education session and individual training session(s), you will be asked to complete a posttest and the self-assessed financial competence survey. April 2015. The total time commitment for this study will be 4-6 hours between December 2014 and May 2015.
WHAT ARE THE POSSIBLE RISKS AND DISCOMFORTS?
To the best of our knowledge, the things you will be doing have no more risk of harm than you would experience in everyday life. There is a possibility of test anxiety, frustration, and embarrassment. Your scores and information will not be made accessible to anyone associated with your work or your performance evaluation.

WILL YOU BENEFIT FROM TAKING PART IN THIS STUDY?
There is no guarantee that you will benefit from taking part in this study. However, some nurse managers have experienced increased knowledge and confidence after taking part in an educational intervention that covered the same content. There may be KBN CEs available free of charge to participants, pending approval from UKHC Staff Development.

DO YOU HAVE TO TAKE PART IN THIS STUDY?
If you decide to take part in the study, it should be because you really want to volunteer. You will not lose any benefits or rights you would normally have if you choose not to volunteer. You can stop at any time during the study and still keep the benefits and rights you had before volunteering.

IF YOU DON’T WANT TO TAKE PART IN THE STUDY, ARE THERE OTHER CHOICES?
If you do not want to be in the study, there are no other choices except not to take part in the study.

WHAT WILL IT COST YOU TO PARTICIPATE?
Total hours spent will be 4-6 hours. There is no charge for taking part. It is possible that you will be using your own time and transportation in order to participate if your schedule requires classes to be on non-work time.

WILL YOU RECEIVE ANY REWARDS FOR TAKING PART IN THIS STUDY?
You will not receive any rewards or payment for taking part in this study. There may be KBN CEs available free of charge to participants, pending approval from UKHC Staff Development.

WHO WILL SEE THE INFORMATION THAT YOU GIVE?
All data collected will be shared only with the investigating graduate student and her advising committee, and possibly ORI members. No subject/manager’s responses will be identified or associated with a particular unit in a way that can be traced back to that manager. Data will be presented at the student’s capstone defense as well as to nursing leadership. Your information will be combined with information from other people taking part in the study. When we write about the study to share it with other researchers, we will write about the combined information we have gathered. While you will not be personally identified in these written materials, it is possible that University of Kentucky officials may view or copy pertinent materials used in this research that could identify you. We may publish the results of this study; however, we will keep your name and other identifying information private.
CAN YOUR TAKING PART IN THE STUDY END EARLY?

If you decide to take part in the study, you still have the right to decide at any time that you no longer want to continue. You will not be treated differently if you decide to stop taking part in the study. The individual conducting the study may need to withdraw you from the study. This may occur if you are not able to follow the directions they give you. There are no consequences to withdrawing from the study.

WHAT ELSE DO YOU NEED TO KNOW?

There is a possibility that the data collected from you may be shared with other investigators in the future. If that is the case, the data will not contain information that can identify you unless you give your consent or the UK Institutional Review Board (IRB) approves the research. The IRB is a committee that reviews ethical issues according to federal, state and local regulations on research with human subjects, to make sure the study complies with these before approval of a research study is issued.

WHAT IF YOU HAVE QUESTIONS, SUGGESTIONS, CONCERNS, OR COMPLAINTS?

Before you decide whether to accept this invitation to take part in the study, please ask any questions that might come to mind now. Later if you have questions, suggestions, concerns, or complaints about the study, you can contact the investigator, Sue McFarlan at 859-552-5719. If you have any questions about your rights as a volunteer in this research, contact the staff in the Office of Research Integrity at the University of Kentucky between the business hours of 8am and 5pm EST, Mon-Fri at 859-257-9428 or toll free at 1-866-400-9428. We will give you a signed copy of this consent form to take with you.

Signature of person agreeing to take part in the study

Date

Printed name of person agreeing to take part in the study

Name of authorized person obtaining informed consent

Signature of Principal Investigator
Appendix B

Nurse Manager Financial Self-Assessment

Use the following numbers to rate your knowledge and performance related to the finance questions below: 1-novice/beginner; 2-advanced beginner; 3-Competent; 4-proficient; 5-expert. *Circle one answer for each section*

<table>
<thead>
<tr>
<th>QUESTION</th>
<th>1 Beginner</th>
<th>2 advanced beginner</th>
<th>3 Competent</th>
<th>4 proficient</th>
<th>5 Expert</th>
</tr>
</thead>
<tbody>
<tr>
<td>Understanding of health care economics and health care public policy as it applies to the delivery of patient care – includes reimbursement, Medicare, Medicaid, managed care, third party providers, challenges to the current health care policies, key legislative initiatives at local, state, and national level.</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>Unit-/department-based budgeting – includes development methodologies, report formats, analysis rules, how to read a report, balance sheets, and cost report interpretation</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>Creating a budget</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>Monitoring a budget</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>Analyzing a budget</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>Reporting on budget variance</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>Revenue forecasting</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>Expense forecasting</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>Interpreting financial information</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>Concepts of capital budgeting – includes financial definitions for capital categories, depreciation, justification and return on investment (ROI) and return on asset (ROA)</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>Cost-benefit analysis (e.g. new program assessment, purchase versus lease options)</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
</tbody>
</table>
Appendix C

Participant Demographics  

Fill in blanks or circle correct answers

Years in Nursing ______

Years in nursing management _______ Do you have a certification in nursing mgmt.?  

Highest level of education (circle one)  yes_____  No______

- Associate’s degree or diploma
- Bachelor’s degree
- Master’s degree
- Doctorate

Gender (circle one)

- Male
- Female

Ethnicity (circle one)

- Caucasian
- African American
- Hispanic non white
- Hispanic black
- Other_________________
Appendix D

Pretest Questions

Choose the correct letter answer:

1. FTE stands for Full Time Equivalent. One FTE equals how many hours annually/weekly?
   a. 2010/40
   b. 2080/40
   c. 1872/36
   d. 3650/40

2. If a nursing unit has 14 nurses who work 3 twelve hour shifts a week, how many FTE’s is this?
   a. 14
   b. 10.4
   c. 12.6
   d. 11

3. A nursing unit saw 9000 patients last year. What is the average daily census?
   a. 32.2
   b. 24.7
   c. 22.7
   d. 27.8

4. What is the occupancy rate of a 30 bed unit with an average daily census of 24.7?
   a. 82.3%
   b. 85%
   c. 81.3%
   d. 84%

5. Cost center expenses are determined per units of service
   a. True
   b. False

6. A unit of service might be
   a. Patient days
   b. Operating room procedure
   c. Clinic visits
   d. All of the above

7. Direct productive costs are
   a. Costs allocated to my cost center from another
   b. Costs not directly related to patient care
   c. Costs directly related to patient care
   d. Actual hands on patient care time during a shift

8. For a nursing cost center, indirect productive time may be
   a. Orientation hours
   b. Education hours
   c. Committee or meeting hours
   d. All of the above
9. Nonproductive costs might be
   a. Vacation hours
   b. Staff meetings
   c. Sick hours
   d. a. and c. only

10. Concerning one’s personnel costs, Total Cost includes all direct and indirect (productive) and non-productive hours
   a. True
   b. False
   c. Not always

11. If your nursing unit staffs with 4 RNs on the 7a-7p shift, 4 RNs on the 7p-7a shift, 2 techs on the 7a-7p shift and one tech on the 7p-7a shift, how many productive worked hours is this in a 24 hour shift?
   a. 96
   b. 130
   c. 132
   d. 124

12. Your unit staffs with 3 RNs and 2 techs around the clock. This is 120 direct worked hours. How many HPPD is this if your average daily census is 10.7?
   a. 12
   b. 11.2
   c. 10.9
   d. 11.7

13. Nursing cost centers are primarily concerned with
   a. Personnel salaries and supply costs
   b. Supply costs, facility costs (utilities, repairs, cleaning)
   c. Personnel salaries only
   d. Supply costs only

14. If your unit’s budgeted OT use is 2%, how many hours per FTE may be worked as OT annually?
   a. 40
   b. 42
   c. 38
   d. 46

15. This year’s operating budget for 3 South is $1.4 million. Eighty percent of the budget is allocated to personnel costs (wages, taxes, benefits). What is the dollar amount of this year’s personnel budget for 3 South?
   a. $980 thousand
   b. $1.12 million
   c. $1.18 million
   d. $1.24 million

16. Next year, the total budget allocation for 3 South will increase to $1.6 million. However, the personnel costs will also increase by 5% compared with the current year. Based on this assumption, personnel costs next year will be
   a. $1.28 million
   b. $1.36 million
   c. $1.42 million
   d. $1.48 million
17. In the above scenario, as the final round in the budgeting process takes place, the manager is asked to cut the non-payroll budget by 10%. This means that the non-payroll operating budget figure for the coming year is now
   a. $216,000
   b. $224,000
   c. $230,000
   d. $240,000

18. Cost per unit of service will increase as
   a. Volume decreases below the break even point
   b. Volume increases
   c. Acuity increases
   d. Management turnover occurs

19. The planned staffing for 3 South, a 24 bed unit, calls for 1:6 staffing ratio (one staff member for every 6 patients). RNs must comprise 75% of the staff. The unit runs 3-eight hour shifts a day, seven days a week and is generally full to capacity. What is the total number of FTEs needed to staff the unit?
   a. 12.6
   b. 14.4
   c. 16.8
   d. 12

20. A cost center is
   a. A business unit that generates revenue
   b. A business unit that generates expenses
   c. A business unit that generates both revenue and expenses
   d. None of the above

Posttest Questions

1. Which of the following is true?
   a. Cost centers generate revenue
   b. Nursing units are cost centers
   c. Nursing units generate revenue
   d. b. and c.
   e. all of the above

2. When unit of service volume decreases below the breakeven point
   a. Acuity increases
   b. Cost per unit of service increases
   c. Productivity increases
   d. All of the above

3. An ICU has 16 beds and staffs with 9 RNs per 12 hour shift, and one tech. If patient volume is consistent and the unit stays full most of the time, how many total FTEs are required to staff this unit?
   a. 42.12
   b. 43.2
   c. 41.2
   d. 40.24
4. The above unit has an overtime budget of 2.5% per FTE. How many hours may one FTE work annually?
   a. 42  
   b. 52  
   c. 46  
   d. 54

5. This year’s operating budget for 2 West is $1.8 million. Eighty five percent of the budget is allocated to personnel costs (wages, taxes, benefits). What is the dollar amount of this year’s personnel budget for 2 West?
   a. $1.5 million  
   b. $1.53 million  
   c. $1.52 million  
   d. $1.55 million

6. Next year, the total budget allocation for 2 West will increase to $1.98 million. However, the personnel costs will decrease by 5% compared with the current year. Based on this assumption, personnel costs next year will be
   a. $1.565 million  
   b. $1.584 million  
   c. $1.591 million  
   d. $1.572 million

7. In the above scenario, as the final round in the budgeting process takes place, the manager is asked to cut the non-payroll budget by 10%. This means that the non-payroll operating budget figure for the coming year is now
   a. $354,400  
   b. $355,400  
   c. $356,400  
   d. $357,400

8. A nursing unit has 25 nurses who work 36 hours a week and 8 techs who work 40 hours a week. How many total FTEs is this?
   a. 31.5  
   b. 30.5  
   c. 29.5  
   d. 32.5

9. If a person works as a 0.9 FTE, how many hours is this weekly/annually?
   a. 40/2080  
   b. 36/1800  
   c. 36/2080  
   d. 36/1872

10. Your unit staffs with 4 RNs and 2 techs around the clock. This is 144 direct worked hours. What is the HPPD is this if your average daily census is 10.7?
    a. 14.24  
    b. 13.46  
    c. 13.26  
    d. 13.44

11. If all four nurses on 7a shift and 2 on 7pm stay over 30 minutes to chart, what does your HPPD become?
    a. 13.46  
    b. 13.78
12. Nursing cost centers are primarily concerned with
   a. Supply costs
   b. Personnel costs
   c. Both supply and personnel costs
   d. Neither supply nor personnel costs

13. Cost Center budgets are calculated based on expected units of service
   a. True
   b. False
   c. Sometimes

14. Units of service might be
   a. Patient days
   b. Clinic visits
   c. Procedures
   d. All of the above

15. Your unit treated an average daily census of 12.6 patients last year. Finance is budgeting for an increase in patient days of 3% this year. How many total patients are you expected to treat this year?
   a. 4732
   b. 4737
   c. 5979
   d. 5879

16. Productive hours can be divided into two categories:
   a. Non-productive and direct
   b. Indirect and direct
   c. Indirect and non-productive
   d. Overtime and straight time

17. Your unit staffs with 4 RNs around the clock and 2 techs. Also during this 24 hour period, you had a staff meeting where 15 people came and clocked 45 minutes each. Additionally, 3 people came for a 4 hour council meeting. How many indirect and direct hours are you paying today?
   a. 23.25 indirect/ 72 direct
   b. 23.25 indirect/142 direct
   c. 22.5 indirect/144 direct
   d. 23.25 indirect/144 direct

18. Which of the following are indirect productive hours?
   a. Meeting hours
   b. Bedside hours
   c. Sick time
   d. Vacation time

19. Which of the following are non-productive hours?
   a. Manager’s hours
   b. Clerk hours
   c. Vacation time
   d. Bedside hours

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20. Which of the following are productive hours?

a. RN bedside hours  
b. Manager hours  
c. Tech bedside hours  
d. All of the above  
e. a. and c. only
Appendix E

Basic Finance and Unit Productivity for Nurse Managers: Educational Outline

Nurse managers attending this course will be able to:
- Recognize basic budgeting concepts
- Examine budget terms associated with personnel management
- Evaluate budget variances
- Appraise the relationship of financial management concepts to nurses’ daily work
- Assess the historical relationship between Finance and nursing
- Compare the priorities of Finance and Nursing

I. Basic Budgeting concepts
   a. Defining budget-projection, not exact
      i. View some finance reports and analyze parts
   b. Cost center vs. revenue center
      i. Nurse staffing-cost, not revenue center
   c. Fixed and variable costs
   d. Projecting unit volume
   e. ROI-return on investment (basic definition/explanation of how this can help decision process with new proposals)
   f. Capital budgeting/depreciation (basic intro to concepts)
   g. Third party reimbursement (basic discussion as it pertains to daily work)

II. Productivity
   a. Full time Equivalents
      i. Calculations and everyday scenarios
      ii. FTE vs. positions on unit
      iii. How can I get to FTEs from staffing ratios?
   b. Units of service
   c. Staffing costs
      i. Direct care costs/Productive time
      ii. Indirect costs/non-productive time
      iii. Issues with incorrect time reporting, staying over to chart, and other issues which negatively impact HPPD or HPPDE

III. Flex budgeting concepts
    a. Actual vs. budgeted FTEs
    b. Projected volume vs. actual, and what this means in terms of staffing
    c. Exploring ways to meet flex budget

IV. Discussion about finance and nursing
    a. Being able to discuss variances
       i. Examples of daily tools to help with this discussion and manage opportunities before large variances happen
    b. Meet regularly with finance to monitor HPPD and unit characteristic changes.
       i. Changes in unit characteristics over time can mean a change in targets in some cases.
       ii. Keep lines of communication open, factual and respectful
c. Involve nurses at the unit level so they understand the value of closely monitoring staffing and finance and how it can relate to finance as well as quality outcomes.
   i. Trying to manage within about 5% above or below a target is ideal.
   ii. It’s about using resources wisely, NOT cutting back as far as we can
   iii. The patient is still at the center of these discussions.
   iv. Manage closely on days where there are opportunities so that you can “balance” with days you may go over your target due to high acuity and activity.
Appendix F
Appendix G

Sample Unit data: in practice this grid will match the managers’ individual units and will be interactive. That will allow a staffing change to show the effect on HPPD.

### Sample HPPD Calc sheet

<table>
<thead>
<tr>
<th></th>
<th>Value</th>
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<tbody>
<tr>
<td>Intermediate/Progressive Census</td>
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<tr>
<td>Acute Care Census</td>
<td>0</td>
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<tr>
<td>Hospice Census</td>
<td>0</td>
</tr>
<tr>
<td>Sort stay/Obs</td>
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<tr>
<td><strong>TOTAL CENSUS</strong></td>
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<tr>
<td>RN Hours/24 Hours</td>
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<tr>
<td>NCT Hours/24 Hours</td>
<td>48</td>
</tr>
</tbody>
</table>

**Total Direct Care(staffed) hours/24 Hours** 168

**Actual HPPD (staffed hours/patient days)** 11.2

**Target (Earned) HPPD** 10.8

**% Productive** 96.4285714

<table>
<thead>
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<th>Value</th>
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<tbody>
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<tr>
<td>Target RN Hours Acute Care</td>
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<tr>
<td>Target RN Hours Hospice</td>
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</tr>
<tr>
<td>Target RN Hours SS/Obs.</td>
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</tr>
<tr>
<td><strong>TOTAL RN HOURS EARNED</strong></td>
<td><strong>119.55</strong></td>
</tr>
<tr>
<td>Target NCT Hours Progressive</td>
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</tr>
<tr>
<td>Target NCT Hours Acute Care</td>
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</tr>
<tr>
<td>Target NCT Hours Hospice</td>
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<tr>
<td>Target NCT Hours SS/Obs.</td>
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<tr>
<td><strong>TOTAL NCT HOURS EARNED</strong></td>
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<tr>
<td><strong>TOTAL DIRECT CARE HOURS EARNED</strong></td>
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</tr>
<tr>
<td>7P NCTs</td>
<td>2</td>
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</tbody>
</table>

Change staffing here!
References


Hanson, J. (2013). From me to we: Transforming values and building professional community through narratives. *Nurse Education in Practice, 13*, 142-146.


