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EMR Training Tactics: A Case Study of Clinical Staff Training Experiences, Needs and Perceptions

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by

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Abstract

Electronic medical record systems have become essential for giving patient care at health care institutions. The purpose of this study was to explore the training provided to staff at the University of Arkansas for Medical Sciences Northwest Family Medical Center in an effort to identify participant training experiences, needs, and perceptions. This study included qualitative, case study research. There were fourteen participants in the study. A focus group interview was conducted with eight administrative and training participants. Interviews and observations were conducted with six staff members.

The literature review of this study discussed educational theories including andragogy and training techniques. It also reviewed current research on healthcare informatics and the training provided to clinical staff during educational and organizational trainings.

Due to the case study nature of the study, multiple reliability and validity measures were utilized including; an open researcher positionality, triangulation through multiple data sources, purposeful sampling and member checks. Data collected were coded as themes and explanations emerged. The study found that training was lacking for study participants but all wanted training that matched the training techniques suggested through research.

Acknowledgements

Throughout this five year journey, many helped guide me toward the completion of my lifelong goal of getting my PhD. Without the many faculty and staff who guided and encouraged me, this could not have happened. First, I want to thank my advisor, Dr. Murphy. From agreeing to take on a PhD student for the first time to working with me on my non-traditional road through the CIED program, her guidance and help finding my way has been crucial to my success. I would also like to thank my committee members: Dr. Endacott, Dr. Beck, and Dr. Wavering. The time and advice during classes and the writing of my dissertation is greatly appreciated. Finally, I would like to thank the administration and staff members of UAMS. They opened up their experiences and perceptions of the work they do and the EMR system. Without their participation and open thoughts, this study could not have been possible.

Dedication

I dedicate my dissertation and all the work cumulating to this experience to my husband and daughter, Stephen and Dixie Miller. Without their love and support this would have never been possible.

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Chapter One

The days when medical professionals need only to know how to practice their specific field of clinical care roles are over. Today clinical staff must also be technologically proficient. More specifically, with the implementation of sophisticated electronic medical record systems (EMRs), clinical staff are required to report all patient findings, needs, visits and medical billings electronically on patient charts. Medical, pharmaceutical and nursing educational institutions focus their curriculum on learning the science of patient care, and accrediting bodies require very little instruction on interfacing patient care with an EMR (Accreditation Council for Pharmacy Education, 2011; Commission on Collegiate Nursing Education, 2013; Liaison Committee on Medical Education, 2013). On the flip side, professionals learning to work in clinical business offices go through educational programs that focus on data entry within electronic medical record entry but not on specific systems. These Health Information Management programs focus on the processes of the job but not on the specific procedures in any given system (Commission on Accreditation for Health Informatics and Information Management Education, 2015). Despite the lack of emphasis on EMR training during educational experiences, upon entering a place of employment clinical staff are immediately required to input patient care information into an EMR.

Problem, Purpose and Research Questions

While EMRs have been used for over 10 years, little research has been conducted on what type of training clinical staff find to be most beneficial for becoming proficient in EMR use. Of the research conducted previously, researchers indicate that training has positive impacts when it is on the job or through hands-on activities that focus on transferring learning from the training environment to the job (Aaronson, Murphy-Cullen, Chop, & Frey, 2001; Baldwin &

Ford, 1988; Colquitt, LePine & Now, 2000; Lim & Morris, 2006). A lack of existing literature and discussions with medical professionals indicated research was needed to generate an understanding of the needs and best practices for EMR training. The purpose of this study was to explore the training provided to staff at the University of Arkansas for Medical Sciences Northwest Family Medical Center in an effort to identify participant training experiences, needs, and perceptions. Specifically this study had a scope to understand both perceptions and experiences in regards to the training clinical staff received, how those training experiences affected their perceptions of the EMR and their job, and what types of training they felt they needed to effectively complete their job duties. This was accomplished through an intrinsic, qualitative case study design with the following guiding research questions:

1. How is the current EMR System training impacted by research and educational theories?
2. How does the EMR system training received affect the perceptions of the staff toward that same system?
3. In what ways do UAMS Northwest employees think the clinical staff should be trained on the EMR system and how do those views compare to the current training experiences of those clinical staff members?

Significance of the Study

Research has indicated that training programs are often given by system vendors during the initial implementations of electronic medical record systems (Borychi, Armstrong, & Kushniruk, 2009; Zywiak, 2001). However, research review has indicated that these programs are rarely used in complete forms or updated as time and the EMR system progress (Rose, et al.,

2005; Youssef, 2013). Often administrators and information technology professionals are unaware or unable to make needed changes to training programs, leaving clinical staff to learn the detailed system on their own or with outdated materials (Hensley, 2013; Jerant, 1999; McCain, 2008). This issue was identified and discussed by administrators at UAMS and while they indicated a desire to make changes necessary to rectify training problems, they were uncertain of how to effectively proceed. In an effort to investigate this problem and offer solutions to the site's administration, this study used a literature-supported conceptual framework and qualitative data obtained from clinical staff to create a holistic view of the training conditions of the case. The overall goal was to generate suggestions for changes that could positively impact the case location and its clinical staff.

Limitations of the Study

While this study looked to offer great insight for the site it is bounded around, there were limitations. Presented as a case study, the findings of this study were not intended to be generalized to the masses. The findings were valid only to the site it was in reference to (Merriam, 2009). Additionally, due to the qualitative nature of the study, findings were framed around the participants' information and the data analysis techniques and perceptions of the researcher. The perceptions of the participants also cause a limitation due since their perceptions are based on their own personal experiences and that varies from person to person. Data presented by participants was only made valid and reliable by finding like statements between other participants and data points. These self-reported data by participants were perceptional in their own eyes. Through this qualitative study, the researcher also had the ability to incorporate bias to the study through participant selection, data collection and analysis phases. Purposeful sampling was used in an effort to build an inclusive view of the study site. However there was

the possibility of limitations due to uneven participant distributions based on voluntary participation within the study. Other detailed techniques were in place to reduce the bias and increase the participants' validity and data reliability, but it is important to acknowledge this limitation.

Study Framework

Training for clinical staff, including nurses and business office professional on an EMR system is in its general form organizational training. Offered to adult learners in the workforce, organizational training is provided through the use of adult learning principles, educational theories, training techniques, and delivery methods. The learning theory of andragogy, the study of adult learning, provided the base of the conceptual framework for this study (Knowles, 1970). This framework was supplemented with detailed educational and training concepts. These included but were not limited to: the ADDIE model used for instructional design, organizational training techniques like building rapport, motivation, self-efficacy, and methods for training delivery like hands-on computer based training in labs and job shadowing. In addition to this conceptual framework, this study utilized previous research conducted over technological uses in medical training to expose a research gap in regards to EMR training for clinical staff (Aaronson, et al., 2001; Albarrak, 2006; Bamidis, Konstantinidis, Bratsas, & Kaldoudi, 2009; Bernardo, et al., 2004; Davis, et al., 1999; Edmonson, et al., 2005; Hensley, 2013; Jerant, 1999; McCain, 2008).

Nature of Study

This study was selected due to a motivation of the case location and the researcher to determine the issues of training and ways to improve it. Specifically it looked to learn the history of training at UAMS, the perceptions of administration and staff on that training, and

how that history and perceptions affected the view of the EMR. It further looked to develop an understanding of what types of training participants wanted on the EMR in an effort to build a plan to present to UAMS. Data were collected in a qualitative manner from 14 participants. Eight participants underwent a focus group session to discover an overall view of the training history and needs from an organizational standpoint. Six participants participated in both an one-on-one interview and an observation. These data collection techniques gave a view on each participant's personal experiences and perceptions. Documents were also gathered throughout data collection to corroborate the findings.

Definitions

During this study, many concepts and techniques were discussed. These are defined below.

Adult Education: An educational process for adult learners that supports their specific needs in a way that uses their higher level learning skills.

Andragogy: The study of adult learning.

ADDIE Model: An instructional design model that focusses on the steps necessary to create quality curriculum and instructional materials (Reiser & Dempsey, 2011).

Clinical Staff: Staff members who work in clinical environment like an outpatient clinic or hospital.

Continuing Education: Training during job tenure over job processes and procedures.

Compute-based Training: CBT; Learning through the use of media often in a lab setting.

Cross Training: When organizations "improve employee's proficiency levels in roles outside the current responsibilities (Mayhew, 2015).

EMR: Electronic Medical Record System, A system used to collect patient records electronically.

Employee Onboarding: "The process of helping a new employee make the transition to a new organization from the point of (job) offer to their first day" (McNeil, 2012, p. 687).

Health Informatics: A blend of patient health data within a technological interface.

Job Shadowing: On-the-job training where a new employee watches a current employees work to learn.

Learning Transference: Transfer of learning from the training to the job.

Motivation: Giving adult learners the encouragement and belief that what they are learning is for a purpose.

Rapport: The building of relationships and friendliness between trainees and trainers.

Scaffolding: Learning guidance and support on an ongoing basis based on the educational needs of the learner (Pumtambekar & Hubscher, 2005, p. 3).

Self-directed Learning: "ability to learn on one's own" (Knowles, 1975, p. 17).

Self-efficacy: When learners believe they are capable of learning the required information (Colquitt, lePine, & Noe, 2000).

Organization of the Study

The current research utilizes a five chapter organizational structure which introduces the study and its concepts, reviews the literature, and explains the methods utilized, presents the results, and concludes with interpretations and recommendations. Within chapter one, the study problem, purpose and significance are listed in an effort to introduce the general ideas of the study. Following this, the significance and limitations of the study are explained in an effort to offer an open view of what the researcher wanted for the study and the intentions they had for the findings. Wrapping up chapter one, an overview of the study framework is listed. Chapter two details the conceptual framework and provides a review of the theoretical concepts and literature

as they relate to adult learning, organizational training and healthcare informatics. Chapter three details the methodology used to collect and analyze data, and describes the process for final participant selection and their demographics. Formed around a qualitative case study design, this chapter explains components of qualitative research, then details the specific study design. Chapter four of this study reviews the results from data collection, organized through each research question. The research questions are built in a way that promotes themes and explanations from each question to help answer the next. Chapter five wraps up the study by using the conceptual framework and results previously discussed to generate conclusions and recommendations for the case study site.

Chapter Two: Literature Review

There is a plethora of literature explaining the concepts of adult learning and organizational training. Formed over 100 years ago, adult education has been theorized and researched in detail to form a set of ideals on how adults learn best. These ideals, coupled with organizational training models, types, and techniques, help build a foundation for understanding for health informatics training. Understanding health informatics is the first step in gaining a complete understanding of electronic medical record systems (EMR). While research on health informatics and EMRs is available in abundance, specific research conducted on the training over EMRs is minimal. Even more rare are studies that focus on clinical staff experiences and perceptions relative to EMR training and use.

In an effort to frame this study with research, this chapter first introduces a history of health informatics, then reviews the details of the conceptual framework of this study by defining what is adult learning and other pertinent learning theories. Finally, organizational training is discussed by defining what organizational training is, introducing the ADDIE model used to design instructional events, reviewing various training types including onboarding, cross training and continuing education, discusing various training techniques, and then discussing how training effects the perceptions of trainees. Through the discussion on organizational training, both general concepts and research tied to health informatics is presented in an effort to identify the gaps in the research.

Search Processes

Along with the review of textbooks available to the researcher, various search engines, databases and search terms were used in the research process. To discover research on the conceptual framework topics, Google.com, GoogleScholoar.com, and the University of Arkansas

(UARK) and University of Arkansas for Medical Sciences (UAMS) library search engines were used to discover online available research. Google.com was used to search basic concepts and to review how other organizations utilize training. It also was used to build a history of health informatics and the curricular requirements of health care educational institutions.

GoogleScholar.com was used to find peer reviewed articles to validate the findings and generalizations discovered through the textbooks and information from Google.com. It was also used to discover articles referenced in websites found through Google.com searches. Through the UARK and UAMS library search engines, article databases were scoured to uncover specific healthcare related articles. The two databases utilized on these sites included: EBSCO Host and Health Quest. In addition to the search engines and databases, search terms emerged over topics including adult learning, organizational training, instructional design, training techniques, and healthcare training experiences. A detailed list of these search terms organized by topic can be found in Appendix A.

History of Health Informatics

As technologies have advanced and improved through the years, the science of health informatics has emerged. Explained by Hoyt & Bernstam (2009) as "the science of information and the blending of people, biomedicine and technology" (p.2), health informatics is a blend of patient health data within a technological interface. These technological interfaces play a key role in patient care and record management in clinical environments. The types of technological support range from upgraded medical equipment to highly-advanced record upkeep systems.

With the increased technological aspect being brought into clinical staff's workflow, an increase in technical understanding must occur. Based on current accrediting body requirements for many of the clinical programs, understanding how health informatics and specifically

electronic medical record systems (EMR) are integrated into their clinical workload is not required when receiving clinical certifications and degrees (Accreditation Council for Pharmacy Education, 2011; Commission on Collegiate Nursing Education, 2013; Liaison Committee on Medical Education, 2013).

Mainly due to the multitude of informatics driven equipment and EMRs available to learn, the training on health informatics is conducted in basic form in educational institutions, but the specific training is passed from the educational institutions to the clinical environments. Research published in the Journal of General of Internal Medicine in 2008 titled "Challenges to HER (EMR) Implementation in Electronic-Versus Paper-based Office Practices", interviewed practice managers and medical directors in a teaching hospital in New York City. Through qualitative interviewing procedures, the participants indicated that while electronic health and medical record systems have benefits for cost efficiency, the comfort level for use and the training provided during and after implementation was limited (2008). The participants went on to say that the system was only used at about 50% efficiency and training will improve that and the amount of patients able to be seen. It also indicated the need for clear workflows and that efficient procedures need to be in place prior to EMR implementation (Zandieh, 2008). While the study found information regarding the positive impact training could, have it did not detail how training can be implemented of the ramifications of not having training can have on health care organizations. Throughout this literature review, research on clinical and healthcare educational institutions continues to be reviewed in an effort to build a picture of current research that has been conducted in the areas of training and educational events that are available to current and future clinical staff.

Adult Learning

Educational and learning theories have progressed through the years to allow various types of learners and learning situations to be addressed with tested theory. From a classroom setting to an organizational training environment, research has been conducted to offer clear ideas and solutions on how to make an educational situation the most effective possible. Learning needs for adults are no different. Since the early 1900's adult learning has been a validated form of study and practice in educational and workplace environments. Just like other educational theories, adult learning theory went through paradigm shifts from its beginning to the modern theories used today (Merriam, 2001; Merriam & Bierema, 2014).

Foundational History

Adult education was acknowledged as a professional practice in 1926 through the foundation of the American Association for Adult Education (Knowles, 1970; Merriam, 2001). Theorists Thorndike, Bregman, Tilton, and Woodyard published the first book on the topic in 1928 titled *Adult Learning* (Merriam, 2001). Founded through a "behavioral psychological perspective" (Merriam, p.3, 2001), adult learning was investigated using testing situations that normally were timed and required various memory tasks. Psychologist and educator Edward L. Thorndike (1879 – 1949), one of the lead authors of the aforementioned book, published earlier works on the ideals of learning through connections (connectionism). This paved the way for the use of behaviorist theory to be applied in education (Schunk, 2012).

With a strong history and large tie to psychological concepts, early theories on adult education relied on the behavioral perspective with insights driven from research on children. Not until the late 1960's did a separation of the learning needs of adults compared to children

occur with the development of theories focused specifically on the needs of the adult learner (Merriam, Caffarella, & Baumgartner, 2012).

Current Pillars of Adult Learning Theory

Prior to the theoretic work of the late 1960's and early 1970's, adult education was a confusing term used to describe an educational process or activity conducted by or with adults (Knowles, 1970). This changed when theorists Malcolm Knowles and Cyril Houle began theorizing the ideas of andragogy (adult learning theory) and self-directed learning, respectively. Knowles cites Houle's seminal study *The Inquiring Mind*, published in 1961, as well as Allen Tough's (student of Houle) research regarding how adults learn naturally as the research that launched his personal endeavor to create the unifying theory now known as andragogy (Knowles, 1970).

Labeled as the adult equivalent to pedagogy, Knowles explained in his later work that andragogy is simply the "opposite end of the spectrum (to pedagogy)" with an emphasis on the need for self-direction in learning (Knowles, 1970, p.43). Through andragogy, assumptions of the adult learner were established. According to the theory of andragogy, adults are self-directed, intrinsically motivated individuals that use their previously attained life experiences and knowledge to found new learning. Adult learners are also known for being goal-oriented problem solvers with a need to be actively involved in decisions regarding how they will learn. (Merriam, 2001; Knowles, 1970; Wynne, 2013).

One of the key assumptions of adult learning theory, as well as a motivating concept of Malcolm Knowles, is the idea that adults are self-directed learners. These learners are characterized as being managers of their own learning process with a high level of motivation to learn more (Mardziah, 2007). Originally discussed simply as the "ability to learn on one's own"

by Knowles (1975, p. 17), Houle (1961), Tough (1979) and Merriam (2001) progressed the research on self-direction to include encouragement of learning transformation and the ability to initiate learning and learn on their own.

In an effort to help novice learners be self-directed learners, educators in a learning situation implement scaffolding to self-directed learning (SDL) initiatives (Merriam, 2001). Without scaffolding, self-directed learning can result in a negative training experience through trial and error. The Theory of Trial and Error is learning based on reacting to the stimulus presented to the learner (Hull, 1930). This process can cause confusion and frustration for the learner and scaffolding helps eliminate that need. As described by Puntambekar and Hubscher (2005) in their article published in the *Educational Psychologist*, experts in a learning experience provide guidance and support based on an "ongoing diagnosis" of the learner's current level of understanding (p.3). In any given learning situation, there are varied levels of learners. Whether a novice, expert or somewhere in-between, adult learning situations must be flexible enough to guide the pace of learning equally among all participants (Bransford, Brown & Cocking, 2000**).**

During learning experiences, adult learning facilitators need to take the learner level into consideration to determine how the experience should progress. This is much like the progression and changes of learning through scaffolding diagnosis. This keeps the experts in the learning situation on alert and builds a highly collaborative learning environment between expert and novice learners (Mardziah, 2007). Adults naturally use their previously attained life experiences and knowledge as a foundation for the new learning to build upon. Previously attained knowledge can hinder adult learning, primarily by creating a mental block on the new ways or content being learned. However, it is a part of adult life-long learning processes and cannot be ignored.

Life experiences also impact the motivation adults have toward the education and training they receive. Often confused as being a life-long student, life-long learning involves any adult that takes control of and makes decisions for their learning needs based on the goals and means of learning that lay before them (Mocker & Spear, 1982). While this goal orientation may cause adult learners to be demanding and cynical about their upcoming learning experiences, framing the learning with authentic learning activities feeds the need to achieve goals.

In conjunction with goals, adult learners are influenced by intrinsic and extrinsic motivation (Mardziah, 2007). In the multi-institutional study *Barriers to Business Education: Motivating Adult Learners*, researchers investigated how the motivation to learn changed based on age. Results indicated that adult learners are motivated the most by desires for personal accomplishment, being a role model, completion of a long awaited degree or learning new skills. Barriers to this motivation center on the extra responsibilities in addition to learning and the cost to attend a university (Kimmel & McNeese, 2006). When the motivation need outweighs the existing barriers, adults actively pursue learning. This motivation usually begins long before the learning event takes place (Kazlowski & Salas, 1997).

Adult learners want to learn more and may pursue information during a training event. Learning as an adult is not just an activity; it is a need to fulfill goals. Learning needs to have a focus and tie to an area of interest to adults. Adults are motivated by their own personal needs or the needs of their career (Knowles, 1970; Wynne 2013). Motivation is based on each individual and is formed through their own experiences, stage of life, view of the world, and personal needs and endeavors (Roger, 2009).

Through adult learning theory, adult education is described as an educational process for adult learners that supports their specific needs in a way that uses their higher level learning

skills. By clearly stating what the adult will learn and how it impacts them, educators of adults are more likely to create an environment that encourages motivation and spawns the beginning stages of self-direction during the learning experience. Once the educational activity is underway, adult learners will vary on content experience and knowledge.

Organizational Training

Adult learning often takes place during training events in the workplace, also known as organizational training (Wentland, 2003). Organizational training ranges from informal coaching to full scale training programs. Regardless of the training type, it is likely that behind the program or training event there is a designer who works to make the content as high quality and relevant as possible. Training and instructional designers use multiple concepts to help build training programs for organizations. This section looks at the high level concepts used to build effective training programs. While this is not an all-inclusive list, the following concepts present a view of what should be considered when training adults in an organizational setting. These include: an introduction to the ADDIE Model for training creation, deployment, and evaluation; techniques to increase self-efficacy; build rapport with attendees; encouraging learning transference; and evaluating effectiveness.

The ADDIE Model

All training programs are not made equal. Those that utilize a systematic process for creation, deployment and evaluation offer a training experience to employees that is well thought out and more relatable to the trainees jobs. Without this organization, attending employees are likely to become distracted by their other day to day needs (Wentland, 2003). One systematic process used by training experts is the ADDIE model (Reiser & Dempsey, 2011). This is an instructional design model that focuses on the steps necessary to create quality curriculum and

instructional materials. Formulated with five phases to develop and deploy training, the ADDIE model guides instructional designers and trainers toward topic focused, impactful training. The ADDIE phases require the designer to do the following to their topic and training content in the listed order: analyze, design, develop, implement, and evaluate (Reiser & Dempsey, 2011).

Organizational development experts and researchers agree that authoring a training needs analysis, the first stage in the ADDIE model, is integral to the creation of a complete and beneficial training program (Cekada, 2010; Brown, 2002; Diauro, 1979; Holton, Bates, & Naquin, 2000; Miller & Osinski, 2002). The analysis phase of the ADDIE model gives the training designer the opportunity to discover exactly what is needed for the training program being developed. The next two phases, design and development, allow the trainer to write the objectives of the program and then create the curriculum for the program based upon these objectives. The final two phases, implementation and evaluation, deploy the finalized training to the learners and evaluate its effectiveness once completed (Reiser & Dempsey, 2011). While multiple other instructional design concepts are available for use, the ADDIE model takes many of the training techniques listed in the below section into an ordered, linear process.

Techniques to implement the ADDIE model. As described in the elements of andragogy, training adults involves key techniques that help establish a deployed program within the organization and with the attendees. These techniques along with the systematic process listed above builds the effectiveness of organizational training. These techniques include: increasing self-efficacy, building rapport with attendees, encouraging learning transference, and evaluating training effectiveness.

Increasing self-efficacy. Employees tend to learn better when they believe they are capable of learning the required information (self-efficacy) and feel the information is tied to

their current job (Colquitt, LePine & Noe 2000; Ota, 2006; Wentland, 2003). Each person's level of self-efficacy changes at different rates but can be affected by verbal persuasion and emotional cues (Lunenburg, 2011). Verbal persuasion and emotional connections can be made by talking or emailing participants directly regarding your excitement (as the trainer) about their attendance and the value they will bring to the training. Whether training is optional or required, a welcome message is one way to develop relevancy for the information that is about to be taught.

Self-efficacy can be increased before the training even begins by emphasizing the participant's interest in the specific topic(s) and giving them a chance to mentally prepare for the training that is about to take place. With adult learners it is imperative that they believe they will achieve valued learning and be motivated to attend the training (Kirk, 2013; Lunenburg, 2011). Beier and Kanfer (2010) argue that motivation to attend training begins as soon as participants are notified of the training and continues through the training and even into the time they are expected to utilize what they learned in the workplace. A welcome message that makes participants feel they are capable of learning the required information and demonstrates how the information is relevant to current job duties helps set up a firm foundation for motivation to build upon.

Building rapport. Communicating with employees also helps build rapport with training participants. Along with this introductory communication to increase self-efficacy, formatting organizational training with a meet and greet, an introduction of training objectives, question and answer sessions, and a demonstration of what the participants are being trained to do helps create a positive environment that encourages active learning and participation (Kirk, 2013; Wentland, 2003). Not only does this build a team like environment in the training situation, it also gives a clear direction for the training taking place.

As discussed in the explanation of adult learner traits, employees learn best when they are familiar with the world around them and know what is expected of them. Making sure everyone knows each other in the training environment and encouraging active communication helps motivate the learner through the building of social relationships (Lieb & Goodlad, 2005). The introduction of training objectives not only helps build a map of the actual training that takes place but it also helps set up an internal understanding of what is expected of the training participants. Objectives should be built in a way that offers the employee an explanation of the conditions, criterion and expected performance they are to have (Wentland, 2003). The introduction should also set a path of understanding for the employee in the training. This path is important to adult learners as it increases the ability to retain knowledge.

Based on the theory of goal-setting, adult learners have an increase in learning motivation and retention when a clear set of goals are laid before them (Locke & Latham 2006; Wentland, 2003; Yamnill & McLean, 2001). With a direction in mind, employees should also be able to ask questions before the learning takes place. It is extremely important in organizational training for the employee participating to feel like their voice is being heard. This is the first step in building a respectful environment. "Instructors must acknowledge the wealth of experiences that adult participants bring to the classroom" (Lieb & Goodlad, 2005, p.1).

With a social learning environment created that includes solid goals and expectations, the training can commence to the content being presented. Regardless of topic, training meetings work best when the employee participants are actively engaged and have their attention focused on the content presented (Adult Learning Theories and Practices, 2013, Lieb & Goodlad, 2005; Ota, 2006). It is also important to base new information around the prior knowledge the participants' should have over the topic (Adult Learning Theories and Practices, 2013). Engaging

the learners through experiential techniques like simulation, problem solving, group discussion, and case methods helps adults retain the information and build a tie to their career (Ota, 2006; Prince, 2004), which is important for motivation in andragogy as described above. These experimental learning techniques along with the integration of technology into the delivery methods give a variety of options to present to learners.

Learning transference. After training concludes the process of transferring the information from the training environment to the workplace begins. Saks and Belcourt's (2006) study explained that information received in training steadily declines after the event resulting in only 35% of the knowledge being used in the workplace a year after the training. Working with employees to assist in the recall of training information combats this decline.

Yamnill and McLean (2001) found that the use of situation cues presents employees with opportunities to use what they have learned in their actual work environment. These cues can be in a number of forms, but it is important to use them to build training overlearning opportunities after training has commenced. "Overlearning refers to the process of providing trainees with continued practice far beyond the point when the task has been performed successfully" (McGehee & Thayer, 1961 as cited in Baldwin & Ford, 1988, p.68).

Through intentional meetings with participants on a one-on-one or a small group basis, the concepts learned at initial training can be revisited and practiced by the employee with the trainer once again. With the retention curve mentioned in the McGhee & Thayer (1961) study, these meetings should take place periodically over the course of a year, followed by refresher training as often as necessary. These recall methods help build a strong training program and offer reminders of the training concept long after the training is over. This is often done with the use of shadowing or continuing education.

Evaluation of effectiveness. Training program evaluations are almost as valuable as the learners gaining and retaining the information. "Evaluation is the systematic acquisition and assessment of information to provide useful feedback about some object" (Zinovieff, 2008, p.2). Adult learners appreciate when their ideas are heard and want to give feedback on the improvement of training programs (Lieb & Goodlad, 2005). Evaluation techniques vary, including those that are formative, summative, confirmative, meta, goal-based, process-based, and outcomes-based (Zinovieff, 2008).

Evaluation technique(s) should be based on the information trainers want to gather about the training programs, and this often involves an evaluation of the goals and objectives set for the training. Multiple evaluation models exist; however most have emerged from Donald Kirkpatrick's Four Levels of Evaluation and/or Jack Phillips Return on Investment (ROI) (Kirkpatrick, 2009; Phillips, 1997; Zinovieff, 2008). Kirkpatrick's evaluation model measures four levels of learning in training situations including learner perceptions, skills and knowledge gained, usage of the skill on the job, and impact on the organization. Phillips' ROI model uses the same four levels from Kirkpatrick's model, but differs in that Phillips adds a fifth level of evaluation that looks at the return and quality of investment the training makes to the organization (Davidove, 1993; Kirkpatrick, 1996; Zinovieff, 2008). Kirkpatrick's (1996) information for each of the five levels of evaluation cannot be gathered in a single evaluation form or meeting, and should be obtained over time.

Training Types

Training comes in multiple forms. Within organizations the most utilized includes new employee onboarding, cross training, and continuing education. Dick Finnegan, a healthcare human resources director with expertise in how training impacts job retention explains that

strategies and processes must first be reviewed and implemented prior to any training type to work (2010). Burger and Giger (2014), explain that healthcare institutions have trouble implementing these needed changes, but if they are able to implement a successful employee onboarding process, they experience increases in patient satisfaction, medical supply availability and employee retention.

Employee onboarding "is the process of helping a new employee make the transition to a new organization from the point of offer to their first day" (McNeil, 2012, p.687). During onboarding it is important to induct new employees to their new environment including the systems they are a part of. The detail of this onboarding process should be decided by the organizations conducting the training but McNeil encourages a complete onboarding that leaves all questions answered by the employees (2012).

After employees enter into the workforce and become acquainted to their job role, many organizations encourage cross training between employees. Cross training is when organizations "improve employee's proficiency levels in roles outside their current responsibilities" (Mayhew, 2015). Research indicates that when employees take the knowledge they have on their current job roles and add new knowledge on similar roles within the workplace positive impacts occur for both the organization and the employees. The organization saves money by utilizing backup employees while others are out of the office while also encouraging closer teamwork and motivation for the employees (Mayhew, 2015; Belilos, 1999; Volpe, Cannon-Bowers, Salas & Spector, 1996).

In addition to cross training, continuing education on current job functions helps remind employees on the proper processes and helpful techniques. O'Brien, et al., (1999) discuss the impact formal continuing education in the medical field have on health care outcomes. Their

study reviewed 64 studies from 1993 to 1999 regarding continuing medical education (CME) to build intervention and outcome maps of the CME provided. From the research, they found that those CME activities that encourage active participation resulted in changes to professional practices and, on occasion, health care outcomes (O'Brien, et al., 1999).

Training Techniques

Hands-on. In technological training, hands-on training sessions give training participants the ability to work within the system they are learning in a controlled environment (Sisson, 2001). While it is often unstructured and on-the-job, it can be case-based with the instructor using their knowledge of how the job functions to train new employees (Sisson, 2001). It can come in many forms but is always contained around the technology being trained on. These hands on activities can be in the form of in person computer based training or pre-made online learning modules. These two hands on training techniques are discussed below with previous research and their results identified.

Computer-based training. One of the most popular technological mediums used to enhance learning within training programs is the computer. Computer-based training (CBT) gives users the ability to learn through media in a lab setting. It is particularly useful to train with computers on the use of software. This allows for real-time simulation learning, and builds understanding through cases, problem-based learning, and instructor-led situations. Within healthcare settings, research has shown that this type of technical implementation of training may be used to introduce employees to newly implemented systems and software through large, instructor led computer-based labs or modules (Albarrak 2006; Ceusters, De Moor, Bonneu, & Schilders, 1992; Covell, Lemay & Gaumond, 2004; Olagunju Mokwe & Anderson,; Zywiak, 2001).

Organizations with multiple sites present a difficult challenge when planning to implement new technology or continuing education for employees. A study conducted in McGill University Health Centre (MUHC) in 2004 discusses the difficult task of deploying a computer based, networked training program and the challenges faced in the deployment (Covell, Lemay & Gaumond, 2004). The goal of the implementation was to create a self-directed training environment for nurses on five MUHC campuses, to evaluate the building needs by CBT designers and determine the usage quality and perceptions of the CBT. The training was created by an unidentified educational software and then added to a networked server environment (Covell et al., 2004). A live test was conducted in three phases, over a three hour period, in an effort to track the capacity of the server to handle the new CBT. Thirty participants were selected to be a part of the test located from all five different campuses with server capacity results indicating that full-scale deployment would be possible without network bandwidth interruption. Upon completion of the test, research through evaluation forms and focused interviews with nurses found that "the consistent availability of educational resources on the unit has been viewed as a positive benefit for those nurses who use independent learning and are familiar with computers" (Covell, Lemay & Gaumond, 2004, p.207). Nurses without significant computer knowledge did not find the training as conducive and easy to use. Like Covell et al.'s study, many others have found similar results. Reactions to newly implemented CBT is positive; however the outliers are those that do not feel as confident in the navigation of the content electronically (Aaronson, Murphy-Cullen, Chop & Frey, 2001; Devkota, Lamia, Pommer, Smith & Whitman, 2011; Colman-Brochu, Sullivan & Meniger 2009; Harrington & Walker, 2003; Jerant, 1999; McCain, 2008; Youssef, 2013). Covell, Lemay and Gaumond mentioned that this

generally positive outcome makes the lengthy creation time of the CBT modules acceptable (2004).

Research conducted by Colman-Brochu, Sullivan and Meninger looked in detail at how training in a clinical environment on the technological components can be challenging (2009). Specifically, they looked at how training should be implemented in a phased implementation of an EMR that would be used by over 1,200 medical professionals. They discussed the challenge of having to train employees that were not able to devote large amounts of time away from their work area without causing problems for the organization and patients (Colman-Brochu, Sullivan & Meninger, 2009). The plan of the organization was to offer training up to six weeks prior to implementation, which caused concern for the organization related to learning transference. This research described creating online learning modules that employees viewed at their convenience. Through the research the employees indicated that the tutorials were very time consuming to create, and were not as interactive as they would have liked them to be (Colman-Brochu, Sullivan & Meninger, 2009). While this study gave ample information regarding lessons learned on the implementation of CBT training, it did not provide a follow to how effective the training was for the users of the EMR right after implementation and as the system changed through the years.

While CBT can be time consuming for the training designers, it allows for mass usage after distribution. It also offers adult learners the ability to direct their own learning which is a key component for adult learning (Knowles, 1975). Research in educational institutions and clinical organizations has confirmed the usefulness of CBT for system and software training; however, special attention has been given to the computer abilities of participants and availability of the trainer(s) for participants. This type of technical integration for training has to

weigh the time spent by the training designer against the amount of people through the trainings life cycle it will help.

Self-directed learning modules. The use of self-directed learning modules add educational activities outside of the classroom environment. The information located in these systems expand on what is presented in the classroom; however, within healthcare settings it is rarely used as the main source of information. Much research has been conducted on self-directed learning classroom enhancement with the average findings indicating that this type of learning significantly impacted learning in educational institutions and training on EMR systems in clinical systems. Studies indicate that giving healthcare future and current professionals a hands-on, case based training, learning increases during training and the transfer of that learning is more likely when moving to their actual work environment (Bernardo, Ramos, Plapler, de Fiqueiredo, Nadier, Ancao, von Dietrich & Siquelem 2004; Edmonson, Esquivel, Mokkarala, Johnson & Phelps, 2005; Hensley, 2013; McCain, 2008; Taradi, Taradi, Radic & Pokrajac, 2005; Wiecha, Gramline, Joachim & Vanderschmidt, 2003).

Research regarding the use of self-directed learning and education portals within medical training environments is not as readily available as in medical classroom environments. However, researchers at the University of Victoria created a web based education portal for their EMR system (Borycki, Armstrong, & Kushniruk, 2009). A team of EMR and training experts created an online portal for students and clinical employees within the university to review and practice the usage of a demo version of their EMR. A group of 150 test participants were used to investigate access abilities, portal perceptions, and possible portal uses to determine the portal's ability be become a full scale teaching tool regarding health informatics (Borycki, Armstrong, & Kushniruk, 2009). Results indicated that the system helped reduce stress over the use of the

EMR system in real time clinical settings. Clinical staff preferred portal usage during their training and educational experiences at the university. Upon discovering this preference and usage, the organization implemented the portal to the entire organization (Borycki, Armstrong, & Kushniruk, 2009). While this study found that training on a portal was valuable to its usage, it did not look at the training of the actual EMR system the portal was tied to.

Based on the research listed above, the addition of self-directed learning modules should significantly impact the learning over EMR systems by clinical staff. While this does not accomplish the task of deploying the bulk of the content to training participants; it adds the ability for the adult training participants to do personal learning and progress their understanding as they wish. This feeds to the abilities of the adult learner and will help solidify the concepts presented regarding EMR systems.

Job shadowing. In addition to hands-on training, training can also come in the form of job shadowing. "Job shadowing allows the observer to see and understand the nuances of a particular job" (Healthfield, 2015). Research indicates that it is an effective way to both onboard new employees and cross train employees on different jobs within the same company (Healthfield, 2015; McCarthy & McCarthy, 2006; Hamilton & Hamilton, 1997). McCarthy and McCarthy conducted a research on the use of job shadowing in addition to case study research in university settings. Their research found that while case study work, like hands-on computer training sessions and online modules, it does not provide the levels of self-efficacy like experiential learning, that job shadowing offers (2006).

Training Effects on Perception

Training is a powerful tool that can alter the perceptions of the participants on their job, themselves and what they are being trained to do. Many studies have been conducted that report

training perceptions can influence learning transference, but few studies have reviewed how training effects perceptions on the systems they are trained to operate (Baldwin & Ford, 1988; Barling, Weber, & Kelloway, 1996; Bartlett, 2001; Hicks & Kilmoski, 1987; Lim & Morris, 2006).

Abdinnour-Helm, Lengnick-Hall, & Lengnick-Happ (2003) conducted a study on the implementation of an Enterprise Resource Planning system at an institution. Like EMR's, this system was a very robust system that impacted most of the components of the participants jobs. During their study, they discovered that many participants did not receive appropriate training on the system based on their job. The institution was revisited by the researchers a year after system implementation and it was found that there were continued problems using the system to its full potential, and most of the participants who had inappropriate training for their job viewed the system negatively. In their study this was correlated to the length of time at the institution. In other words, the longer participants worked for the institution without the ERP, the harder it was to impact their view of the system in a positive manner (Abdinnour-Helm, Lengnick-Hall, & Lengnick-Happ, 2003).

Another study looked at the relationship between training and organizational commitment. Through a questionnaire, the researchers asked participants, specifically nurses working at hospitals, of their perceived relationship between training and organizational commitments (Bartlett, 2001). Their data indicated that there was a correlated connection between training and the participant's commitment to their employed organization. While this study was over health care facilities and staff, it did not show any explicit ties to EMR training and the commitment participants would have toward the use of it during their tenure at their employed organization.

Study Relevancy

In the modern healthcare industry, everyday job duties are encompassed with various technological tasks. While these tasks range from medical equipment usage to computer input, the most frequent technology task performed by a clinician involves data entry within an EMR system. HealthIT.gov defines an EMR as "a digital version of a paper chart that contains all of a patient's medical history from one practice" (p.1). These systems automate the operations of a clinic or hospital regarding medical patient data as well as financial requirements of patients. This includes patient demographics, visit and medical history, medications, previous communication with providers, laboratory results, and even the tracking of chronic diseases. Housed within a software package, the interface and content within an EMR system varies depending on the vendor that created the system and the institution that implemented it.

As explained in the above literature review, research has been conducted over training delivery in healthcare settings, the views researchers have on training, and even specifically over EMR system implementations. However, there is a gap in the research as it relates specifically to clinical staff's understanding and perceptions of the usage of EMR systems after the system was successfully implemented to the clinic. This same gap widens when the scope of the research changes focus from a clinician (physician, nurse, and pharmacist) standpoint to a business office personnel view. In an effort to start filling this gap, this study is built in a qualitative manner to learn the actual participant experiences and perceptions of both the EMR and the training they received. This exploration coupled with current research should start to build a comprehensive view of clinical staff training on EMR systems.

Chapter Three: Methods

The study was an examination of an EMR system training provided to nurses and business office staff at the University of Arkansas for Medical Sciences Northwest Family Medical Center (UAMS NW) since system implementation in 2007. The purpose of the study was to: Identify the EMR system training experiences that have been provided to clinical staff members; explore how the identified training experiences affected perceptions of the EMR system; and discover the types of training the staff feel is needed to effectively use the EMR system. Data were gathered to address the three research questions to formulate a proposed plan for future training within the case study environment.

This study employed a qualitative research paradigm with an intrinsic case study strategy. Through intrinsic case study research, a purposeful sampling of UAMS Northwest nurses and business office staff allowed the researcher to collect data through multiple methods including in-depth interviews, observations, and document collections (Baxter & Jack, 2008). The study was built to promote a deeper level of understanding over the training that took place at this single site. Data came from a variety of sources ranging from administrative focus groups, clinical staff interviews, administrative and personal documentation, personal communication, and EMR system use observations (Mack, Woodsong, MacQueen, Guest, & Namey, 2005). This chapter outlines the single study design by discussing the research questions, establishing researcher positionality, detailing the current study's design, and then reviewing the plans for protection of human subject data.

Research Questions

Through a detailed literature review, a gap in the research exists regarding training after electronic medical record systems (EMRs) are implemented (Aaronson, Murphy-Cullen, Chop,

& Frey, 2001; Baldwin & Ford, 1988; Borycki, Armstrong, & Kishniruk, 2009; Ceusters, De Moor, Bonneu, & Schilders, 1992; Jerant, 1999; McCain, 2008; Rose, et al., 2005). This includes when staff using the system must be oriented, trained, and retrained as time progresses. The overall goal of this research was to understand the experiences and perceptions of the EMR system and its training offered at the University of Arkansas for Medical Sciences Northwest Family Medical Center. This was in an effort to provide research and theoretical based guidance for future training program creation. Specifically, the focus of this research was on training offered to business office and nursing staff over the EMR. Looked at through the lenses of management personnel, EMR system trainers and clinical staff, this research was guided by three research questions including:

1. How is the current EMR System training impacted by research and educational theories?
2. How does the EMR system training received affect the perceptions of the staff toward that same system?
3. In what ways do UAMS Northwest employees think the clinical staff should be trained on the EMR system and how do those views compare to the current training experiences of those clinical staff members?

The goal of this study was to identify a training program that would be both relevant and desired by employees and administration. These three guiding research questions helped do this by creating an understanding of the following: EMR system usability, EMR system training, current training design and methods, management views and expectations of EMR system training and clinical staff perceptions and expectations of the EMR system and offered training. To answer

these guiding research questions and delve further into the above concepts, a qualitative approach was used. A single case study design provided an environment that enabled the building of a holistic view of EMR system training at UAMS Northwest.

Researcher Positionality

As a qualitative researcher my role in the research process and actions I took within the environment in which the research was conducted were intertwined. Initially beginning as a problem needing to be addressed at my place of employment, the development of a formalized research plan, questions and methods to discover results were difficult to devise and I did not take it lightly. As a researcher, considerations for all involved in the case and the potential effects on the site where the case study took place were top priorities in the planning of this study. It was also important to me that I reduced personal biases that I might have had. As a researcher, I had a responsibility to my research and its participants to remain objective and transparent. The following subsections detail my researcher positionality by discussing my researcher background and bias.

Researcher Background

Prior to working on my PhD in Curriculum and Instruction at the University of Arkansas, I received a bachelor's degree in Speech Communication and a Master's degree in Learning Systems Technology from the University of Arkansas at Little Rock. In both staff and adjunct faculty positions, I have worked in higher education and healthcare environments for over eight years. Through positions like clinical unit secretary, adjunct instructor, trainer, research assistant, and educational technologist, my career has given me a firsthand look at working with and around nurses, using an electronic medical record system and understanding the needs of adult learners during organizational trainings.

For the past seven years, I have worked at the University of Arkansas for Medical Sciences with five of those at UAMS Northwest. Starting at UAMS NW as an Educational Technologist working for the academic units, I have moved into a Technology Coordinator and Project Manager role working for both the academic and clinical areas of the UAMS Northwest campus. As the Technology Coordinator and Project Manager in the UAMS Northwest Information Technology department I manage academic classrooms, administer all campus websites, manage the campus scheduling team, guide staff training development and manage technical projects for the clinic, and deploy process improvement projects to the campus. With a project facing role within the clinic, the nursing and business office staff primarily work with me when they are involved in a project implementation. Most often, this is with the supervisors of the various clinical areas. While I do know most of the clinical staff, my interactions with them are rare, taking place in the event our information technology (IT) department is short staffed and clinical staff need assistance with minor issues. With my background in communications, I understand how to work with people in a way that reduces stress from the technical issue. Based on feedback from the staff, I am comfortable to talk to and not as intimidating to contact for help as other IT staff members. With the EMR system being a central software for their daily work, questions often arise regarding issues or usage concerns of the EMR system. I do not know how to use the system or understand the technology involved with its virtual placement on our local servers; therefore I relay those questions to other members of our IT department or our EMR administrator.

Researcher Bias

With my educational and career background, I have a strong bias towards the need for quality, education based training programs. I believe that training, when created through

educational theories and organizational training concepts, can give participants a clearer understanding of the topic being covered. This drive for the need for quality training was the initiating factor that helped me see the need for research at UAMS Northwest Family Medical Center. My bias toward the need for quality training had potential to influence my analysis of the data collected from participants and I cannot separate myself from this as a person or as a researcher. In addition to this bias toward training, I had a bias toward the participants. I was in a unique position because I knew most of the participants on at least a professional level. Depending on the participant, I also had a personal friendship with them. Of the 14 participants, I knew all 14 for at least the past six months on a professional basis and one of them on a personal level for one year. Five of the participants have participated in an educational event that I either led or helped created.

As a qualitative researcher, I also must acknowledge that I had expectations of the results for this study. As an employee of UAMS Northwest Family Medical Center, I expected to discover a need and want for training. Like my background and relationship with participants, this too was a bias within my research. Since I could not remove myself from the many biases, I had to control them in a way that did not interfere, corrupt, or invalidate the data (Merriam, 2009). This was done through extensive reliability and validity checks during and after data collection and analysis.

Current Study's Design

As described by the research questions, this research aimed to study nurses and business office staff at the Family Medical Center at UAMS Northwest. The focus was on the training experiences and subsequent perceptions of clinical staff members toward the electronic medical record system while also considering the views of administrative and training personnel. Framed

through a constructivist paradigm, this study was only completely understood within the context of UAMS Northwest (Patton, 2002). While this does limit the usability of the findings to other researchers, a constructivist approach offered the ability for the study participants to construct their reality of the EMR system and its training (Hatch, 2002).

Further detailed, this study was wrapped within an intrinsic case study design. Schram (2006) and Hatch (2002) explain that qualitative case study designs investigate a time, place, or phenomenon which is specifically bounded. They and Merriam (2009) go on to explain that qualitative research that is designed in a case study format offers the ability to bring a holistic view of a particular situation. The holistic view is accomplished through the use of multiple data collection techniques including but not limited to observations, interviews, and document analysis.

While this research could have been conducted across multiple platforms and organizations, using a case study design offered the ability to look into detail at the current situations happening at UAMS NW. Intrinsic cases emerge from an interest by the researcher. Intrinsic studies are not undertaken to come up with a general conclusion about a topic, but rather because the situation being researched is of interest to the researcher (Merriam, 2009; Schram, 2006). This research topic was selected because of the special interest to the researcher and the site's administration.

Previous research on EMR systems and clinical staff training were often focused on a quantitative approach that aimed to generate an understanding of a large population (Aaronson, Murphy-Cullen, Chop, & Frey, 2001; Borycki, Armstrong, & Kushniruk, 2009; Landry, Oberleitner, Landry, & Borazjani, 2006; Koles, Nelson, Stolfi, Parmelee, & DeStephen, 2005). This study was more interested in the complete picture of one site rather than an examination

across multiple venues. This study's research questions sought knowledge on components of the people in the case and what can be learned from them in specific detail. Upon completion of the study, the researcher gained an understanding of the experiences and perceptions of the EMR system and its training provided. This section will review the single site study design including details regarding the following: Research site, participants, events and data collection tools, data analysis, and reliability and validity measures.

Research Site

Using a case study design implied that the research site and participant pool was enclosed in the area in which the research was conducted (Hatch, 2002). This was true within this research study conducted at the UAMS Northwest Family Medical Center. Even though this research was a case study, the selection of the site and participants were purposeful in an effort to create a holistic view of staff training over the EMR system.

At the time of the study, UAMS Northwest Family Medical Center was an outpatient family medicine clinic that served an average of 125 patients per day. It employed 35 business office and call center staff members, 7 attending physicians, 33 newly graduated residents, 15 nurses and 2 pharmacists in an effort to provide optimum patient care and record keeping at the two clinical locations in Fayetteville and Springdale Arkansas. Within the clinic, there was both a Business Office and Nursing Department. The Nursing department was divided into three teams. Two teams were located in Fayetteville, Team Blue and Team Red, while the Green Team was located in Springdale.

The clinic was part of a satellite campus of the University of Arkansas for Medical Sciences which is based in Little Rock, Arkansas. While they were a part of UAMS Little Rock and they received technological assistance on networking from the primary campus, the UAMS

NW Family Medical Center did not use the same EMR system as UAMS Little Rock and did not receive any support or training from the main campus to the clinical users.

While each clinic had used an EMR system for patient records for different lengths of time (10 years at Springdale and 7 years at Fayetteville), they became a unified system in 2007 (E. Beecher, personal communication, March 7, 2014). Since implementation of the unified EMR system, training has primarily occurred through informal coaching by employee peers with no global training plan. Periodic efforts to train and update current and new nursing and business office staff have occurred, primarily as short computer based lab sessions and lunch-time miniature lectures. Starting early 2013, UAMS Northwest administrators began investigating more formal training initiatives starting with a restructure of EMR system orientation for incoming Family Medicine Residents. As of July 2014, variations of this training have been conducted for two of the three resident groups. However, no formalized plans have been implemented for non-resident groups like the nursing and business office professionals.

The reason UAMS was selected as the research site for this intrinsic case study was due to an internal motivation on the part of the researcher to learn more about the history of the EMR system training experiences at the site. As a researcher and an employee of the site, I believed that UAMS Northwest presented a unique opportunity to view the aftermath of EMR system implementation that occurred in a clinical environment without a systematic training plan in place. Additionally, UAMS Northwest Family Medical Center offered the opportunity to research various clinical and non-clinical staff members, all of which had different levels of technical understanding, backgrounds with EMR system usage, and patient care roles and responsibilities. These variations allowed for multiple viewpoints on EMR system training. This

study had full support of the UAMS Northwest Family Medical Center Clinic Administrator who directed both the nursing and business office departments (See Appendix B).

Participants

The participant pool in the case study consisted of current employees at the UAMS Northwest Family Medical Center. Prior to establishing contact with any possible participants, a list of all employees within the clinic including names, email addresses, and job titles were created with the assistance of the Human Resources Department. Based on this list, the participant pool was narrowed to include only those that were administrative personnel, trainers and members of the nursing and business office departments. All in this group received an initial survey within a request to participate email (See Appendix C). The attached survey was also used to inform participant selection by creating a baseline understanding of the technical abilities, backgrounds, basic perceptions and other demographical data of possible participants. The data from the initial survey served as an information tool to select participants purposely as well as give demographic and technical usage statistics for final participants. Limitations with this technique existed due to the researcher being unaware of the perceptions of those invited possible participants who chose not to complete the survey. Forty two individuals were invited to participate by email. Of those, twenty four completed the survey. Of these twenty four, twenty two were female. Final participants were selected from strategic points within the spread of varied backgrounds due to the study's purposeful sampling technique (Schatzman & Strauss, 1973). The overall goal of this sampling technique was to build a participant pool that represented the entire nursing and business office departments. Participants were selected for two participant groups: focus group members and individual participants. Below, the participant

tasks, timeline and complications that emerged are discussed for the focus group and for those who participated individually.

Focus group. Members of administration, information technology, and other departments who had job roles that were in a supervisory or training role were grouped together as possible participants for the Focus Group. These participants were selected based on their area of representation and the job function rather than their perceptions and experiences in the EMR. The focus group participants were selected based on two questions on the initial survey. First, "Department" was reviewed. That in conjunction with the "Job Role" helped identify possible focus group participants. Particularly, job roles including supervisors, staff that provides technical or EMR guidance, and trainers were needed. Eight employees matching the desired demographics, two of which were male, completed the survey and all eight were invited to participate. Of the eight participants, four were supervisors in the business office or nursing areas. One was the information technology director and three were upper level staff members who have previously supervised team members in the business office or nursing areas as well trained those staff members on the EMR or its connected systems. All were emailed requesting final participation with all agreeing to participate. Using Doodle polling software, a date for the focus group was selected and it took place on November 4, 2014. The session lasted two hours in a conference room outside of the clinical environment. Participants did not know the questions in advance. All but one participant actively talked during the session with the need for the researcher to guide the participants back on topic occurring twice.

Individual participants. Once focus group participants were removed from the overall list of potential individual participants, the remaining possible participants were divided up using the information provided in the department, primary location, and team questions from the initial

survey. Of the remaining possible participants, all departments within the case boundaries were represented with the bulk of participants coming from the business office, eight participants, and the nursing area, nine participants. The Fayetteville location accounted for most of these participants. However, Springdale was represented with three individuals, all from the nursing area. Experience in healthcare and time spent at the clinic ranged from a few years to upwards of thirty to forty. After the possible participants were grouped based on department and location, general observations were conducted. This was done in an effort to narrow down the participant pool to those who would serve as final individual participants. First, the check-in/out and call center areas of the business office were observed on October 8th. The blue nursing team (Fayetteville) observation was conducted on October 14th with the green team (Springdale) observation on October 29th.

Selection process. After the general observations were completed, a list of final participants in the business office and nursing areas were selected. This was done by taking the responses of clinical staff members from the initial survey and mapping their responses. First, all possible participants who completed the survey were divided between the two main staff groups being researched: business office staff and nursing staff. Next, each possible participant was mapped with their responses to the five point Likert scale questions including: a) general technical ability, b) understanding of the EMR system, c) usage abilities of the EMR system, and d) training received on the EMR system. This scale ranged from "Extremely Poor" to "Excellent". Each participant was mapped regarding their answers to the four questions listed above. Each answer on the Likert Scale was identified with a number as follows: 1) Extremely Poor, 2) Below Average, 3) Average, 4) Above Average, and 5) Excellent. Each answer by all possible final participants was transferred to one of these numbers. Then, each participant's

answer set of the four questions was totaled and averaged. Finally, each area was sorted from lowest to highest average with the goal to get a participant from the low, middle, and high points of the groups score spread. Figure 1 shows this mapping and where requested participants, final participants and other important possible participants fell in the spread.

Four staff members were selected each from the business office the nursing area. All business office staff members were located in the Fayetteville clinic, while the nursing staff members were located in Springdale and Fayetteville. Table 1 indicates the backgrounds and perceptions of both the requested and actual final participants.

Table 1
Individual Participant Demographics

Participant ID	Job Role	Career Time Spent		Technical and EMR Perceptions			
		In Healthcare Field	At UAMS	General Technical Ability	Understanding of EMR System	Usage Abilities of EMR System	Training Received on EMR System
Business Office							
BO1	Appointment Setter	18 months	18 months	Below Average	Below Average	Below Average	Extremely Poor
BO2	Medical Records	5 years	5 years	Average	Above Average	Above Average	Above Average
BO3	Check-in/Out	18 years	8 years	Above Average	Average	Average	Average
NPBO1	Check-in/Out	20 years	7 years	Average	Average	Below Average	Below Average
Nursing Area							
N1	Triage Nurse	10 years	11 months	Average	Above Average	Above Average	Average
N2	Medical Assistant	2 years	1.5 years	Average	Above Average	Average	Below Average
N3	Nurse	7 years	1 year	Above Average	Above Average	Average	Average
NPN2	Nurse	32 years	2 years	Average	Average	Above Average	Extremely Poor

Complications with data collection. Every effort to get a wide spread of representation of final participants was made. The business office had well-rounded representation in experience and perceptions. On the other hand, the nursing area final participants represented a higher perceived skill level on average. This was believed to be caused by two situations. First, nursing staff initial survey completion was lacking. With over 25 nurses employed at UAMS, only eight completed the survey. Second, after the completion of the survey, two nurses left UAMS and one fell very ill resulting in the inability to participate in the research. Of the eight participants asked to be in the final participant pool, all agreed to participate with the exception of one business office staff member.

NPN1 agreed to participate but was unable to attend data collection meetings due to an impromptu vacation from work. NPBO1 was asked to participate since her perceptions toward the usage and training of the EMR was below average. This below average indication was needed to have a wide spread of perceptions in the business office area. However she declined the invitation. After the actual collection of the data had begun another business office staff member (BO3) was asked to participate. He/she was given the initial survey and it was determined he/she would be a good fit for the study since his/her perceptions were similar to the perceptions of the business office staff member that was asked to participate who declined.

Before an actual interview took place, four participants requested that their one-on-one interview be rescheduled three to four separate times. In early January 2015 it was communicated to me that one participant was concerned that work left undone during the interview would hinder job performance. Supervisors who were aware of the study and supported participation within their departments were asked to remind participants of this support, and to reiterate that job performance would not be impacted by the interview process.

After supervisors spoke with department members, six of the seven final staff participants went through the one hour one-on-one interview. The interviews were located outside the clinic, in the Information Technology building. The seventh participant took unexpected leave. Upon return two weeks later, both the participant and the researcher agreed to conclude his/her participation in the study. After the interviews took place, all six individuals were scheduled for observations. Each observation lasted one hour and was located at the desk of the participant. The participant was asked to work as normal with questions posed by the researcher as needed. One participant was unable to make the scheduled observation due to illness. This observation was not rescheduled due to research time constraints.

Events and Data Collection Tools

Once participants were identified, data collection techniques varied between the two main groups: focus groups and individual participants. As mentioned in my researcher positionality, I had dynamic working and personal relationships with many of the participants. During this study, these relationships changed daily based on the schedule of research events that took place. While research events took place, I put my role as the researcher above any non-study participation (Merriam, 2009). As a researcher I used both the content received from study collection tools as well as the knowledge I had on educational concepts, the study site and the EMR system to build a complete data set.

Focus group. In an effort to gain an organizational view of the EMR system and its training, a focus group consisting of administrative and training personnel was conducted. At UAMS NW, there is not a single employee or department that is solely responsible for staff training. Due to this, no single person had a complete understanding of the efforts undergone to train staff. Through a focus group, I facilitated the discovery of this complete training picture.

With participants grouped together, the expectation was to get high quality data from participants in a short, socially driven amount of time (Patton, 2002). Questions were focused on current training makeup, if and how educational and organizational concepts impact training, training successes and failures, and organizational wants and needs for EMR system training at UAMS Northwest (See Appendix E). The focus group session was recorded and transcribed for data analysis in an effort to formulate answers for the three guiding research questions of this study.

In addition to the focus group meeting, the UAMS Northwest clinical administrator provided departmental documents she felt were relevant to build an understanding of how employees felt towards the technical systems and training. These documents detailed the first one-on-one meeting between each employee in the business office and the clinic administrator. These took place when she began at UAMS NW in early 2014. All documents were copied with identifying markers and irrelevant discussions removed per the request of the clinical administrator. During document analysis, I searched for information that contributed to the three guiding research questions. Notes were taken for coding during data analysis.

Individual participants.

One-on-one interview. Once final participants were selected, a semi-structured interview was scheduled with each participant. Interviews gave the researcher the ability to explore in detail the perceptions of participants (Hatch, 2002). The researcher came with guiding interview questions. However, the semi-structured interview allowed the participant and researcher to actively dig into ideas and concepts as the interview progressed (Hatch, 2002). Questions in the interview were formulated with the conceptual framework ideals and focused on the three guiding research questions (See Appendix F). Probing and secondary questions were based on the background information from the initial survey, group observation, initial participant

observation, and the information presented by the participant in the interview's planned questions. After the primary interview took place and before the final observation, the researcher transcribed and reviewed the interview to determine themes and the possible need for further information. As additional information was needed from participants, follow-up discussions were conducted through casual communications.

Observations. To wrap up an understanding of each participant an observation was conducted. This was a tool that had the researcher observe the actions of the participant and ask questions to verify and build an understanding found during the group observation and one-on-one interview (Frey & Fontana, 1991). This observation gave the researcher the ability to understand the concepts and terminology used during meetings as well as observe situations the participants may not be comfortable discussing in an interview (Kawulich, 2005). Contact with patients occurred while visiting the clinic. Due to the focus of the research being on the usage of the EMR system and not on the actual content being input, observations did not include any patient interactions, but rather the work caused by that interaction.

While I am both the research and also a member of the IT department, I did not help with any EMR or IT related questions. Hatch (2002) explains that the level of involvement of researchers can change the natural environment and if the intended outcome of the observation is to view participants in their natural setting, researcher participation should be minimalized.

While the group observation looked at the dynamics of the team or area and the general work on the EMR system, this observation focused on the specific work conducted by the individual participant on the EMR including their system usage strengths, weaknesses, struggles, wants, and needs. Frey and Fontana (1991), explained that by using an observation as the final component of a participant's study experiences, the researcher can play a more active role in the

observation. This minimized the possibility for questions of the researcher to be unanswered after data collection.

Data Analysis Techniques

Once data were gathered, a thorough analysis was performed. Analysis techniques shifted and molded the data to build a complete view of the case as well as answer the guiding research questions. First, all research content was gathered and organized electronically in an effort to prepare it for data analysis. This was necessary to allow for efficient data analysis. A data collection excel file was created with separate worksheets for the general observations, the focus group, each participant, and documents. After all data were compiled electronically, a final worksheet called the case record was created with all data combined together. This allowed for thematic analysis of the case as a whole with specific data points listed for review and possible thematic assignment. As mentioned above, the four different worksheet templates included the general observations, the focus group, individual participants, and documents. This section will look at the techniques and electronic formatting of each data collection tool. Then the techniques used in data analysis will be discussed.

Transfer to electronic format.

General observations. Prior to final participants being selected, general observations were conducted in multiple areas and with various teams. These included the blue (Fayetteville) and green (Springdale) nursing teams, the call center area and the check in/check out area. Notes were taken during the general observations of all possible final participants' actions and communications. Each general observation was transferred to its own worksheet within the Data Collection excel workbook. Each was titled "General Observation – (Area/Team)". These worksheets were each formatted as shown in Table 2.

Table 2
Example of General Observation Worksheet

Participant(s):GG, FF*(not final participant)*			**Date of Interview:** 10/10/2014
Type: General Observation			**Location:** Call Center
Task #	**Part. ID**	**Task/Situation Observed**	**Notes for Future Review**
GOCC1	FF	Text ABCE	See if GG completes task differently.
GOCC2	GG	Text 1234	

Within the table, "Task #" was assigned to each entry to identify location in the final record. "Part ID" identified who within the focus group said or reacted as described and "Notes for Future Review" identified questions and situations the research wanted to explore further as the notes were transferred electronically.

Focus Group. Unlike other participants, the administrative and training personnel participated in a group focus group session. This focus group was recorded and notes were taken by the researcher during the session. After the recording was complete, a basic transcription was made by the researcher. This along with the notes were then transferred to the Data Collection excel workbook as its own worksheet titled "Interview – Focus Group". This worksheet was formatted as shown in Table 3.

Table 3
Example of Interview – Focus Group Worksheet

Participant(s):AB, BC, DE			**Date of Interview:** 11/04/2014	
Type: Focus Grp			**Location:** Conference Room	
Task #	**Part. ID**	**Location**	**Task/Situation Observed**	**Question #**
FG1	BC	notes	Text ABCD	1
FG2	AB	transcript	Text 1234	2

In addition to the repeated columns from Table 2, "Location" identified whether the task or situation was found in the researcher notes or in the transcript of the recording and "question #" identified what question the task or situation was a reaction from. A list of these questions, exactly as they were observed through the transcript was also listed on the worksheet for easy viewing.

Participants. Individual participants who did not fall under the category of "Administrative/Training Personnel" participated in a one-on-one interview and an observation. The one-on-one interview had both notes and a transcription created by the researcher and transferred to the Data Collection excel workbook. The field interview had notes taken directly to that workbook. Like the format of the general observations, each participant had their own worksheet titled "Type – (ID)". An example of this is "Business Office – CC1". These worksheets were each formatted as shown in Table 4.

Table 4
Example of Participant Worksheet

Participant(s):LM			**Date of Interview:** 01/04/2015 **Date of Field Interview:** 01/05/2015	
Type: Individual Participant			**Area Represented:** Call Center	
Task #	**Tool**	**Location**	**Task/Situation Observed**	**Question #**
1	FI	notes	Text ABCD	
2	1on1	transcript	Text 1234	1

As with the focus group, question numbers were also listed on the worksheet in the order they were asked in the one-on-one interview to use as reference.

Documents. The study allowed any participant or member of administration to provide documents he or she perceived to be relevant to this study. To aid in document validity, the clinic administrator reviewed all documents for accuracy. The study produced four documents to review: two files of staff meeting notes and two participant images of documents created for self-training. After retrieval, they were reviewed for important ideas and those important segments were then transferred to the Data Collection excel workbook. This process was much like that used during general observations and field interviews. The information was contained in a "Documents" worksheet in the format shown in Table 5.

Table 5
Example of Document Worksheet

Type: Document

Task #	**Part. ID**	**Pg. #**	**Task/Situation Observed**
1	D1	1	Text ABCD
2	D2	1	Text 1234

Data analysis techniques. Once all data were placed in their respective worksheets, analyses began. In an effort to analyze the data efficiently and completely two techniques were used: Thematic analysis and explanation building with logic model creation (Yin 2003). First, the researcher moved content into a Case Study Record worksheet within the Data Collection excel file. This file included a historical record of changes in coding and logic model creation by using version control. This file was formatted as shown in Table 6.

Table 6
Example of Case Record Worksheet

CR #	Work sheet Name	Task #	Part ID	Task/Situation Observed	Coding	
					Theme 1	Theme 2
1	*Clinical – AD*	*4*	*CC1*	*Narrative 1234*	*Test*	*Sub Test*
2	*BO - CD*	*12*	*BO2*	*Narrative ABCE*	*Test 2*	*Sub Test*

Thematic analysis. Once all data components were added to the case study record, all data were analyzed for themes by assigning research relevant codes. These codes helped construct themes among all data sources (Merriam, 2009). In an effort to tie data to both the literature and the research questions, thematic analysis terminology was directly related to the theories and concepts of adult learning and organizational training. It also incorporated a

differentiation between when participants perceived something, wished something or experienced a situation. This was done in an effort to build a picture of the current training, how it affected perceptions, as well as what they wanted in a training program. This thematic analysis was not a single phased process. As themes were created, the researcher continued to review literature and modify themes and theme groupings accordingly. This continued until all data were analyzed and a complete picture of the case being studied was believed to be discovered by the researcher.

Explanation building. After thematic analysis was complete, the data underwent a case study research specific analysis technique known as explanation building and logic model creation. I used the created themes to explain "how" or "why" things happened in the research, to build a picture of what the clinical staff experienced for training regarding the EMR system and how they felt about it (Yin, 2003). This was accomplished by taking experiences within a theme or subtheme and identifying who and how many participants had like perceptions or experiences. This helped build a general understanding of the case, which is vital to completely understand and analyze data within an enclosed system.

The final data analysis technique used for this case study, logic model creation, was used to create a picture of the training experiences and perceptions of the two distinct groups, focus group and individual participants. Described by Yin (2003) as a linear flow, organizational-level logic models created between training histories and the perceptions of the participant groups. With themes of all the data, narrative explanations of the case situation, and organizational-level logic models, data analyses built a holistic view of the situations surrounding the EMR system training at UAMS Northwest Family Medical Center.

Reliability and Validity Measures

In an effort to create a more reliable and valid qualitative study, this research utilized the following measures: Open researcher positionality, purposeful participant sampling, data triangulation, and member checking. These measures were in an effort to reduce the bias of the researcher, increase the reliability of the study to others, and validate the study's findings for accuracy as portrayed in the case study site and situation. Each of these are detailed with processes below.

Open researcher positionality. Qualitative research is formulated in the eye of the researcher. With an open researcher positionality, it is understood what views the researcher had and how it may impact the study. Having an open researcher positionality helped validate the study findings since researcher views and biases were detailed. A detailed positionality statement regarding this researcher is listed earlier in this chapter to introduce an open researcher positionality to this study.

Purposeful sampling. In an effort to create an organizational view of EMR system training at UAMS Northwest Family Medical Center, the participants that participated in study events were narrowed down in a purposeful way. By using a purposeful sampling technique, the researcher was able to collect information rich data that spread across backgrounds within the case study (Merriam, 2009).

Data triangulation. Data were triangulated through the multiple sources of data collection in an effort to increase the credibility of the information provided by participants and how it was analyzed by the researcher. Through interviews, observations, and the review of provided documentation, information was gathered from multiple sources and from multiple participants. The researcher looked for data that repeated in multiple data sources in an effort to

create an internally reliable set of data points (Merriam, 2009). This was in conjunction to the researcher using previous research and theoretical concepts to help triangulate data with other's findings.

Member checking. All participant interactions were noted electronically on the Data Collection excel workbook as discussed in the sections above. Once these were compiled, each participant was sent a copy of their personal worksheet to review findings for accuracy and completeness, called member checking (Hatch, 2002). This was also done for the provided documents with findings being checked by the clinic administrator. Content that was viewed to be inaccurate or incomplete required the participant and researcher to work together to find an accurate clarification and the information was modified as needed. This did not occur in the current study.

The aforementioned measures helped validity and reliability by removing bias from the data that was analyzed through the lens of the researcher. Merriam (2009) emphasized that "qualitative research can reveal how all the parts work together to form a whole" (p.6). She and others further elaborated that qualitative research looks to build an understanding of issues in a specific detailed format (Merriam, 2001; Merriam, 2009; Patton, 2002). Qualitative research offers many unique characteristics that promote understanding and specificity.

Protection of Human Subject Data

This single site, case study was conducted at UAMS Northwest Family Medical Center by a University of Arkansas PhD candidate. This health care facility and their Institutional Review Board (IRB) does not constitute employee research as valid human subject research therefore no UAMS IRB exemption letter was issued; however, the UAMS Northwest Family Medical Center approved this study to take place (See Appendix B). The University of Arkansas

requires all PhD students to submit an IRB application and gain IRB approval prior to data gathering for a dissertation study. Thus, an IRB application for this research study was submitted and approved for exemption with a total participant pool of 15 at the University of Arkansas (see Appendix G). All activities associated with this study were monitored by the IRB for the protection of the human subject rights.

At initial contact, participants were notified of their rights through a request to participate email (see Appendix C) with voluntary completion of the initial survey (see Appendix D). The final participant consent form was signed at the first official meeting (see Appendix H) with a copy being distributed to each participant for their records. The information gained within this study does not include sensitive information; however, to encourage full disclosure, all participants were automatically given a unique identifier upon their consent. This identifier was a string that included the staff member type and a three digit number. An example includes: Nurse_123. All written content for the case including transcriptions, coding documents, and results only reference the unique identifier of each participant.

To encourage continual confidentiality, upper administration at UAMS Northwest was not notified of the final participants. Scheduling of observations and interviews were conducted only with the participants and their immediate supervisor. With the close proximity of participants and administration, the possibility of administration becoming aware of the participants during field interviews was possible. Participation or lack thereof within the study could not affect the employees at UAMS Northwest in either a positive or negative way. This was through an approval of upper administration (see Appendix B). Also, all documents created from this research were stored on an encrypted drive with password protection enabled for no less than seven years. Distribution of this material will be available as requested by the

University of Arkansas Internal Review Boards as well as the PhD dissertation committee members. Data may also be requested by UAMS Northwest Family Medical Center administration and it will be provided after participant identifiers are removed.

Chapter Four: Results

While chapter three described in detail the methods used to collect data for this case study, this chapter presents the data found during data collection. To properly analyze a case study, Baxter and Jack (2008) explain that it is "important to report findings in a concise manner" with a goal to describe the case as best as possible (p.13). Throughout analysis, participant and documentation references are made. During each reference a citation of the reference will be indicated as follows: (Type., Participant ID, Case Record Number). Like normal citations, if any of these are mentioned in the sentence, the citation will adjust as needed. Type is in reference to the data type of the reference. Options include: focus group discussion (FG.), individual interview (INT.), observation (OB.), document (DOC.), and personal communications (PCOM.). Participant identification numbers are listed when final participant demographics are presented. The case record number is a unique identifier given to all data that were collected during its transfer to the final Case Record worksheet as indicated in Chapter three.

Report of Findings

This research found that both focus group and individual participants had a varied history with training over the EMR system at the site with clear indications of how they want future training to consist of. This section reports on the findings by first giving an overview of the case as a whole, through the eyes of the participants. Then each research question is discussed by building explanations from the data and identifying emerging themes that work toward answering the research questions.

Case Background

Through data collection a general understanding of the case was created. Through individual observations, individual interviews and focus group questions an idea of usage of the EMR emerged. This was vital to truly understand the history, perceptions, and needs of EMR system training at UAMS FMC. Within the theme of EMR system usage, two subthemes emerged: what is considered the EMR, and ease of use of the EMR system. Below, each theme is discussed with reports of the findings building an understanding of the case background.

What is considered the EMR? Both the focus group participants and the individual participants indicated during interviews that the EMR system is not just made up of the system. It is actually made up of many systems and EMR overlays that are required to get various jobs done. During the Focus Group interview, the group as a whole named over ten systems that were considered the "EMR" at UAMS FMC. Each system had its own layout, requirements and function for health information management. Participants mentioned systems that impacted them the most ranging from other hospital EMR's, to ordering software, to electronic prescription software and a patient portal. Participant N2 indicated in her one-on-one interview that, "There are a lot of systems we interact with at the same time" (INT.,CR142). She later indicated in her observation that, "Working in the EMR is not just about it, it is about all the systems, and many don't play nice with each other" (INT., CR165). These interwoven systems add multiple layers of complexity to the usage and training on usage of the EMR.

Ease of use. As a whole, all observed participants seemed to know enough about the system to accomplish their daily tasks. From a researcher standpoint my observations indicated lots of clicking and movement from screen to screen but little confusion on the tasks they needed to complete their work. When asked if their coworkers knew their way around the system like

they did, one participant said, “None of us really know our way around. We just look like we do” (OB., N3, CR151). Another participant in a separate department indicated that she knows the EMR system “okay” in areas that pertain to her daily job but when she has to cover for someone else she is lost (OB., BO2, CR137). All participants seemed very open and excited to explain their personal abilities in the EMR system. This openness can be attributed to their motivation to know the system even if it was simply due to being required to do so (Mardziah, 2007). Out of all fourteen participants, all but one felt they needed more guidance to work the system properly. The outlier, participant BO2, likes the EMR and not only appeared to know the system based on observations, but also believed she does (OB., CR137, CR275, CR334). While many of the other participants’ confidence to correctly follow procedures within the EMR system in their daily job wavered, participant BO2 was completely confident unless she left the confines of her own routine (OB., CR137). In summary, participants at UAMS seemed to know their way around the system well enough to complete their job tasks, but it was apparent from one-on-one interviews that this may have been deceiving as they were not certain that the processes and procedures they follow in the EMR system are correct. This misconception and general concern of the participants was a common theme in the data related to many of the study research questions.

Research Question One

Research question one aimed to build an understanding of how the current training conducted at UAMS on the EMR system was built around educational theories and concepts. Data related to this question were obtained in two ways. First, focus group team members were asked questions aimed at discovering how previous training was built, the background of previous trainers, and the believed needs of those receiving the training. Second, individual

participants were asked to detail any training they had received including information regarding the trainer, what types of documentation they were provided, and what kind of evaluation techniques were used to identify if they were ready to work within the EMR system on their own. From these data collection techniques, little evidence pointed toward any type of educational or theoretical focus for training creation. However, training history emerged as a major theme among the data. This was looked at by first creating an explanation of the training history followed by specific subthemes that emerged from that history.

There were three types of training participants explained in this study. First, the focus group participants discussed the training received throughout the years on the EMR system and its other systems by vendors. Second, the same participants explained efforts they employed to train their own staff on the systems required to complete electronic medical record data entry. The history then wrapped up by discussing the actual training received by individual participants when they became employees at UAMS FMC and since then. Throughout this detailed explanation of the history, relevant subthemes emerged and were discussed.

Vendor provided training. During the focus group discussion, participants detailed the training received, or lack thereof, by the group of EMR system vendors, including its overlays and connected systems. It became evident, even during implementation that participants believed training was lacking. One participant explained the training received during implementation:

> Little Rock provided training in 2007 in small bits but there were no hands on training until we were in production. We did not understand it (the system). The training was all together: doctors, nurses, and business office staff. We were not given the ability to truly understand the system (FG., FG7, CR110).

Others in the focus group discussed how they were sent to training conducted by vendors or more educated Little Rock personnel throughout the years. Participant FG8 said they "went to LR for that training on ICD 10 about a year ago" (FG., CR182). FG1 piggybacked on that

statement by explain that "It was a joke. She (the trainer) did not know anything" (FG., CR183). Upon hearing this a member of the focus group, who is in administration and has only worked at UAMS FMC for a few months stated the following:

> I am shocked GE were put in and did not require onsite training at each location. I have been in other organizations where this has been done with other software and you were not allowed to have that in your facility without going through the mandated training (FG., FG4, CR238).

In addition to in person trainings, the group described weekly e-learning seminars offered over the Janice Forms. Upon review of the system, Janice forms were a system overlay that UAMS NW implemented to allow different views for clinical data entry within the EMR system. Participant FG7 explained that there were weekly trainings by the Janice form group but "they are on another version than we are so I have to watch and then figure it out on my own" (FG., CR87). Previous research indicates that this negative perception of the EMR system can be more related to the training they received then the actual abilities of the system (Baldwin & Ford, 1988; Barling, Weber, & Kelloway, 1996; Bartlett, 2001; Hicks & Kilmoski, 1987; Lim & Morris, 2006).

In-house training implementation efforts. Aside from vendor provided training they have received, UAMS FMC has informally implemented various training efforts through the years. As a follow up question to the planned questions listed in Appendix D, the focus group was asked "Has there been any grassroots efforts to make it (training) formalized for staff?" The focus group participants indicated an awareness that the training provided did not meet the needs of the staff members, but they were unaware how to proceed with a complete plan that stayed in place. Participant FG5 indicated "we have had more training on Patient Portal (a separate, required system) than the EMR system, and we still don't know it really" (FG., CR319). He and other members of the focus group continued to detail out their thoughts on efforts to formalize

training. Participant FG5 stated, "We know the training has been lacking and we need to come up with a formalized training process" (FG., CR120). Participant FG2 added, "We made training and documentation for residents a few years back and I use those for staff members and keep trying to make more as I see it is needed" (FG., CR240). Participant FG3 interjected with, "It is always difficult to do training because we are short (staffed) already. We did try a training thing but it fell flat" (FG., CR186).

Participant FG2 was asked after the focus group for more information on the documentation now being sent to staff members that was originally used to provide training to residents. She provided documentation that explained the project, its implementation, and its current status. As described by the instructional design model, ADDIE, providing documentation and guides for review by training participants is a valuable component of the development and implementation phases (Reiser & Dempsey, 2011). The downfall of this documentation, as described by individual participants can be attributed to not being tied to a completely deployed ADDIE model that included analyzing the needs of the learners and evaluating its effectiveness after deployment (Reiser & Dempsey, 2011). From a detailed document review, it was discovered that this training was created by a small team in 2012, dedicated to building "how-to" documentation on basic usage of the EMR (DOC., D3, CR349 – CR358). This was led by a member of the Information Technology department who had a background in training. The team created how-to documentation templates and a training plan for new resident physicians in the clinic. It was indicated that due to the lack of time from all team members and no single person being capable to lead the charge for training creation, the project ended after one training round (DOC., D3, CR359). Participant FG2 was a member of this team. She stated in a personal communication to the researcher,

> I learned a lot from the IT person. They helped me learn how to build help guides. Since I know so much about the EMR system, I thought it was important for me to continue these guides for other new things I hear people have questions about (PCOM., CR360).

Participant FG3 was asked after the focus group for more information on the training that fell flat. She described in a quick verbal discussion one-on-one with the researcher that a training initiative took place in early 2013 during the implementation of the call center. She stated that,

> Due to the key person who understands training being in another department aside from the clinic, they were pulled from the project to do work duties that aligned more with their current position. After they left the training project, everything stalled and end up falling to the wayside (PCOM, CR361).

Actual staff training received. While the focus group was able to give an idea of the training they received from the vendor and the training they have tried administratively to deploy, the individual research participants were able to build a picture of the on-the-job training received upon employment at UAMS regarding the system, its connected systems and overlays, and their job functions in general. As mentioned in earlier sections, a member of administration provided the researcher with research documents. These documents were individual interviews between unnamed staff members and the member of administration regarding their feelings and perceptions of many components of their working environment. During a detailed analysis the researcher uncovered multiple unnamed clinical employees that indicated that training is lacking at UAMS. One stated, "There is not much training going on here" (DOC, D1, CR182), while another stated "training is hit and miss" (DOC, D1, CR183). The views of these unnamed clinical employees from the documents collected were also seen in the more detailed types of training the individual participants of the study described. These can be grouped together into four main categories as described by the participants: show and tell, trial and error, shadowing, and documentation. Each had representation in the data with more prominent themes emerging

from the individual participants than other sources. The data for these categories are discussed below.

Show and tell. Throughout data collection, all individual participants mentioned the idea of "fly-by" guidance or "show and tell" experiences. Show and tell is described by research participants in a negative light. They view these training experiences as more of an aggravation than help. Andragogy explains that while adult learners are self-directed, the use of scaffolding by educators or trainers is needed to help keep the learners motivated and on track (Knowles, 1975). Many have stated that the information shown can be given too late to be really helpful or even be incorrect information. While the focus group created a picture of the training history at UAMS NW, they discussed show and tell experiences and issues,

> We have never had training. We have always figured it out on our own and said, oh wow, I found this this morning. Then you give it to a few people and then later you found out it did not get spread out like it should (FG., FG1, CR274).

They continued to explain further by stating, "Or one person says how to do it wrong and everyone does it wrong" (FG., FG3, CR316). Another participant interjected, "Or how to do something and then they show the person sitting next to them and then they do it wrong" (FG., FG8, CR317)

Individual participants corroborated this view of the focus group. Participant N2 explained, "I have learned by me reaching out to others" (INT., CR73). Another participant stated, "I feel like any offered help is a fly-by training, but only if I ask for it" (INT., BO3, CR139). Another gave an example, "Did you know there is a spell check in the EMR? Someone showed me yesterday and I am showing everyone" (OB., N1, CR72). This participant later discussed in a non-formal interaction with the researcher that she was excited about learning about the spell check but feels that it is a little late since she has been an employee at UAMS

FMC for over a year. She said, “Learning stuff like that, way after the fact, is the norm” (PCOM., CR362).

Trial and error. Five of the six individual participants described their training as a “trial by error” scenario either in its entirety or in partial form. As described by Hull (1930), the Theory of Trial and Error explains that learning this way can lead to confusion and frustration much like what was found with “show and tell”. On their own individual accounts, participant after participant described being brought into UAMS NW as a new employee, presented with a login for the EMR system within a few days, and left to discover the system on their own. Participant N1 stated, “I received virtually no training on the EMR…. I spend a lot of time teaching myself how to use the system” (INT, CR230, CR337).

Another participant stated, “I did not receive any training. It was a trial and error process” (NT, BO3, CR341). While yet another explained, “I received no training on the EMR or all the other systems connected to the EMR. It was trial and error” (INT, N2, CR320). She went on to say, “I have watched some but discovered the needs myself” (INT, N2, CR329). During the observations of this same participant, the research collaborated these views by perceiving a confusion of the system and its tied components. Their work in other hospital systems was much more fluid and purposeful (OB., N2, CR90).

Shadowing. While explaining their history of training at UAMS NW, three participants described shadowing events. The literature indicates that shadowing is a way to give the training participant the ability to learn hands on and that it can help with retention of information learned (Healthfield, 2015; McGhee & Thayer, 1961). Two explained that the experience was minimal but it provided them a small glimpse at what was expected of them. One participant described her shadowing experiences as follows,

> When I was asked to move into my new role, I went to Springdale to learn how other people were doing the work. I listened, then watched, then did while she (the person being shadowed) watched me. It was very difficult to do that way because it is so fast paced (INT., BO1, CR71).

Another participant stated,

> I shadowed with someone and then got to work in the system. It was all pretty quick. I had some computer lab time during the shadowing, but I don't remember much of it. It was not patient care related things (INT., N1, CR115 – 117).

The third participant described detailed shadowing with a coworker that included a phased process to slowly integrate her into the system and her job. She described it as follows,

> When I started working here, I shadowed "coworker A". She had me watch her for a while and then started giving me tasks to do on my own. Everything I did she helped me with and checked my work. This went on until we were both comfortable with my getting stuff done right (INT., BO2, CR167, CR233).

Documentation. Unlike shadowing, the subtheme of documentation being provided was very prevalent by the individual participants. The use of this technique was mentioned by the focus group, as indicated in the above sections; however the individual participants indicated specific likes, dislikes, and issues with the documentation they were receiving. Participant N3 indicated that the clinic's EMR administrator occasionally provided quick one page guides. She stated, "It's nice" (INT., CR81). She went on to say both positive and negative thoughts regarding the documentation received, "Anytime that we implemented, like the well child thing, she gave us a handout for that. Little things like that she gave us but big changes, I don't feel like we are getting enough information" (INT, N3, CR107 – 108). Another participant indicated that they were given a book of information on their new role but "it is now out of date and useless" (INT, BO1, CR185).

Research question one summary. Through the investigation of ties that may have existed between the training at UAMS NW to educational and theoretical concepts, the researcher was

able to build an inclusive view of the history of training within the bounds of this case study. Several stories and sub-themes emerged from the data including:

- Vendor provided training
- In-house training implementation efforts
- Actual training staff received

The actual training include:

- Show and Tell
- Trial and Error
- Shadowing
- Documentation

Ties to education concepts and research exist. However, it seems minimal and not purposeful. Chapter five will discuss the implications of these findings toward the research question in an effort to answer the question posed, "How is the current EMR System training impacted by research and educational theories?"

Research Question Two

Research question two was focused on discovering how the received training, described through the training history above, affected the perceptions of the staff toward the EMR system. While perceptions are completely within the eyes of the participant expressing them, in this study it helps build a picture of the views of staff members at the case study site. During data collection, five of the six individual participants presented a negative view of the EMR. Figure 2 contains a diagram that lists each individual participant, their training received, and their view on the EMR system. By reviewing the diagram, it is not difficult to see that most participants had a negative view of the EMR; however further investigations indicated the outlying participant had

a much more comprehensive training experience at UAMS FMC. To review the ways EMR training received affected participant perceptions of the system, this section first compares the views and experiences of the participant with a positive outlook to those with negative views. Then, subthemes that emerged from the negative views are looked at in more detail. These subthemes are in the form of needs from the participants and include: need for system flow, need for processes, and the need for uniformity between the teams.

Positive and negative view comparison. As mentioned above, only one participant had a positive view of the EMR system. Participant BO2 described her shadowing experiences as a phased process with a complete understanding of her job duties (INT., CR288). When asked her views toward the EMR system, she stated, "The EMR is user friendly. I have not had any problems at all in the areas I do every day" (INT., BO2, CR290). While observing this participant, the researcher noticed that she worked in the system and navigate it in a smooth, purposeful way. Her work is quick but seems accurate with each task she performs taking on average one minute to complete (OB., BO2, CR291, CR296, CR297, CR298).

The other five individual participants had more critical and negative views of the EMR system. When asked to describe the system, participants N3, BO1, N1 and BO3 said the system is "not user friendly" (INT., CR132, CR134, CR199, CR265). Participant N1 added, "it sucks" (INT., CR160). Another participant stated, "It is really, really annoying" (INT., N3, CRCR133). When asked to describe the EMR system in one word, the focus group corroborated the perceptions of the individual participants. They described the system as, "difficult", "cumbersome", "slow", "junk", and "ill designed" (FG., FG1, CR224; FG., FG2, CR225; FG., FG3, CR237; FG., FG5; CR221, CR223). When looking back at the training these individual participants received, each of the five with negative views received training that was considered

by them "minimal" and "fly-by" (INT., BO3, CR139). Even though Participant N1 received a minimal shadowing experience, all five participants had to rely primarily on trial and error to learn the system on their own (INT., N1, CR337; INT., BO1, CR330; INT., N2, CR320; INT., BO3, CR341). The small amounts of documentation they received as well as the various "show and tell" experiences they experienced did not equal the comprehensive training experience that Participant BO2 described.

System and job needs. The EMR system at UAMS NW is intertwined with all job functions. During data collection this close relationship between the use of the system and the work in their job in general resulted in all participants discussing both needs of the system and of their job. One focus group member described this connection as follows:

> The EMR is our job. Even when we are not using it, we have to think about how what we are going to do will impact it. If it touches a patient, it has to go into our system, and everything we do touches a patient somehow (FG., FG3, CR365).

The negative views of most of the participants in the study was directly related to three needs that emerged from the data: need for system flow, need for processes, and the need for uniformity between the teams.

Need for system flow. After explaining their views of the EMR system, participants were asked to explain why they felt that way. During these explanations, three individual participants and one unnamed participant from the document reviews mentioned situations that were caused by a lack of system flow. One participant stated, "It (the EMR) does not flow good" (INT., N1, CR201). She explained this with an example,

> When I try to do e-scripts, if I forget something then I have to go back to a different screen. I can't do that without canceling everything I was just working on. Every time it happens, I'm like, oh crap, now I have to start over again (INT., CR177).

Another participant discussed a similar flow issue and stated, "It (the EMR) does not switch between the EMR and Schedule as I would like it to" (INT., N1, CR224). Participant N1 mentioned this issue with the schedule and stated,

> I just started doing appointments and really using the schedule. It should be intertwined with the chart. It's not. You have to go back and forth all the time to get anyone scheduled for an appointment in the clinic (INT., CR224).

This same participant stated, "There is too much stuff in-between point A and B to get the job done" (INT., CR295). With the issue of flow represented during individual interviews, the researcher asked each participant to draw a path from "A" to "B" with a straight line indicating clear flow. Figure 3 is a compilation these images created by all individual participants. During the creation of these images, participants described what they were drawing. Participant BO3 stated, "It's very chaotic. You don't always know what to do" (CR97). While creating her drawing, participant BO1, stated,

> Let's say this is as simple as charting an immunization. First I have to gather the information. Then I go to another system. They I have to go back, then I have to go into another system. Once I think I have everything I go to the state immunization site, then I have to go back to our system and start over. Then, I get told I have a patient so I have to get out of the system and all my work is lost. Then I have to come back in, start the processes all over. Then someone asks a question about the system, and I have to go back and I lose all my data. Finally after hours, I get one shot, for one kid logged in the state immunization system and our EMR. Then I have to print the stupid thing because we have to give the paper version to someone at some point. It's all a cluster (INT., N2, CR366).

This explanation was very similar to all five participants that felt negatively about the system, which in turn was the same participants that did not receive a comprehensive training on the EMR system. As explained in the literature, adult learners need comprehensive training events to keep them motivated and on track to obtain the learning they feel they need (Merriam, 2001; Knowles, 1970:, Wynne, 2013).

Need for processes. In addition to flow problems and a need for participants to have it within the system, all participants, even the outlier who had a positive view of the EMR system, expressed a need for process and policy creation for their job and the EMR system. One participant stated, "There are not any policies in writing which makes using the EMR hard" (INT., BO3, CR 299). Another stated, "We are not all on the same page a lot of the time" (INT., BO1, CR98).Yet another stated, "I just don't know my expectations of my job or the system. It's frustrating. There is not a uniform expectation for anything" (INT., BO1, CR93 94). Participant BO2, who believes the system is user friendly, stated, "I need more detail on proper policies. I get sent an email with changes and I am expected to remember it all" (INT., BO2, CR138). These are corroborated within the documentation received from the clinic administrator with an unnamed staff member stating, "I really don't know what my job requires. I need training to understand" (DOC, D1, CR5).

Need for uniformity among teams. This need for processes played into the final subtheme that emerged, the need for uniformity among teams. As described in the background of this case, UAMS NW is made up of two locations, Springdale and Fayetteville. Few nurses and business office staff work at both locations. However, they all possibly share patients and can be asked to do work for either of the clinics at any time. The motto as described by administration is "One clinic, two locations". This is also true for the EMR system. It is one system with both locations in the system. Each location has their own appointment schedule but the list of patients is one comprehensive list for the entire Northwest Family Medical Center.

Even though the "one clinic, two locations" moto is used by administration, individual participants within the study described an inconsistency of processes within and outside of the EMR system between the two locations. An unnamed staff member stated through the

documentation reviewed, "There is inconsistency from Springdale to Fayetteville. That makes training even harder a possibility" (DOC., D1, CR215). Participant BO1 stated, "There seems to be a Springdale versus Fayetteville mentality" (INT., CR176). Another participant stated, "There is not continuity between clinics so the way they do things in the EMR is different from Fayetteville to Springdale" (INT., BO1, CR216). She later said in her interview,

> See, job duties even within the system are not specified. Once I worked at Fayetteville and was trying to do something I always do here (in Springdale) and the nurses looked at me like I was crazy. See, we are doing it here. It's the norm (INT., N2, CR217).

Research question two summary. By investigating how the training received by research participants affected their perceptions of the EMR system, the researcher was able to build a holistic view of the perceptions and subsequent issues surrounding the EMR system and even the participant jobs. The overall view that emerged from the data was a negative one with the need for flow, processes, and uniformity requested. Chapter five takes these findings and discusses the affects and possible solutions that derive from the research question posed of, "How does the EMR system training received affect the perceptions of the staff toward that same system?"

Research Question Three

Research question three was, "In what ways do UAMS Northwest employees think the clinical staff should be trained on the EMR system and how do those views compare to the current training experiences of those clinical staff members?" Both focus group and individual participants were asked questions during their interviews that aimed at collected data on this topic. While questions one and two helped build a holistic picture of the history and issues with the EMR system and its training, this question was aimed at understanding what both the administrative/training groups and the staff members felt was needed to be trained on the system.

Even though the data collected indicated a lack of training, participants understood its benefits and believed it was needed. A focus group participant stated, "The more you know, the more job security you have" (FG., BO1, CR287). Other discussed training importance and things they needed to remember when implementing training in the future. Participant FG3 explained, "We need training not just for the EMR but for job competencies" (FG., FG3, CR75). Another stated, "Everyone learns differently" (INT., BO2, CR200), while yet another participant explained that "training is all about repetition" (INT., N3, CR279). Past these general views on training, specific training ideas emerged as a major theme within the data. From this theme, subthemes were mapped to build a logical flow of training suggested by the group. The two main areas mapped from all the data in the main theme included training during the onboarding process for new employees and continuing education needs throughout staff careers at UAMS NW. Below, each area is discussed with the suggestions for training by the participants described.

Onboarding. As both the focus group and individual participants discussed how they learn best and what type of training they envisioned as the "perfect training" all mentioned the need to be trained completely in the beginning of their employment. When asked to describe this initial training, two types of onboarding training emerged from the data: cased-based instruction and shadowing. For many of the participants, these two types of training went hand-in-hand, with cased-based training needed to learn the system and shadowing required to integrate their work environment with their knowledge of the system.

Participant FG5 from the focus group stated, "It (the training) needs to be geared toward their job" (FG., FG5, CR148). One individual participant explained their ideal training as, "I am a "doer" to learn. Give me some fake patients and let me do the work" (INT., N1, CR328). Another stated, "My perfect training would be hands-on the EMR and learning how to

implement it to patient care" (INT., BO1, CR192). Yet another described their ideal training as, "Ideally, I would want to have it (the EMR) up on the board, have information presented step by step with processes on how to handle specific patient related cases" (INT., N3, CR74).

This idea of case-based training emerged even as participants described the want and need for more detailed shadowing. Participants not only expressed the want for shadowing but more of a reverse shadowing where, after receiving basic EMR training and watching someone work for a short time, a trainer watched them while they worked in the system in real time. Participant N3 explained,

> If I was going to train, it should look like me pulling up the chart and them watching me. I would explain the basic things like getting to the chart summary. Then I would show them step by step how to do something. After that is done for a day or two, then they do it on their own and I will watch them to make sure it is right and they are not lost (INT., N3, CR77).

Another participant corroborated this idea by stating, "I want to shadow someone. Watch them do it and then have them watch me" (INT., N1, CR68). Another stated, "I think training should be done where you watch and then do" (INT., BO2, CR78). A member of the focus group said the following with participant FG5 shaking their head in agreement, "Most people learn best by watching and then doing it themselves" (FG., CR, CR326).

Continuing education. While most participants came to the conclusion that a case-based onboarding training should be conducted with shadowing, the focus group and the documents received from administration continued to push for more training in the form of continuing education. Two types of subthemes emerged: cross training and seminars. While little indication of how to perform cross training was discussed, six of the nine unnamed staff members represented in the analyzed documents requested cross training (DOC., D1, CR 168, 171, 254, 179, 104). One of these staff members went even further and expressed the needs for

training on how to deal with patients and for team building training exercises (DOC., D1, CR104). The focus group focused on the type of continuing education needed. Even among the group, these ideas were scattered with varied opinions on how this should be done. One participant stated,

> "We need monthly seminars. A way to have a gold standard for nursing. They need to be able to be away from their job and to concentrate on their job specific scenarios" (FG., FG7, CR283).

While the unnamed staff from the document reviews corroborated this with a request for seminars and the ability to get continuing education credits for their certifications, other focus group staff members did not feel it was needed (DOC, D1, CR336). They stated,
"I don't think they need another class but something to look at to refresh" (FG., FG5, CR101).

Research question three summary. Research Question three investigated what types of training the research participants felt was needed. Through data collection, it was determined that a case-based, onboarding training with the use of shadowing was needed with continuing education offered. In Chapter five, these findings along with the literature on training and educational concepts are used to build recommendations for future training developments at UAMS NW.

Summary of Data

In Chapter four, I presented explanations and themes that emerged from the data collected. Data were pulled from the official case record that contained records from the focus group session, individual interviews, individual observations, and document reviews. The data collected indicated a history of little to no comprehensive training on the EMR system from system implementation to employee onboarding to continuing education. Administration and other focus group participants acknowledged this as an issue but continued to have problems

with in-house training implementation efforts. These downfalls created an overall negative view of the EMR system. However, clear needs for improvement and ideas for training were presented by not only focus group participants, but by individual participants and unnamed staff members within the document reviews.

While a story was created from the data, information was organized around the research questions. These research questions worked in a linear fashion, using each other's responses to gauge the further understanding of the next question. The major themes, subthemes and emerged explanations of situations helped answer the research questions posed. In Chapter Five, the findings discussed in this chapter are tied to the literature in an effort to come to conclusions and recommendations for the case that was studied.

Chapter Five: Summary, Recommendations and Conclusion

The purpose of this study was to explore the training provided to staff at the University of Arkansas for Medical Sciences Northwest Family Medical Center in an effort to identify participant training experiences, needs, and perceptions. This study investigated how training theories and educational concepts impacted the current training and perceptions of the nursing and business office staff. Through the current pillars of adult learning, research suggests that adults want to be active participants within their learning with motivation needed (Merriam, 2001; Merriam & Bierema, 2013; Schunk & Zimmerman, 2012; Tough, 1979; Wynne, 2013).

This study looked specifically at the ties to adult learning concepts and training techniques the current case situation had as well as how to use these concepts and techniques to build a new training plan for the case study location. This study found that the current training utilized few pillars of adult learning and training techniques, which resulted in negative perceptions of the EMR system. However, the study also revealed that participants have a desire for training that is supported by these concepts and techniques.

Summary of Findings

Training healthcare professionals on technological systems requires an awareness of the needs of adult learners, the professional atmosphere, and the role of informatics within healthcare. EMR systems contain all patient records, billing and insurance information for their history at a clinical practice (Aaronson, Murphy-Cullen, Chop & Frey, 2001). These systems are extremely robust and require detailed knowledge to fully be able to train staff on its usage. Wentland (2003) explains that if training is not organized to meet the educational needs of adult learners, the training can cause more harm than good. Data seem to indicate this in the current study. Participant descriptions of the training history described various training efforts by

various coworkers and administrative members that gave bits and pieces of information to the participants. These informal, uncomprehensive training endeavors contributed to negative perceptions of the system. Farooq and Khan (2011) explain that when employees are not fully trained during onboarding on their work tasks or the functions of the system they use to perform these tasks, they cannot efficiently or effectively function in their job. Many of the participants expressed a concern and need for changes to not only the system but their jobs as a whole.

This study also presented participants with the opportunity to offer plans for training for the future. Andragogy explains that adult learners are goal-oriented problem solvers and like to be a part of the decisions regarding their learning (Merriam, 2001; Knowles, 1970, Wynne, 2013). The participants actively offered training ideas, which were founded in the way they personally learn best, indicating a desire to be involved. By reviewing the history of training to the needs of training with the participants, this study uncovered that while there was a lack of theoretical foundations and plans on current and past training, there existed a desire for comprehensive training to be implemented.

Discussion

Research Question One

How is the current EMR System training impacted by research and educational theories?

When asked about training creation and how it was impacted by research and educational theories, participants of this study indicated very little understanding of previous ties to their training efforts and experiences. Upon review of the actual training received, four categories emerged: show and tell, trial and error, shadowing, and documentation. Below, each category is reviewed for possible connections to previous research and educational theories.

The first category, show and tell, was described by participants as a "fly-by" training. It was looked at in a negative light with little help coming from this type of training experience. Kirk (2013) and Wentland (2003) explain that adult learners need rapport built and clear communication during training to properly prepare them for the training that is about to take place. The show and tell experiences described by participants came from anyone, not a dedicated trainer, and many things that were shown were inaccurate or incomplete. Abdinnour-Helm, Lengnick-Hall, and Lengnick-Happ (2003) described a similar situation where training was incomplete, resulting in a negative view of the system being trained on and even possible turnover due to these views. This same concept is looked at further in Research Question Two.

In addition to show and tell, participants described having to train themselves using trial and error. They explained how they received little to no formal training and were required to learn how to do their job functions by trial and error. Theorists on adult learning indicated that adult learners are naturally self-directed learners, but scaffolding is necessary for learners to be introduced to new educational concepts only when they are ready (Knowles, 1975; Houle, 1961; Tough, 1979; Merriam, 2001; Puntambekar & Hubscher, 2005). If this scaffolding is not implemented properly, the result is the learners being in a trial and error learning environment. Experts on the Theory of Trial and Error explain that it is a basic form of learning for many fundamental learning achievements, but that it is slow and tiresome for the learner (Hull, 1930).

The third category of training received was job shadowing. Shadowing was described by few participants with only one explaining a shadowing experience that was comprehensive enough to meet their needs. Research indicates that job shadowing is an effective way to onboard employees and encourages the transfer of learning (Hamilton & Hamilton, 1997, Heathfield, 2015).

Research Question Two

How does the EMR system training received affect the perceptions of the staff toward that same system?

Throughout data collection, this study discovered the staff perceptions of the EMR system. By comparing the training experiences to the perceptions, it was discovered that all participants who did not receive what they felt was comprehensive training upon being hired at UAMS NW, felt negatively towards the EMR. In talks with the one participant that received detailed shadowing training, it was discovered that there were many hands-on experiences and communications from the trainer acknowledging that the participant was learning the information correctly by reviewing their work. This acknowledgment ties directly to a need for adult learners to have increased self-efficacy in training. Researchers explain that while self-efficacy levels vary from person to person, they are increased by believing they can learn what is being taught, seeing the ties to their job, and by receiving verbal and emotional cues of learning success (Colquitt, LePine & Noe, 2000; Ota, 2006; Wentland, 2003; Lunenburg, 2011).

The participant who experienced comprehensive shadowing was the only participant who took the information learned and migrated it to the actual work environment in a repeated fashion. Theorists describe this as overlearning. This concept refers to the continued practice presented to the trainee by the trainer to complete the work they learned in training after initial training takes place (McGehee & Thayer, 1961). The researchers encourage follow ups to initial training for trainees to recall the information they learn (McGhee & Thayer, 1961). This can be in the form of shadowing after initial training or continuing education experiences, both of which were lacking with most of the participants within this study.

Along with these negative perceptions, needs for their job and the system emerged from the data. Participants described needs for both their job and system including a need for a comprehensive system, a need for system flow, a need for clear processes, and a need for uniformity among teams. Explaining these needs was a smooth transition for participants as they discussed their perceptions of the EMR system. Lieb and Goodlad (2005) explain that adults learn best when they know what is expected of them. By participants presenting these needs, it is indicated that they did not know completely what was expected of them.

Research Question Three

In what ways do UAMS Northwest employees think the clinical staff should be trained on the EMR system and how do those views compare to the current training experiences of those clinical staff members?

With an understanding of the training history, its ties to theoretical concepts and the perceptions of the EMR system, study participants offered ideas for training for clinical staff members. These ideas not only were for new employee onboarding using shadowing but for cross training and continuing education. Researchers on adult learning and organizational training emphasize that training should be conducted not as a one-time effort but a continual learning through their career (Adult Learning Theories and Practices, 2013; Lieb & Goodlad, 2005; McGehee & Thayer, 1961; Yamnill and McLean, 2001). Although how to actually achieve cross training and continuing education was difficult for participants to express, individual participants were able to explain the need for new employee onboarding to involve a hands-on shadowing experiences where they have the ability to do the work.

The acknowledgement of cross training and continuing education is a positive step, but Covell, Lemay & Gaumond (2004) explain that organizations with multiple sites have difficulty

implementing this type of training due to the need to distribute the same information in a timely manner to employees located at different sites. Shadowing is more of a one-on-one effort and implementation is easier since it requires face to face interactions of trainer and trainee regardless of site location.

Recommendations

The overall purpose of this research was to offer recommendations for a training program for UAMS NW on their EMR system. During this study, recommendations for organizational and training changes were developed. Prior to the development or implementation of any training programs, administration should look in detail at the policies, procedures, and job expectations of both the nursing and business office staff. Participants indicated a lack of understanding of their job duties as well as inconsistency of duties from team to team. These inconsistencies should be rectified with official notifications of the changes explained to all participants involved. Until this is accomplished, any training conducted at the case location will be based on an incomplete understanding of the job functions within and outside of the EMR system. This is counterproductive to not only the needs of adult learners, but to the organization's productivity and accuracy within the EMR system.

After these needs are met and inconsistencies are eliminated, it is recommended that UAMS NW create a comprehensive training program geared toward adult learners. Because the EMR system can change over time, this program should be built so that EMR system content updates can be easily incorporated into the training. The program should be created using the components of the ADDIE model and pillars of adult learning. The needs and learning styles of healthcare staff should be considered and hands-on, case-based training should be implemented with shadowing and overlearning opportunities implemented. The goal should be not just to get

the information presented to the employees, but to help them completely understand and retain what is taught.

First, an analysis in addition to this research should be conducted by administration and members of the training group. From this analysis, a timeline of completion, project plan, updated understanding of staff demographics, and the desired training types should be discussed. After analysis, the training group should design and then develop the training for the EMR. Research participants suggested having both employee onboarding and continuing education. Both types of training should be built. Within these trainings both the research participants and the literature on adult learning indicated that hands on learning, job shadowing, and how-to documentation should be included during the development of the training. After development, the training can be provided to staff. This includes deploying the actual training events, starting job shadowing scenarios, and having computer lab hands-on training events on the usage of the EMR system. To complete the training program, evaluations should be done at new employee and continuing education events to gauge the program's effectiveness. From these evaluations the analysis phase should begin again to offer a continually modified training program.

Future research is also encouraged based on these results. A follow-up case study is encouraged within one to two years to review the effectiveness of the changes made by administration. This second study can help identify what techniques positively impacted participant perceptions and actual usage within the system. The hope is that this additional research will give data to administration to support a continual improvement process and validate that work toward improvement is making a positive impact.

Conclusions

This case study indicated that employees at the University of Arkansas for Medical Sciences Northwest Family Medical Center believes training is vital for their EMR system. However the described history of training is inconsistent. Research participants acknowledged the training was only as good as the person that presented the material and they were unaware of anyone at UAMS NW knowing the system abilities completely. While how-to guides helped distribute correct information in pieces, it was delivered too little, too late. On its own, it was unable to combat the years of misinformation and dislike employees felt for the system and the training they received. The findings and recommendations of this study will help UAMS NW administration become aware of the impact the lack of training has had on employees and their personal abilities and perceptions of the EMR system. It will also help these same administrative members set organizational standards in place that will support future work toward building a comprehensive training program that targets the needs of employees relative to the EMR system.

References

Aaronson, J. W., Murphy-Cullen, C. L., Chop, W. M., & Frey, R. D. (2001). Electronic medical records: the family practice resident perspective. *FAMILY MEDICINE-KANSAS CITY-*, *33*(2), 128-132.

Accreditation Council for Pharmacy Education. (2011). Microsoft word - final S2007 guidelines 2.0 with changes identified in red font - S2007uidelines2.0_ChangesIdentifiedInRed. Retrieved from https://www.acpe-accredit.org/pdf/S2007Guidelines2.0_ChangesIdentifiedInRed.pdf

Albarrak, A. (2006). Designing E-learning systems in medical education.

American Association of Colleges of Nursing | CCNE accreditation [Website]. Retrieved from http://www.aacn.nche.edu/ccne-accreditation

Baldwin, T. T., & Ford, J. K. (1988). Transfer of training: A review and directions for future research. *Personnel Psychology*, *41*(1), 63-105.

Bamidis, P., Konstantinidis, S., Bratsas, C., & Kaldoudi, E. (2009). Enhancing medical curricula via online problem based learning–Experience using web 2.0 technologies. Paper presented at the International Technology, Education and Development Conference, Valencia, Spain. Retrieved from http://iris.med.duth.gr/Portals/14/pub05_conf_papers/Kaldoudi_INTED_2009_PBL.pdf.

Barling, J., Weber, T., & Kelloway, E. K. (1996). Effects of transformational leadership training on attitudinal and financial outcomes: A field experiment. *Journal of Applied Psychology*, *81*(6), 827-832.

Bartlett, K. R. (2001). The relationship between training and organizational commitment: A study in the health care field. *Human Resource Development Quarterly*, *12*(4), 335-352.

Baxter, P., & Jack, S. (2008). Qualitative case study methodology: Study design and implementation for novice researchers. *The Qualitative Report*, *13*(4), 544-559.

Beier, M. E., & Kanfer, R. (2010). Motivation in training and development: A phase perspective. *Learning, training, and development in organizations*, 65-97.

Belilos, C. 1999. Cross-training as a motivational and problem-solving technique [Website]. Retrieved from http://www.easytraining.com/crosstrain.htm.

Bernardo, V., Ramos, M. P., Plapler, H., de Figueiredo, Luiz Francisco Poli, Nader, H. B., Anção, M. S., Sigulem, D. (2004). Web-based learning in undergraduate medical education: Development and assessment of an online course on experimental surgery. *International Journal of Medical Informatics*, *73*(9), 731-742.

Borycki, E. M., Armstrong, B., & Kushniruk, A. W. (2009). From prototype to production: Lessons learned from the evolution of an EHR educational portal. In *AMIA Annual Symposium Proceedings* (Vol. 2009, p. 55). American Medical Informatics Association.

Bransford, J., Brown, A., & Cocking, R. (2000). How people learn: Mind, brain, experience and school, expanded edition. *DC: National Academy Press, Washington.*

Brown, J. (2002). Training needs assessment: A must for developing an effective training program. *Public Personnel Management, 31*(4), 569-578.

Burger, J., & Giger, A. (2014, February 13). How healthcare organizations can improve this year [Website]. Retrieved from http://www.gallup.com/businessjournal/167108/healthcare-organizations-improve-year.aspx.

Cannon-Bowers, J. A., & Bowers, C. (2009). Synthetic learning environments: On developing a science of simulation, games, and virtual worlds for training. *Learning, training, and development in organizations*, 229-261.

Cekada, T. L. (2010). Training needs assessment. *Professional Safety, 55*(3), 28-33.

Ceusters, W., De Moor, G., Bonneu, R., & Schilders, L. (1992). Training of health care personnel towards the implementation and use of electronic health care records using integrated imaging technology. *Informatics for Health and Social Care, 17*(4), 215-223.

Colman-Brochu, S., Sullivan, P., & Meninger, S. (2009). Using technology to teach technology. *Journal for Nurses in Staff Development - JNSD, 25*(6), E9-E13. doi:10.1097/NND.0b013e3181c266a4

Colquitt, J. A., LePine, J. A., & Noe, R. A. (2000). Toward an integrative theory of training motivation: A meta-analytic path analysis of 20 years of research. *The Journal of Applied Psychology, 85*(5), 678-707.

Commission on Accreditation for Health Informatics and Information Management Education. 2015. CAHIIM accreditation standards [Website]. Retrieved from http://www.cahiim.org/accredstnds.html.

Commission on Collegiate Nursing Education. (2013). Standards-amended-2013. Retrieved from http://www.aacn.nche.edu/ccne-accreditation/Standards-Amended-2013.pdf

Covell, C. L., Lemay, C., & Gaumond, D. (2004). Deployment of computer-based training programs via a hospital intranet: Methods used, lessons learned. *Journal for Nurses in Staff Development - JNSD, 20*(5), 197-210.

Davis, D., O'Brien, M. A. T., Freemantle, N., Wolf, F. M., Mazmanian, P., & Taylor-Vaisey, A. (1999). Impact of formal continuing medical education: Do conferences, workshops,

rounds, and other traditional continuing education activities change physician behavior or health care outcomes? *Jama*, *282*(9), 867-874.

Davidove, E. A. (1993). Evaluating the return on investment of training. *Performance Instruction*, *32*(1), 1-8.

HealthIT.gov. Definition and benefits of electronic medical records (EMR) | providers & professionals [Website]. Retrieved from http://www.healthit.gov/providers-professionals/electronic-medical-records-emr

Edmonson, S. R., Esquivel, A., Mokkarala, P., Johnson, C. W., & Phelps, C. L. (2005). Using technology to teach technology: design and evaluation of bilingual online physician education about electronic medical records. In *AMIA Annual Symposium Proceedings* (Vol. 2005, p. 946). American Medical Informatics Association.

Finnegan, R. P. (2010). Rethinking retention in good times and bad. *Rethinking Retention-Business Book Summaries*, *1*(1), 1-10.

Farooq, M., & Khan, M. A. (2011). Impact of training and feedback on employee performance. *Far East Journal of Psychology and Business*, *5*(2), 23-33.

Hamilton, S. F., & Hamilton, M. A. (1997). When is learning work-based? *Phi Delta Kappan*, *78*(9), 676.

Harrington, S. S., & Walker, B. L. (2003). Is computer-based instruction an effective way to present fire safety training to long-term care staff?. *Journal for Nurses in Professional Development*, *19*(3), 147-154.

Hatch, J. A. (2002). *Doing qualitative research in education settings.* Albany, NW: SUNY Press.

Healthfield, S. 2015. Job shadowing is effective on-the-job training [Website]. Retrieved from http://humanresources.about.com/od/training/g/job-shadowing.htm.

Hensley, B. (2013). Educating staff on electronic medical record documentation using a blended learning approach. Retrieved from http://www.google.com/url?sa=t&rct=j&q=&esrc=s&source=web&cd=1&cad=rja&uact=8&ved=0CDEQFjAA&url=http%3A%2F%2Fc.ymcdn.com%2Fsites%2Fanpd.site-ym.com%2Fresource%2Fresmgr%2F2014_Poster_Handouts%2FP143_Barb_Hensley.pdf&ei=ZCTIU_a_OuqO8gG1j4HQBQ&usg=AFQjCNEK4r_xor4Itk1-U6Q25O7Hd4bEBQ&bvm=bv.71198958,d.b2U

Hicks, W. D., & Klimoski, R. J. (1987). Entry into training programs and its effects on training outcomes: A field experiment. *Academy of Management Journal*, *30*(3), 542-552.

Holton, E. F., Bates, R. A., & Naquin, S. S. (2000). Large-Scale Performance-Driven Training Needs Assessment A Case Study. *Public Personnel Management*, *29*(2), 249-268.

Houle, C. O. (1961). *The inquiring mind.* Madison, WI: University of Wisconsin Press.

Hoyt, R. E., Bernstam, E. V., & Johnson, T. R. (2009). Overview of Medical Informatics. *Practical Guide for the Healthcare Professional*, 1.

Hull, C. L. (1930). Simple trial and error learning: A study in psychological theory. *Psychological Review, 37*(3), 241-256. doi:10.1037/h0073614

Jerant, A. (1999). Training residents in medical informatics. Retrieved from http://www.stfm.org/fmhub/Fullpdf/july99/ccifme.pdf

Johnson, J. T. (2005). Creating learner-centered classrooms: Use of an audience response system in pediatric dentistry education. *Journal of Dental Education, 69*(3), 378-381.

Kimmel, S. B., & McNeese, M. N. (2006). Barriers to business education: Motivating adult learners. *Journal of Behavioral & Applied Management, 7*(3), 292-303.

Kirk, K. (2013). Self-efficacy: Helping students believe in themselves. Retrieved from http://serc.carleton.edu/NAGTWorkshops/affective/efficacy.html

Kirkpatrick, D. (1996). Great ideas revisited. Techniques for evaluating training programs. Revisiting Kirkpatrick's four-level model. *Training and Development, 50*(1), 54-59.

Kirkpatrick, D. L. (2009). *Implementing the four levels: A practical guide for effective Evaluation of Training Programs.* San Francisco, CA: Barrett-Koehler Publishers.

Knowles, M. S. (1970). *The modern practice of adult education.* New York, NY: New York Association Press.

Knowles, M. S. (1970). The modern practice of adult education: Andragogy vs. pedagogy. New York, NY: New York Association Press.

Knowles, M. S. (1975). *Self-directed learning*. New York, NY: New York Association Press.

Koles, P., Nelson, S., Stolfi, A., Parmelee, D., & DeStephen, D. (2005). Active learning in a year 2 pathology curriculum. *Medical Education, 39*(10), 1045-1055.

Landry, M., Oberleitner, M. G., Landry, H., & Borazjani, J. G. (2006). Education and practice collaboration: Using simulation and virtual reality technology to assess continuing nurse competency in the long-term acute care setting. *Journal for Nurses in Professional Development*, *22*(4), 163-169.

Liaison Committee on Medical Education. (2013). Preface - functions2013june. Retrieved from https://www.lcme.org/publications/functions2013june.pdf

Lieb, S., & Goodlad, J. (2005). Principles of adult learning. Retrieved from http://www.lindenwood.edu/education/andragogy/andragogy/2011/Lieb_1991.pdf

Lim, D. H., & Morris, M. L. (2006). Influence of trainee characteristics, instructional satisfaction, and organizational climate on perceived learning and training transfer. *Human Resource Development Quarterly*, *17*(1), 85-115.

Locke, E. A., & Latham, G. P. (2006). New directions in goal-setting theory. *Current Directions in Psychological Science, 15*(5), 265-268.

Lunenburg, F. C. (2011). Self-efficacy in the workplace: Implications for motivation and performance. *International Journal of Management, Business, and Administration, 14*(1), 1-6.

Mack, N., Woodsong, C., MacQueen, K. M., Guest, G., & Namey, E. (2005). Qualitative research methods: A data collectors field guide. Retrieved from http://www.fhi360.org/sites/default/files/media/documents/Qualitative%20Research%20Methods%20-%20A%20Data%20Collector%27s%20Field%20Guide.pdf.

Mayhew, R. 2015. The importance of cross-training in improving team performance [Website]. Retrieved from http://smallbusiness.chron.com/importance-crosstraining-improving-team-performance-33216.html.

McCain, C. L. (2008). The right mix to support electronic medical record training: Classroom computer-based training and blended learning. *Journal for Nurses in Staff Development: JNSD: Official Journal of the National Nursing Staff Development Organization, 24*(4), 151-154. doi:10.1097/01.NND.0000320673.65824.db

McCarthy, P. R., & McCarthy, H. M. (2006). When case studies are not enough: Integrating experiential learning into business curricula. *Journal of Education for Business*, *81*(4), 201-204.

McNeill, J. (2012). Onboarding and induction. *Keeping Good Companies, 64*(11), 687-689.

Merriam, S. B. (2001). Andragogy and self-directed learning: Pillars of adult learning theory. *New Directions for Adult and Continuing Education, 2001*(89), 3-14.

Merriam, S. B. (2009). *Qualitative research: A guide to design and implementation.* Hoboken, NJ: John Wiley & Sons.

Merriam, S. B., & Bierema, L. L. (2013). *Adult learning: Linking theory and practice*. *Hoboken, NJ:* John Wiley & Sons.

Merriam, S. B., Caffarella, R. S., & Baumgartner, L. M. (2012). *Learning in adulthood: A comprehensive guide.* Hoboken, NJ: John Wiley & Sons.

Miller, J. A., & Osinski, D. M. (2002). Training needs assessment. *Society for Human Resource Management (SHRM) White Paper*, Retrieved from http://www.dynamicconceptjb.com/Download/TNA.pdf.

Mocker, D. W., & Spear, G. E. (1982). Lifelong learning: Formal, nonformal, informal, and self-directed. information series no. 241. *National Center Publications, 1982*, 1–31.

Olagunju, A., Mokwe, M. D., & Anderson, J. (2012). Effective electronic performance system training for supporting the clinical activities of physicians. Paper presented at the International Conference of Engineering and Technology Innovation, Kaohsiung, Taiwan. Retrieved from http://www.iiis.org/CDs2012/CD2012IMC/ICETI_2012/PapersPdf/EB850ZW.pdf.

Ota, C., DiCarlo, C. F., Burts, D. C., Laird, R., & Gioe, C. (2006). Training and the needs of adult learners [Website]. *Journal of Extension, 44*(6)

Patton, M. Q. (2002). Designing qualitative studies. *Qualitative Research and Evaluation Methods, 3*, 230-246.

Phillips, J. J. (1997). *Return on investment in training and performance improvement programs*. Houston, Tex, USA: Gulf Publishing Company.

Prince, M. (2004). Does active learning work? A review of the research. *Journal of Engineering Education, 93*(3), 223-231.

Reiser, R. A., & Dempsey, J. V. (2011). *Trends and issues in instructional design and technology*. Upper Saddle River, NJ: Merrill/Prentice Hall.

Roger, C. (2009). Understanding the adult learners' motivation and barriers to learning. Retrieved from http://www.google.com/url?sa=t&rct=j&q=&esrc=s&source=web&cd=3&cad=rja&ved=0CD8QFjAC&url=http%3A%2F%2Fwww.academia.edu%2F1267765%2FUnderstanding_the_Adult_Learners_Motivation_and_Barriers_to_Learning&ei=ZFx9UtjRMPLMsQTh54CYCA&usg=AFQjCNGXIBLrZsQLWy8TxX4DjY8ZDOurpw&sig2=SfnqMFt0AFwFH00saWd4ZA&bvm=bv.56146854,d.eW0

Rose, A. F., Schnipper, J. L., Park, E. R., Poon, E. G., Li, Q., & Middleton, B. (2005). Using qualitative studies to improve the usability of an EMR. *Journal of Biomedical Informatics, 38*(1), 51-60. doi:http://dx.doi.org/10.1016/j.jbi.2004.11.006

Saks, A. M., & Belcourt, M. (2006). An investigation of training activities and transfer of training in organizations. *Human Resource Management, 45*(4), 629-648.

Schram, T. H. (2006). *Conceptualizing and proposing qualitative research*. Upper Saddle River, NJ: Pearson Merrill Prentice Hall.

Schunk, D. H. (2000). *Learning theories.* Upper Saddle River, NJ: Merrill Upper Saddle River, NJ.

Schunk, D. H., & Zimmerman, B. J. (2012). *Motivation and self-regulated learning: Theory, research, and applications*. New York, NY: Taylor and Francis Group.

Sisson, G. R. (2001). *Hands-on training: A simple and effective method for on the job training*. Oakland, CA: Berrett-Koehler Publishers.

Taradi, S. K., Taradi, M., Radić, K., & Pokrajac, N. (2005). Blending problem-based learning with web technology positively impacts student learning outcomes in acid-base physiology. *Advances in Physiology Education, 29*(1), 35-39.

Tough, A. (1979). *The adult's learning projects. A fresh approach to theory and practice in adult learning*. Minneapolis, MN: Illuminated Way Publishing.

Volpe, C. E., Cannon-Bowers, J. A., Salas, E., & Spector, P. E. (1996). The impact of cross-training on team functioning: An empirical investigation. *Human Factors: The Journal of the Human Factors and Ergonomics Society, 38*(1), 87-100.

Wentland, D. (2003). The strategic training of employees' model: balancing organizational constraints and training content. *SAM Advanced Management Journal, 68*(1), 56-64.

Wiecha, J., Gramling, R., Joachim, P. & Vanderschmidt, H. (2003). Collaborative e-learning using streaming video and asynchronous discussion boards to teach the cognitive foundation of medical interviewing: A case study. Retrieved from http://www.ncbi.nlm.nih.gov/pmc/articles/PMC1550556/

Wynne, R., (n.d.). Characteristics of adult learners [Website]. Retrieved from http://www.assetproject.info/learner_methodologies/before/characteristics.htm

Yamnill, S., & McLean, G. N. (2001). Theories supporting transfer of training. *Human Resource Development Quarterly, 12*(2), 195-208. doi:http://www3.interscience.wiley.com/cgi-bin/jhome/74000165.

Yin, R. K. (2003). Analyzing case study evidence. *Case Study Research: Design and Methods*, 109-140.

Youssef, W. (2013). Evaluation of EHR training as a catalyst to achieve clinician satisfaction with technology in acute care setting. Retrieved from http://dspace.library.uvic.ca:8080/bitstream/handle/1828/4827/Youssef_Walid_MSc_2013.pdf?sequence=1

Zandieh, S., Yoon-Flannery, K., Keperman, G., Langsam, D., Hyman, D., & Kaushal, R., (2008). Challenges to EHR implementation in electronic-versus paper-based office practices. *Journal of General Internal Medicine, 23*(6), 755-761. doi: 10.1007/s11606-008-0573-5.

Zinovieff, M. (2008). Review and analysis of training impact evaluation methods, and proposed measures to support a United Nations system fellowships evaluation framework. Retrieved from http://esa.un.org/techcoop/fellowships/SFOMeeting/ParticipantArea/BackgroundDocuments/6_REVIEW report FINAL .pdf

Zywiak, W. (2001). Selecting and installing an EMR: HPHC's successful implementation. In W. Zywiak, *Information technology for the practicing physician* (pp. 94 – 103*).* New York, NW: Springer.

	General Technical Ability					Understanding of the EMR System					Usage Abilities of the EMR System					Training Received on the EMR System						
	Extremely Poor	Below Average	Average	Above Average	Excellent	Extremely Poor	Below Average	Average	Above Average	Excellent	Extremely Poor	Below Average	Average	Above Average	Excellent	Extremely Poor	Below Average	Average	Above Average	Excellent	Total Score	General Perception Level
			3				2					2				1					8	2
		2					2					2				1					7	1.75
			3					3				2					2				10	2.5
			3					3					3				2				11	2.75
				4				3					3					3			13	3.25
				4				3					3					3			13	3.25
			3						4					4				3			14	3.5
Business Office			3						4					4					4		15	3.75
			3				2					2					2				9	2.25
			3					3						4		1					11	2.75
		2						3							5	1					11	2.75
			3						4				3				2				12	3
			3					3					3					3			12	3
			3					3					3					3			12	3
			3						4					4				3			14	3.5
Nursing Area				4					4				3					3			14	3.5

Key
Final Participants
Requested Final Participant Not in Study
Possible Participant Left Study Site

Figure 1. Possible Final Participant Perceptions. This figure illustrates the perception levels of all possible final participants from the Business Office and Nursing Areas. Each entry is identified by a number in the Likert scale with a Total Score generated and an average identified by the General Perception Level.

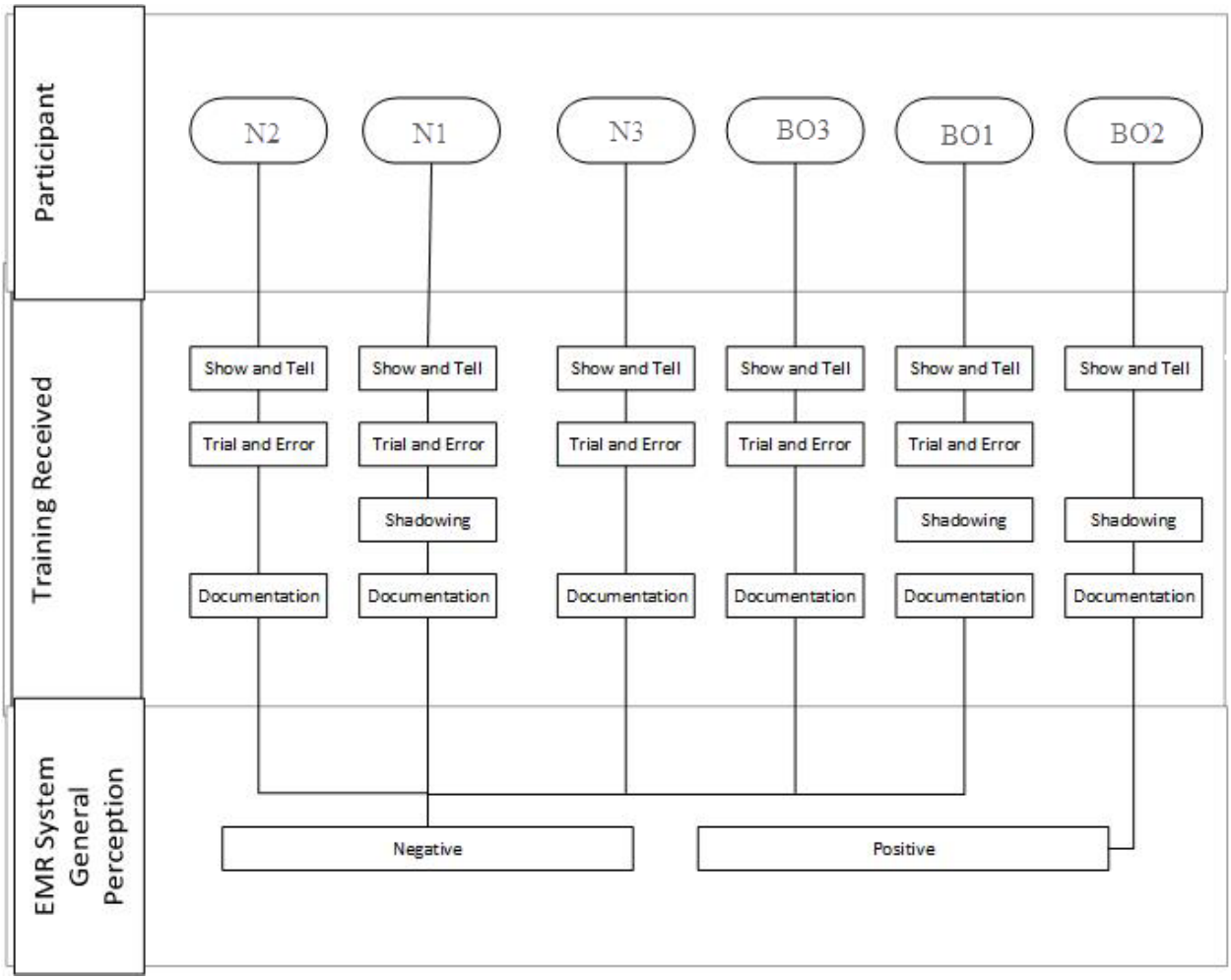

Figure 2. Participant Training Received and EMR Perceptions. This figure illustrates the types of training each individual participant received with their vocalized view of that EMR system.

1) Example of clear process used for demonstration by researcher.

2) Example of process made by Participant N1.

3) Example of process made by Participant BO3.

4) Example of process made by Particiapnt N2.

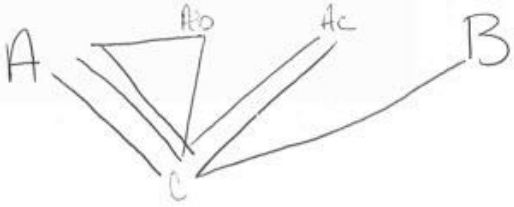

Figure 3. Participant Views of Processes. This figure shows the view of how processes work within the EMR in the eyes of the participant.

Appendix A: Search Terms

A. Clinical Staff
    a. Types of Clinical Employees
        i. Pharmacy Accrediting Body
            1. Pharmacy Curriculum
            2. Pharmacy Technology
        ii. Medical Accrediting Body
        iii. Coder School
            1. Coder curriculum
        iv. Nursing Accrediting Body
            1. Nursing curriculum
            2. Nursing and technology
B. Informatics
    a. Health Informatics
        i. EMR
        ii. EHR
        iii. Technology within clinics
        iv. Technology within healthcare facilities
C. EMR
    a. Vendors of EMR's
        i. Training programs of vendors
    b. EMR Implementations
        i. Training during implementation
        ii. Training downfalls during EMR Implementation
        iii. Training needs during EMR Implementation
    c.
D. Adult Learning
    a. Adult Learning History
        i. Knowles
        ii. Connectionism
        iii. Pedagogy compared to Andragogy
    b. Andragogy
        i. Assumptions of adult learning
            1. Adult learners and EMR's
            2. Adult learners and organizational training
            3. Healthcare workers as adult learners
        ii. Key components of adult learning
            1. Self-directed learning
                a. Self-directed learning techniques
                b. Types of training for self-directed learning
            2. Motivation
                a. How to get Learners Motivated

b. Techniques to Motivate
c. Motivate nurses in EMR training

3. Self-efficacy
    a. Healthcare workers and their self-efficacy
    b. Impact of training on self-efficacy
4. Rapport
    a. Ties between rapport and self-efficacy
    b. Building a connection between training and trainers
5. Learning transference
    a. How much learning transfers to on the job
    b. How to increase on the job transference
    c. Healthcare training and learning transference
    d. EMR training learning transference
        i. Overlearning
        ii. Documentation
    e.

c. Instructional models
    1. ADDIE Model
        a. Components of ADDIE
        b. Using ADDIE in organizational training
        c. ADDIE and EMR training
        d. Evaluations of training
            i. Evaluation techniques

d. Organizational training
    i. Techniques
    ii. Types of training
        1. Employee Onboarding
            a. Hospital Employee Onboarding
            b. EMR Onboarding
        2. Continuing Education
            a. Healthcare Continuing Education
            b. Why is Continuing Education so important
        3. Cross Training
            a. What is cross training
            b. Cross training in the medical field
            c. Cross training on technology
    iii. Job Shadowing
    iv. Computer Based Training
        1. CBT for EMR training
        2. CBT creation
        3. CBT in healthcare
    v. Audience Response Systems
        1. Use of Audience Response Systems in healthcare education

vi. Web 2.0 in Healthcare
vii. Virtual worlds in medical school
viii. Perceptions
    1. Perceptions of people who get training
    2. How do perceptions change when trained
    3. Nursing perceptions on training

Appendix B: UAMS Administration Approval Letter

UAMS
NORTHWEST
UNIVERSITY OF ARKANSAS FOR MEDICAL SCIENCES

August 14, 2014

University of Arkansas
Fayetteville, AR 72701

To Whom It May Concern:

Please accept this letter as confirmation that Victoria Miller, an employee with UAMS Northwest, is approved to conduct research on the EMR system and its training provided at the UAMS NW Family Medical Center (FMC) in Fayetteville.

Ms. Miller has worked in our IT Department for four years; employed with UAMS a total of six years. Kevin Williams, IT Director, is her direct supervisor. She has no supervisory ties to any of the employees that work for the FMC.

If you need more information, please contact any of us at 479-713-8000.

Sincerely,

R. Gullett Jr. M.D.
Robert R. Gullett, Jr., M.D.
Assistant Vice Chancellor
Director, Regional Center
8-14-14

K. Keith Faught 8-14-14
Keith Faught
Director of Finance

Kevin Williams 8-14-14
Kevin Williams 8-14-14
IT Director

Natalie Wood 8/14/14
Natalie Wood
FMC Clinic Manager

Appendix C: Request to Participate Email

Email Title: Participation Request for Research on UAMS NW EMR System Training

Dear _____;

Good morning/afternoon. As many of you know, I am both a member of the Information Technology department at UAMS Northwest and a doctoral candidate in the Curriculum and Instruction Department at the University of Arkansas. I am conducting a research study as part of the requirements of my degree in curriculum and instruction, and I would like to invite you to participate.

Supported by members of the UAMS Northwest clinical administration, this study aims to learn about your experiences and views of our electronic medical record (EMR) system, Centricity. If you decide to participate, you will be asked to be observed by the researcher, participate in at least one face-to-face interview, assist with providing and relevant documents for the study for review, and review the researcher interpretations of your participation for accuracy and completion. In particular, your level of understanding of the EMR system will be observed through your normal usage and you will be asked questions about previous training experiences and those you wish you could have. All study meetings will take place at UAMS Northwest at a mutually agreed time and place and should last about two hours total with one hour dedicated to the primary interview. The primary interview will be audio taped so that I can accurately reflect on what is discussed. The recording will only be reviewed by members of the research team who will transcribe and analyze them. They will then be erased.

Participation is voluntary and confidential. Study information will be kept in a secure location by the researcher. The results of the study may be published or presented at professional meetings or to UAMS Northwest administration, but your identity will not be revealed.

You do not have to be in this study if you do not want to. You may also quit being in the study at any time or decide to not answer any question(s) you are not comfortable answering. Participation, non-participation or withdrawal will not affect your work environment in any way.

I am happy to answer any questions you have about the study. Please see my contact information below. If you have any questions about your rights as a research participant, you may contact the Institutional Review Board of the University of Arkansas at ###-###-####.

Thank you for your consideration. If you would like to participate, please click on the below link and complete the Introductory Survey. By completing this survey you are acknowledging your agreement to participate.

LINK

Thanks,
Victoria Miller

Appendix D: Initial Survey

Initial E-Survey https://docs.google.com/forms/d/1GkYEvD6OYUuQJ2XoUiYFgeambjr...

Initial E-Survey

Study Purpose:
To generate an understanding of the perceptions and experiences of the EMR System and its training at UAMS Northwest Family Medical Center.

E-Survey Purpose:
This will be used to inform participant selection by creating a baseline understanding of the technical abilities, backgrounds, basic perceptions and other demographical data of possible participants

Agreement to Participate Notice:
By completing the below survey, you are agreeing to be a participant within the study. As described in the email this link was within, participation is completely voluntary. Depending on your responses below, you may be asked to participate in more detailed data collection events like focus groups, interviews, and researcher observations.

* Required

First and Last Name*

Department*
- Administration
- Information Technology
- Nursing
- Business Office
- Call Center
- Other:

What is your primary location at UAMS NW?*
- Fayetteville
- Springdale

If you are a nurse, what team are you assigned to?
Note: Call Center nurses do not need to complete this question.
- Red
- Blue
- Green

Job Role*
Please select all that apply. At least one selection must be made.
- Supervisor, Manager or Director
- Care Coordinator
- Nurse
- Check-in/ Check-out Staff
- Appointment Setter
- Call Center Nurse
- Staff that provides technical or EMR guidance
- Trainer
- Other:

How long have you worked in healthcare?*

How long have you worked at UAMS NW Family Medical Center?*

Rate all of the following based on your perceptions. *
Choose one radio button selection per row.

	Extremely Poor	Below Average	Average	Above Average	Excellent
General Technical Ability					
Understanding of the EMR System					
Usage Abilities of the EMR System					
Training Received on the EMR System					

On average, how much time do you spend daily within the EMR System at UAMS NW?*

- Less than 1 hour
- 1 - 3 hours
- 3 - 5 hours
- 5+ hours

In your own words, how do you feel about the EMR system at UAMS NW?

In your own words, how do you feel about the training you have received to date on the usage or the components of the EMR system at UAMS NW?

Submit

Never submit passwords through Google Forms.

Appendix E: Focus Group Questions

Welcome

- Introduction of Researcher
- Topic:
    - EMR System Training Makeup and Needs
- Results Usage:
    - Research study regarding the experiences and perceptions of clinical staff on the EMR system and its training.
- Focus Group Participant Selection
    - Based on job functions as indicated on the study Introductory Survey. Focus group participant roles include:
        - Supervisor/Director
        - Information Technology
        - Trainer

Guidelines

- No right or wrong answers, only differing points of view
- We're audio recording. Please one person talking at a time.
- My roles as a moderators will be to guide the discussion.
- Please talk with each other and not to me, the researcher.

Questions

1. Let's start the discussion by going around the room and discussing what current trainings are offered over the EMR in your area or for your employees including:
    a. Target Audience
    b. Purpose
    c. General Makeup
    d. How often

2. How was your current training creation impacted by the learning or training needs of participants? Like:
    a. Self-Directed Learning
    b. Learning Transference
    c. Motivation

3. How was technology incorporated in the trainings and what was the results of the incorporation? Like:
    a. Computer Labs
    b. Online Modules
    c. Small Videos

4. Now that we know how each area currently trains employees on the EMR system, please discuss how you believe training should be done?
    a. Why?

Final Question

As mentioned in the beginning of this gathering, the focus was on discovering the kinds of EMR trainings that are currently offered and its makeup.
Have we missed anything that you would like to share?

Appendix F: Individual Participant Interview Questions

1. What are your thoughts on the EMR system?
    a. *Probing: Why do you feel that way?*

2. What type of training did you receive on the EMR when you got hired at UAMS Northwest?

    Probing:
    - *One-on-One*
    - *Group*
    - *Computer Based*
    - *Online modules*
    - *Vendor provided*

3. How did it match your expectations for training?

    Probing:
    - *Why do you feel that way?*

4. What type of EMR training have you received since you started working at UAMS Northwest?

    Probing:
    - *One-on-One*
    - *Group*
    - *Computer Based*
    - *Online modules*
    - *Vendor provided*

5. What are your expectations for EMR training?

    Probing: How will that change your opinion of the EMR system?

6. How did the training affect your views of the EMR?

Appendix G: IRB Exemption Letter

UNIVERSITY OF ARKANSAS

Office of Research Compliance
Institutional Review Board

September 8, 2014

MEMORANDUM

TO:	Victoria Miller Cheryl Murphy
FROM:	Ro Windwalker IRB Coordinator
RE:	New Protocol Approval
IRB Protocol #:	14-08-065
Protocol Title:	*EMR Training Tactics: A Case Study of Clinical Staff Training Experiences, Needs and Perceptions*
Review Type:	☒ EXEMPT ☐ EXPEDITED ☐ FULL IRB
Approved Project Period:	Start Date: 09/08/2014 Expiration Date: 09/07/2015

Your protocol has been approved by the IRB. Protocols are approved for a maximum period of one year. If you wish to continue the project past the approved project period (see above), you must submit a request, using the form *Continuing Review for IRB Approved Projects*, prior to the expiration date. This form is available from the IRB Coordinator or on the Research Compliance website (http://vpred.uark.edu/210.php). As a courtesy, you will be sent a reminder two months in advance of that date. However, failure to receive a reminder does not negate your obligation to make the request in sufficient time for review and approval. Federal regulations prohibit retroactive approval of continuation. Failure to receive approval to continue the project prior to the expiration date will result in Termination of the protocol approval. The IRB Coordinator can give you guidance on submission times.

This protocol has been approved for 15 participants. If you wish to make *any* modifications in the approved protocol, including enrolling more than this number, you must seek approval *prior to* implementing those changes. All modifications should be requested in writing (email is acceptable) and must provide sufficient detail to assess the impact of the change.

If you have questions or need any assistance from the IRB, please contact me at 210 Administration Building, 5-2208, or irb@uark.edu.

210 Administration Building • 1 University of Arkansas • Fayetteville, AR 72701
Voice (479) 575-2208 • Fax (479) 575-3846 • Email irb@uark.edu

Appendix H: Consent Form

Consent Form for Participation in a Research Study
University of Arkansas

Research Title: EMR Training Tactics: A Case Study of Clinical Staff Training Experiences, Needs and Perceptions

Principal Researcher: Victoria Miller

Description of the research and your participation

You are invited to participate in a research study conducted by Victoria Miller. Supported by members of the UAMS Northwest clinical administration, this study aims to learn about your experiences and views of our electronic medical record (EMR) system, Centricity.

Your participation will involve least one of the following: electronic survey, group focus group, individual face-to-face interview, assist with providing any relevant documents for the study for review by the researcher, researcher observation visit, and reviews of the researcher interpretations of your participation for accuracy and completion. In particular, your level of understanding of the EMR system will be observed through your normal usage and you will be asked questions about previous training experiences and those you wish you could have had. All study meetings will take place at UAMS Northwest. All one-one-one sessions will be at a mutually agreed time and place and should last about three hours total with one hour dedicated to the primary interview. The primary interview and the focus group session will be audio taped so that I can accurately reflect on what is discussed. The recording will only be reviewed by members of the research team who will transcribe and analyze them. They will then be erased.

Risks and discomforts

There are no known risks associated with this research.

Potential benefits

This study has the ability to present findings within an area of research gap that has not been previously researched: EMR training and its ties to educational theories and concepts. It also is of much benefit to the UAMS Northwest Family Medical Center in that the findings will give the administration a clear picture of the training to utilize for their clinical employees in both onboarding processes and continuing education. With UAMS Northwest not currently having any training for these employees, it will be a group up plan that they will be able to implement with guidance from the research findings.

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Principal Researcher: Victoria Miller

Protection of confidentiality

Participation is confidential to the extent allowed by law and University policy. Study information will be kept in a secure location by the researcher. The results of the study may be published or presented at professional meetings or to UAMS Northwest administration, but your identity will not be revealed.

Voluntary participation

Your participation in this research study is voluntary. You may choose not to participate and you may withdraw your consent to participate at any time. You may deny to answer any questions you feel uncomfortable answering. You will not be penalized in any way should you decide not to participate or to withdraw from this study. Participation, nonparticipation or withdrawal will not affect your work environment in any way.

Contact information

If you have any questions or concerns about this study or if any problems arise, please contact Victoria Miller at the ……. If you have any questions about your rights as a research participant, you may contact the Institutional Review Board of the University of Arkansas at 479-575-2208.

Consent

I have read this consent form and have been given the opportunity to ask questions. I give my consent to participate in this study.

Participant's signature_____ Date:_____