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Distracted Practice and Patient Safety: The Healthcare Team Experience: A Dissertation

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**Distracted Practice and Patient Safety:
The Healthcare Team Experience**

A Dissertation Presented

By

Lynn Berggren Knapp D'Esmond

Submitted to the

University of Massachusetts Medical School, Graduate School of Nursing

In partial fulfillment of the requirements for the degree

Doctorate of Philosophy

Nursing

January 2016

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University of Massachusetts Worcester
Graduate School of Nursing

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Dedication

I want to thank God for blessing me with the opportunity to obtain this degree and dedicate my dissertation research to my family. First to my Mother, whose visiting nurse momentarily eased her discomfort from Multiple Sclerosis and planted in me the seed of desire to become a nurse. To my Father, for his vision and commitment to education that continues to shine a light on my life from above. To my sister who walked the doctoral path before me and provided encouragement along the way. To my children, Tara, Shawn, Joel, Scott, Brad, Sara, Renee, and Chris, their spouses and children, for supporting and experiencing this educational quest with me. To my friends who are part of my “family” and continually provided support, balance and perspective. To my husband, Tom, the love of my life, for his patience and love that sustained me each and every step of the way throughout this amazing journey!

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I especially want to thank my dissertation committee, Dr. Carol Bova, my dissertation chair, who inspired, motivated and encouraged me at every step and whose wisdom provided guidance and direction to overcome all obstacles. Dr. Margaret Hudlin, committee member, for her expertise and commitment to patient safety. Dr. Eileen Terrill, committee member, for her knowledge, insight and unfailing encouragement every step of the dissertation process.

Many thanks to the leaders, managers, and staff for their support of the many details needed to complete this study, including unit observations and recruitment of participants. I am especially grateful for each of the healthcare team members, nurses, physicians and pharmacists, who shared their time and experiences with me, making this research possible.

And most importantly to my extraordinary family who loved, encouraged, tolerated, and provided countless distractions along the way. I am blessed to have you all in my life.

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Abstract

Purpose: The purpose of this study was to explore the experiences of distracted practice across the healthcare team.

Definition: Distracted practice is the diversion of a portion of available cognitive resources that may be needed to effectively perform/carry out the current activity.

Background: Distracted practice is the result of individuals interacting with the healthcare team, the environment and technology in the performance of their jobs. The resultant behaviors can lead to error and affect patient safety.

Methods: A qualitative descriptive (QD) approach was used that integrated observations with semi-structured interviews. The conceptual framework was based on the distracted driving model and a completed concept analysis.

Results: There were 22 observation sessions and 32 interviews (12 RNs, 11 MDs, and 9 Pharmacists) completed between December, 2014 and July 2015. Results suggested that distracted practice is based on the main theme of cognitive resources which varies by the subthemes of individual differences; environmental disruptions; team awareness; and “rush mode”/time pressure.

Conclusions and Implications: Distracted practice is an individual human experience that occurs when there are not enough cognitive resources available to effectively complete the task at hand. In that moment an individual shifts from thinking critically, being able to complete their current task without error, to not thinking critically and working in an automatic mode. This is when errors occur. Additional research is needed to evaluate intervention strategies to reduce and prevent distracted practice.

Distracted Practice and Patient Safety: The Healthcare Team Experience

Dissertation Proposal

Lynn Berggren Knapp D'Esmond

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Distracted Practice and Patient Safety: The Healthcare Team Experience

Introduction

Health care errors are the sixth leading cause of death in the United States (U.S.) (American Association for Justice, 2012; National Quality Forum, 2013). Medication related errors are the most frequently reported health care error that occur on a daily basis in the acute care setting (Aspden & Institute of Medicine (U.S.). Committee on Identifying and Preventing Medication Errors, 2007; Emanuel et al., 2008). In the U.S. medication errors harm over 1.5 million people and cause over 7,000 preventable deaths annually (American Association for Justice, 2012; National Patient Safety Foundation, 2013). Costs from these medication errors are estimated at between \$3.5 and \$29 billion annually (Wachter, 2012). The Institute of Medicine (IOM) reports *To Err is Human: Building a Safer Health Care System* (Kohn, Corrigan, & Donaldson, 2000) and *Crossing the Quality Chasm: A New Health System for the 21st Century* were the first to identify the magnitude of these preventable healthcare errors and are credited with launching the Patient Safety movement (Institute of Medicine (U.S.). Committee on Quality of Health Care in America., 2001; Kohn et al., 2000). Today improving patient safety is a priority area for everyone on the healthcare team (Institute of Medicine, 2005).

In situations requiring the cognitive processing of large amounts of complex, frequently changing information, distractions have been found to negatively impact human functioning (Feil, 2013). Human factors, including “distraction” are responsible for 80% of healthcare errors (Pape, 2003; Sitterding, Broome, Everett, & Ebright, 2012). One example of this occurs in medication management. Distractions at any point in the medication process are frequently cited as increasing error and negatively impacting patient safety. The medication process in the acute care setting begins on admission with reconciliation of the current medications the patient was

taking at home and includes the initial orders of medications prescribed for the patient while in the hospital. Each medication order moves through the process of transcription, dispensing, preparation, administration and documentation. Medication reconciliation is completed with any transfer in level of care and again at discharge to include all appropriate prescriptions and instructions for the medications the patient will continue taking at home. Safe and effective medication management requires coordination of the health care team and includes the ordering practitioner, nurses, and pharmacists. Distracted practice at any point in the process may result in an error. Mayo and Duncan (2004) surveyed 983 nurses who identified distractions as ranking second on the top ten list of causes for error, the first being poor physician handwriting (Mayo & Duncan, 2004). Westbrook, et al. (2010) found that each interruption during the medication process was associated with a 12.1% increase in procedural failures and a 12.7% increase in clinical errors (Westbrook, Woods, Rob, Dunsmuir, & Day, 2010). Biron, Loiselle & Lavoie-tremblay (2009) reviewed 23 studies whose investigators reported distractions to be the precursor to interruptions with a 60% increase in medication administration errors when the nurse is interrupted during the preparation phase. Intervention studies conducted to decrease distractions and thereby improve safety and reliability during the medication administration process have shown promise. In a study that focused on six safety practices including protecting the process from distractions and interruptions, Kliger, Flegen, Gootee & O'Neil (2009) demonstrated an increase in the reliability of the medication administration process from 85% at baseline to 96% at 18 months. Pape et al. (2005) used focused protocols, signage and teamwork to significantly reduce mean scores of distractions experienced by nurses during medication administration from 42 at the beginning to 31 at the end of the study.

Today's hospital environments are filled with copious distractions. Patient's families, visitors, and staff from multiple disciplines can be a source of distractions to anyone working to provide safe in-patient care (Trbovich, Prakash, Stewart, Trip, & Savage, 2010). In addition, the continuous introduction of new technological devices being implemented to further assist nurses in safely monitoring and caring for their patients can increase distractions. Communication with colleagues and coworkers via smart phones and other hand held devices have become the norm. At the same time these devices are responsible for diverting some of the attention that may be needed to safely complete our current work (Feil, 2013; Hohenhaus & Powell, 2008; J. Ross, 2013). Individuals also utilize their personal smart phones while at work to stay in contact with family and friends through texting and social media (Booth, 2012; Nguyen, 2012; Richtel, 2011; J. Ross, 2013). The actual impact of all these distractions on our practice and ultimately on patient safety is unknown and needs to be determined.

The purpose of this study is to further explore the experience of distracted practice among healthcare providers in the acute care setting.

The specific aims of this qualitative descriptive study are to:

1. Describe the characteristics of distracted practice of healthcare team members in the acute care setting, specifically doctors, nurses, and pharmacists.
2. Describe the context, antecedents, stimuli and consequences surrounding distracted practice.
3. Develop a preliminary model that can be used to advance the study of distracted practice as it relates to patient safety in the acute care setting.

The following definition of distracted practice that will be used in this study evolved from a recent concept analysis of distracted practice (see pages 5-23): *Distracted practice is the*

diversion of a portion of available cognitive resources that may be needed to effectively perform/carry out the current activity.

Distracted Practice: Overview

Distracted practice is a growing concern for all healthcare professionals, but especially for those practicing in today's complex, technology rich, acute care environment. Distractions are detrimental to human functioning in circumstances requiring cognitive processing of large amounts of intricate, inter-related and constantly changing information (Feil, 2013). These types of situations occur all the time in healthcare settings (Biron, Lavoie-Tremblay, & Loiselle, 2009; Feil, 2013; J. Ross, 2013). When new or additional information is presented, the cognitive skills of the healthcare professional must be able to focus attention to properly encode the information to memory for retrieval at a future time (Feil, 2013). Diverting focus at key times of information coding are linked to healthcare errors (Feil, 2013). Distracted practice on the part of healthcare professionals may be a significant contributing factor to healthcare errors which is currently the sixth leading cause of death in the United States (American Association for Justice, 2012; National Quality Forum, 2013).

The health care industry has been challenged to improve safety while reducing cost (Sherwood & Barnsteiner, 2012). This challenge has resulted in pressure to render care to more patients in less time. Additionally, health care systems are incorporating many new technological products and devices into the provision of patient care. Many come with data displays and alarm capabilities that claim to foster efficiency, lower cost, and improve patient safety, while at the same time possibly increasing distractions (Feil, 2013). New technologies may only be part of the reason healthcare workers identified distractions as a precursor to an error when they reported an adverse event or a near miss (Biron et al., 2009). The actual source or cause of the distraction in each situation currently remains unknown as this information is not collected as part of the analysis of the event. For example two adverse event reporting software

programs, Corporate Systems Self-Insurance Technology and Resource System (CS STARS), and Radical Logic Technologies Inc. (RL Solutions), commonly used in hospitals to capture data on medication events include distractions in their lists of contributing factors for reporters to choose from but do not require the reporter to identify actual source of the distraction.

Of significant note is the lack of a consistent definition of what constitutes a distraction. Without a clear definition, it is not possible to measure the various causes of distractions in clinical practice or their impact on individual practice and patient safety. In addition, the term distraction is often confused with or used synonymously with the term interruption (Beyea, 2007). Although related, these two terms are distinctly different since distraction refers to continuing to complete the task at hand with some attention having been diverted (Merriam-Webster, 2013), while interruption refers to stopping or suspending the current activity to take on a different task (Brixey et al., 2007; Merriam-Webster, 2013).

Distractions have been studied extensively in the aviation and automotive industries. These two fields like healthcare have enormous responsibility to protect lives and rely on safe practice to preserve and maintain public confidence. The Federal Aviation Administration (FAA) after reviewing a series of accidents found that flight crews were distracted from their flying duties by engaging in non-essential conversations and activities. In 1981, the FAA implemented the Sterile Cockpit Rule. This Crew Resource Management (CRM) rule requires pilots and crewmembers to refrain from non-essential duties, including extraneous conversation, visits to the cockpit by flight attendants, non-pertinent radio calls, overhead announcements, and sight-seeing, during critical phases of flight, particularly take-off and landing (Sumwalt, 1993). Recently, in efforts to improve patient safety, the sterile cockpit rule has been applied to healthcare in the acute care setting (Hohenhaus & Powell, 2008). In their plan for improving

medication administration Hohenhaus and Powell (2008) recommended limiting conversation only to the delivery of the medication (Hohenhaus & Powell, 2008).

Researchers in other fields as well have focused on identifying ways to measure and understand the impact of distraction on different cognitive functions. For example the automotive industry has found that distracted driving is a significant highway safety threat responsible for more than 3,000 fatalities and close to 400,000 injuries a year (Strayer et al., 2013). Eighty percent of crashes and sixty-five percent of near-crashes involve some form of driver distraction (California Department of Motor Vehicles, 2011). This translates to 82 fatalities and 1,095 injuries due to distracted driving every day. Researchers have identified three main sources of driver distraction: visual (eyes off the road); manual (hands off the wheel) and cognitive; (mind off the task). A review of recently published distracted driving research was used to develop a framework (Figure 1) to understand and measure inattention arising from cognitive sources of distraction while driving a motor vehicle.

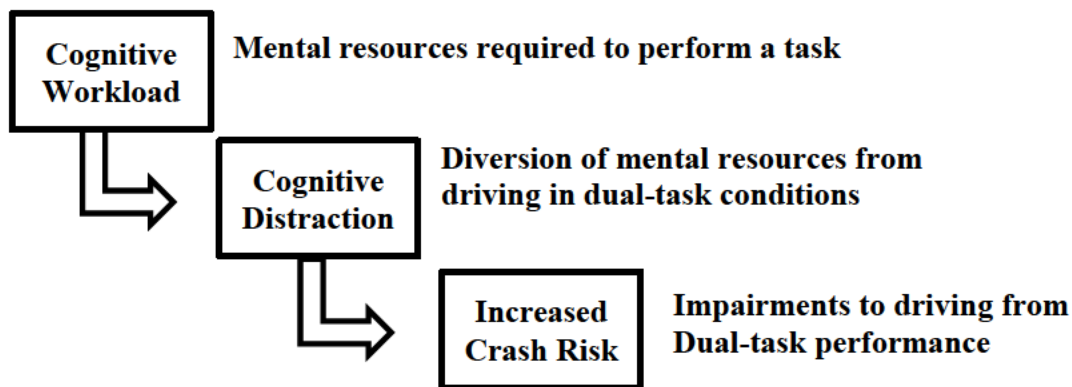


Figure 1. Cognitive workload, cognitive distraction and crash risk. (Strayer et al., 2013)

In each of the studies reviewed by Strayer (2013), a combination of performance indicators was used to assess mental workload that included reaction time with the accuracy of the desired response. As the level of attention being diverted from the task of driving increased, the risk of crashing also increased. The specific areas identified were increased reaction time, failure to scan for potential hazards in the environment, failure to notice objects in the line of sight, and failure to stop at controlled intersections (Strayer et al., 2013). This series of experiments led to the development of the cognitive distraction scale that measures the level of cognitive distraction associated with crash risk (Strayer et al., 2013). The knowledge gained from this research provides a preliminary framework (Figure 2) for studying distracted practice.

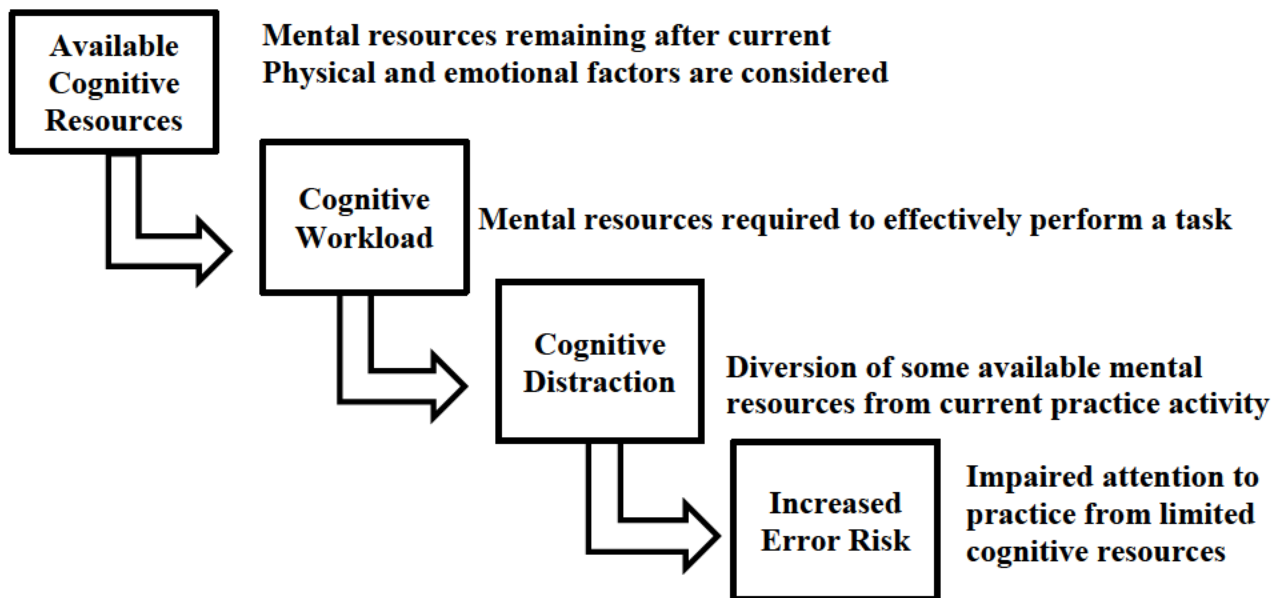


Figure 2. Distracted practice in healthcare

The model suggests that distracted practice may be influenced by personal cognitive resources that are available to perform an ongoing task/activity. Cognitive resources may be influenced by both physical and emotional factors such as: illness, pain, knowledge deficit, lack of experience, anxiety, grief, time pressure and personal issues. The cognitive workload needed

to perform a task is impacted by the available cognitive resources. Clearly these resources will vary from person to person and for each individual these resources may vary from day to day. The cognitive resources available then influence the cognitive workload needed to perform a task. Likewise, the cognitive workload will vary greatly by individual and situation. Cognitive distractions are more likely to occur when there is a poor match between the cognitive resources available and the cognitive resources required to correctly perform a task or skill. When this “miss-match” occurs there is a higher likelihood that an error will ensue that may affect patient safety.

A review of the healthcare literature for the term “distracted practice” was carried out in Pub Med, CINAHL and Google Scholar for the years between 2008 and 2013. Twenty-seven studies were identified in Pub Med that included distractions or practice. However, review of these articles did not yield any studies related to distracted practice or provide a definition of this concept. A search for the term “distracted practitioner” yielded two studies related to driving. Similar searches carried out in CINAHL and Google Scholar did not yield any studies that defined the concept of distracted practice in healthcare. No definition of distracted practice was found in articles of distracted doctoring (S. Ross & Forgie, 2012) or distracted nurses (Westbrook et al., 2010).

The first step in studying distracted practice is to define it. The purpose of this analysis is to define distracted practice by examining its attributes and characteristics utilizing Walker and Avant's (2011) method of concept analysis. Sample cases from current practice in patient safety will be used to illustrate the concept and assist in the development of an operational definition. This analysis of distracted practice will further the understanding of the concept in healthcare and its broad implications for patient safety.

Definitions

To properly focus on distracted practice and develop a definition for use in this analysis we must first understand the terms distract, distracted, distractions and practice. Each of these terms will be defined below.

Distract. *The Merriam-Webster Online Dictionary* (2013) identified distract as a Middle English word that comes from the Latin word *distractus*, a past participle of *distrahere* meaning to draw asunder or apart, to turn aside, and was first used literally and figuratively in the 14th century; “to throw into a state of mind in which one knows not how to act” (Harper, 2014). Distract means to “draw or direct one’s attention to a different object or in different directions at the same time” (Merriam-Webster, 2013, p. 0 n.p.) .

Distracted. Distracted means “unable to think about or pay attention to something, unable to concentrate, mentally confused, troubled or remote, maddened or deranged especially by grief or anxiety” (Merriam-Webster, 2013, p. 0 n.p.).

Distraction. The word distraction was first used in the mid fifteenth century and comes from the Latin word *distractionem* meaning a “pulling apart, separating” a noun of action meaning “mental disturbance” (Harper, 2014). According to Merriam Webster (2013) distraction is “the act of distracting or the state of being distracted; especially mental confusion” and was first used in the 15th century (Merriam-Webster, 2013, p. 0 n.p.) . A distraction is “something that makes it difficult to think or pay attention; something that amuses or entertains you so that you do not think about problems, work, etc.; a state in which you are very annoyed or upset” (Merriam-Webster, 2013, p. 0 n.p.). Synonyms include agitation, bewilderment, discombobulating, and diversion. Antonyms include certainty, serenity, calmness and tranquility (Merriam-Webster, 2013).

In the healthcare literature, distraction is frequently cited as a factor that reduces efficiency and productivity, contributes to errors and negatively impacts patient safety (Brixey et al., 2007; Feil, 2013; Kliger, Blegen, Gootee, & O'Neil, 2009; Pape et al., 2005). In a study that looked at the impact of interruptions and distractions on dispensing errors in an ambulatory pharmacy, Flynn et al. (1999), defined distractions as “stimulus from a source external to the pharmacist that was not followed by cessation of activity but by the pharmacist continuing productive efforts while responding in a manner that was observable” (Flynn et al., 1999, p. 1321). A study on a medical intensive care unit found distractions and interruptions occurring every 5:10 (five minutes and 10 seconds) and often preceded an error with clinical distractions being responsible for 43% of medication errors (Collins, Currie, Bakken, & Cimino, 2006). In a study investigating innovative approaches to reducing distractions during medication administration Pape (2005) defined distractions to include “anything that draws away, diverts, or disturbs attention from achieving a goal” (Pape et al., 2005, p. 109). The definition of distraction that will guide this analysis is: *diversion of cognitive resources that draws some attention away from your current activity (primary focus) making it difficult to think clearly, focus or pay attention.*

Practice. The word practice comes from Old French *pratiser* “to practice” as an alteration of *practiquer* from Medieval Latin *practicare* “to do, perform, practice” (Harper, 2014). Practice is also derived from Late Latin *practicus* “practical” and from Greek *praktikos* “practical” in the early fourteenth century meaning “to do, act” the early fifteenth century “to follow of employ; to carry on a profession” especially medicine (Harper, 2014, p. 0 n.p.).

Practice means “to carry out or apply or to do or perform often, customarily, or habitually; to perform or work at repeatedly so as to become proficient” or “to be professionally

engaged in the continuous exercise of a profession” (Merriam-Webster, 2013, p. 0 n.p.) . In healthcare the term practice refers to the role an individual is performing such as nursing, physician or pharmacist. Individual practice is governed by licensure and the scope of practice the license permits one to do. In addition to one’s license, an organization grants privileges to individuals to practice. The organization has by-laws which further guide an individual’s practice. Organizations also have policies and procedures which are used to guide and evaluate the performance of all staff, both licensed and unlicensed personnel in carrying out the duties and responsibilities of their position. The definition of practice that will guide this analysis is: *the acceptable performance (according to standards and competency) of the duties and responsibilities associated with the position one is to perform.*

Distracted practice. Based on the preceding definitions the following definition of distracted practice will be used to guide this analysis: *Distracted practice is the diversion of a portion of available cognitive resources that may be needed to effectively perform/carry out the current activity.* Distracted practice is believed to compromise patient safety and increase the risk of error (Feil, 2013).

Examples of distracted practice from clinical experience include the following:

- Conversing with colleagues, patients, and/or families; in person or on the phone; while continuing to perform a clinical task such as documenting, preparing medications, carrying out orders, or caring for a patient
- Reading and replying to text messages on hand held devices during patient care rounds or during a procedure
- Thinking about something else other than the current task at hand

Defining Attributes

According to Walker and Avant (2011) defining characteristics and attributes of a concept are those things that occur over and over again and allow one to differentiate a specific phenomenon from a related or similar one. Four key defining attributes of distracted practice are: (a) it is an individual human experience; (b) the individual must be aware of a stimulus drawing away their full attention; (c) the individual continues to carry out the same activity without suspension to take on another activity; and (d) the experience occurs within a specific context or practice setting.

Distracted Practice: A Human Experience

Being distracted is a “normal” human experience. For care providers distracted practice may result in a loss of focus with the potential to compromise patient safety. In healthcare settings there are high levels of distraction posing continual threats to patient safety (Feil, 2013). In an effort to improve patient safety, new technologies have added to the types and numbers of distractions in the healthcare arena over the last decade (Sherwood & Barnsteiner, 2012). In their article entitled “*Devastatingly human: an analysis of registered nurses' medication error accounts*” Treiber and Jones (2010) interviewed 158 nurses who had self-reported a medication error. They found that it was the more experienced staff who believed their safe practice would prevent them from making errors (Treiber & Jones, 2010). Unfortunately it is common for poor system design and systems failures to lead to an adverse event (Sherwood & Barnsteiner, 2012). Regardless of the cause of the error, part of being human is making mistakes and adverse events are always experienced by the human practitioners involved (Sherwood & Barnsteiner, 2012). When distracted practice contributes to an error resulting in harm to a patient, the individual and/or team of practitioners involved may experience a variety of human feelings and emotions

ranging anywhere from shock, denial and disbelief, to embarrassment, guilt and shame (Jones & Treiber, 2012; Sirriyeh, Lawton, Gardner, & Armitage, 2010; Treiber & Jones, 2010).

Distracted Practice: Aware of a Stimulus

Distracted practice is the result of a stimulus that can be either external or internal to the individual. External stimuli involve one of the senses; visual, auditory, olfactory or tactile. External sources of stimuli may be observable and measureable by the researcher. The stimulus can also be internal involving cognitive processes, such as mind wandering, daydreaming or any intrusive thought unrelated to the current activity or task. Extreme stress, anxiety and grief are known to affect concentration and effect short term memory (Parkes, 1998). Researchers have found that stress causes dramatic changes in our brain and is linked to scattered memory and emotions all of which may trigger frequent thoughts unrelated to the task at hand causing further distraction (Ghosh, Laxmi, & Chattarji, 2013; Matta, 2014). An internal stimulus experienced by the individual is generally not directly observable by the researcher.

Distracted Practice: Continues Carrying Out the Current Activity

Despite the external or internal stimulus reducing the available cognitive resources, the individual continues to carry out the current activity without suspension or interruption. This clearly differentiates a distraction from an interruption. The stimulus diverts a portion of the individual's available cognitive attention that may be needed and or required to effectively complete the current task without error. An example of continuing to carry out the current activity comes from a recent survey of perfusionists. Half of the 439 individuals surveyed admitted to accessing the internet, texting, or attending a nonmedical-related call while their patient was on bypass, although they recognized that this was not a safe practice (J. Ross, 2013).

Distracted Practice: Positioned Within a Context or Practice Setting

Distracted practice occurs within the context of a practice setting or location. The context includes the surroundings, circumstances, environment and working conditions of a specific geographical location, type of organization, department, and exact location or patient setting (Brixey, 2010) . Some contextual factors mentioned in the literature include but are not limited to: unit design, patient volumes, staffing patterns, workloads, staff experience and expectations, policies, procedures, safety culture, and barriers to efficiency. The context helps clarify the situation in which an individual's practice takes place. In distracted practice understanding the context in which an event occurs will assist in identifying opportunities for prevention of error and improvement in quality of care delivery and patient safety.

For example: A nurse files an adverse event report stating she gave the wrong medication to her patient. In determining what took place the context in which the event occurred must be understood. On review of the incident it became apparent that the error occurred on the 3 to 11pm shift on a 24 bed medical/ surgical unit in an acute care academic medical center. The usual staffing pattern for the evening shift was six RNs and two Patient Care Assistants. On this evening the unit had 23 patients, there were still four patients to be discharged and there were three patients expected from the Post Anesthesia Care Unit and one admission coming from the emergency room. There were five RNs and three Patient Care Assistants for the shift. In addition to being unable to replace the RN sick call one RN had recently completed orientation and this was her first shift directly unsupervised by another RN. In addition to being in charge, the resource nurse took a patient assignment to equitably distribute the workload. During the shift she administered a medication to the wrong patient. She was the one who filed the incident

report. This description enables the reviewer to fully understand the context in which the adverse medication event took place.

Antecedents

According to Walker and Avant (2011) “. . . antecedents are those events or incidents that must occur or be in place prior to the occurrence of the concept” (Walker & Avant, 2011, p. 171). There are two antecedents in distracted practice: (a) being engaged in a specific task or work activity, and (b) a stimulus occurring. It is important to note that a decrease in the cognitive resources available to perform a job-related task/activity can result in distracted practice.

Consequences

According to Walker and Avant (2011), consequences are the outcomes of a concept. The consequences of distracted practice include, but are not limited to the following: tasks left uncompleted, extended time required to complete a task, missed information, inaccurate information, and errors. The consequences of distracted practice can be grouped into three major categories: (a) completion of task without error; (b) identification of a potential error with corrective actions taken prior to reaching the patient; (c) error occurs and reaches the patient. Finally, the consequences of an error can range from no harm to severe harm or even death.

The relationships between the antecedents, attributes, and consequences of distracted practice are demonstrated in Figure 3. This model will be used to guide the proposed research study on distracted practice.

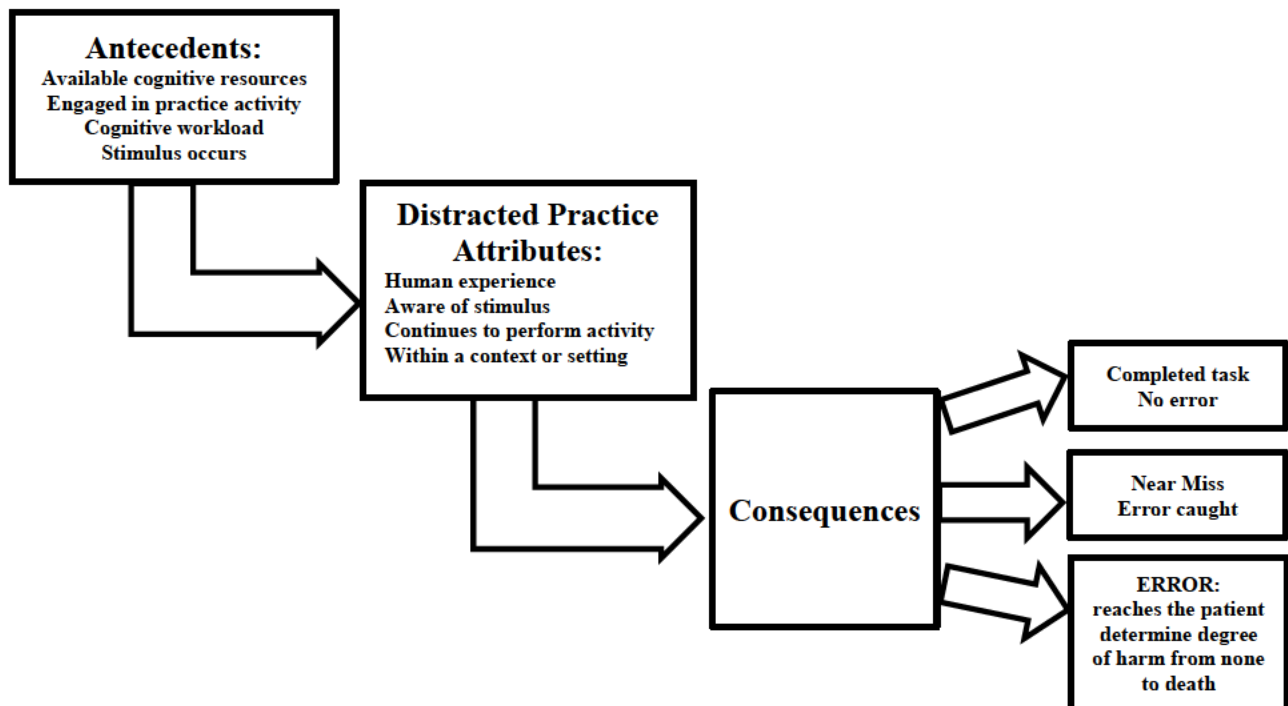


Figure 3. Antecedents, Attributes, and Consequences of Distracted Practice

Empirical Referents

Empirical referents are the happenings that demonstrate the existence of a concept by their presence (Walker & Avant, 2011). Empirical referents are “. . . the means by which you can recognize or measure the defining characteristics or attributes” of a concept (Walker & Avant, 2011, p. 168). They provide the clinician or researcher with clear, observable phenomena by which to determine the existence of the concept in particular clients. There are currently no measures of distracted practice. Direct observation and description are needed. Distracted practice will be identified by observing a clinician perform a clinical task or duty while also engaged in doing something else. Observable examples include but are not limited to:

- Conversing with colleagues, patients, and their families; in person or on the phone; while documenting, preparing medications, carrying out orders, administering medications or performing any task

- Reading and replying to text messages during patient care rounds or during a procedure in which the clinician is administering medications
- Eating while transcribing or documenting

Unobservable examples include but are not limited to:

- Clinician exhaustion
- A clinician self-reporting thinking about other things while carrying out the task at hand
- A clinician without the cognitive resources to carry out a specific task
- A clinician who is experiencing cognitive overload

These identified clinical referents can be used to quantify distracted practice by measuring the following:

- The frequency of occurrence of distracted practice
- The number of times an individual is distracted by a stimulus while performing a task
- The length of time individuals take to complete certain tasks during which they are distracted
- Evaluating reported adverse events, near misses, or errors citing distractions as a contributing factor to determine if it was due to distracted practice.

The above listed empirical referents assigned to distracted practice demonstrate that the concept can be measured both qualitatively and quantitatively. This will be useful for researchers when selecting a design to study distracted practice.

Model Case

A model case is a pure case of the concept and demonstrates all the defining attributes (Walker & Avant, 2011). The following example has been adapted from real life experience.

It is a typical night shift on a 26 bed surgical unit in an academic medical center. There are six new post-operative patients who were transferred from the Post Anesthesia Care Unit (PACU) on the day and evening shift. There are five Registered Nurses (RNs) and two Patient Care Assistants (PCA's) to care for the 25 patients currently on the unit. It is the regular staff working who have enjoyed working together for the past five years.

The first half of the shift is uneventful. At about 3 am one of the post op patient's begins to hemorrhage and is emergently sent back to the OR. At 4 am, one of the nurses becomes ill and needs to go home. The patients are redistributed to the remaining four staff nurses. One nurse is now in the medication room preparing pain medication, for Mrs. Finch, who had a total abdominal hysterectomy that morning. Mrs. Finch had been sleeping and has now awoken with severe pain. The order is for Morphine Sulphate, 2 mg, intravenously (IV), every three hours for severe pain. While the nurse is in the medication room, a patient arrives from the emergency department for admission to the unit. The other three nurses on the floor are busy with other patients and no one is available at the moment to take report. The nurse in the medication room can overhear the emergency department staff nurse on the phone talking to the nursing supervisor and expressing a great deal of displeasure that *"no one is able to take report or assist me with transferring Mr. Smith into 252 bed A"*. The nurse continues preparing the medication for Mrs. Finch. Once completed she leaves the medication room and walks down the hall. She enters the correct room and administers the IV Morphine to the patient in **bed A**; however, Mrs. Finch is in **bed B**.

The nurse manager spoke with the nurse the following the event. The nurse stated she was engaged in the activity of preparing a medication when she overheard the distressful phone conversation. "We understand the Emergency Department is busy, but they think they are the

only unit that is! I wish they would work with us for a few shifts, then they might understand how busy we are as well.” She acknowledged continuing to prepare the medication, but feeling “very distracted” realizing she was so distracted by the phone call that her usual safe practice of checking patient ID prior to administering any medication was skipped. Being distracted caused her to give the medication to the wrong patient.

Borderline Case: Interruption

A borderline case contains most of the defining attributes of the concept undergoing analysis, but not all of them (Walker & Avant, 2011). An interruption is considered a borderline case because it is a human experience. Individuals are aware of the stimulus and it occurs within a context or practice setting. However, the individual does not continue to carry out the current activity. A person who is interrupted stops what he/she is doing to do something else and may or may not resume the prior activity once the new task has been completed. The following borderline case of interruption demonstrates three out of the four defining attributes of distracted practice.

A 62-year-old female was admitted to the academic medical center for a laparoscopic cholecystectomy. The medical history of the patient included atrial fibrillation, mitral valve prolapse and several episodes of thrombophlebitis in her left leg for which she has been on anticoagulation therapy with warfarin.

Surgery was completed without complication. Admission laboratory results indicated that the patient’s international normalized ratio (INR) was 1.2. The INR target range for this patient was 2.0 – 3.0. Later in the evening of this same day, the resident on the team increased the daily dose of warfarin from 5mg to 10 mg per day for three days, in an attempt to increase the INR to be within the target range. The next morning on patient rounds there was a team

discussion regarding the plan for ongoing anticoagulation. The attending physician told the resident that the warfarin should be discontinued until an echocardiogram of the heart and cardiac consultation had been obtained.

It is important to note that the medical center had a computerized physician order entry (CPOE) system that permitted providers to place orders from their handheld devices and smart phones. This allowed the residents to enter orders as patients were evaluated by members of the team on rounds.

When the attending gave the order to discontinue the warfarin, the resident began to enter it on her smart phone. While entering the order, a text message was received from a friend inviting her to an upcoming party. The resident stopped entering the order to respond to the text message and accept the party invitation. The team moved onto the next patient.

The resident never completed the order to discontinue the warfarin and the patient continued getting 10 mg per day for the next several days. There was no order to check the patients INR as everyone on the team thought the warfarin had been discontinued. With the CPOE system in place there was also no indication to review the medication list so no one recognized that the patient continued to receive warfarin.

On hospital day four on morning rounds the patient was found to have shortness of breath, tachycardia, and a significant drop in her blood pressure. An echocardiogram revealed that blood was filling the sack around the heart, indicating hemopericardium with evidence of tamponade (pressure from the blood limiting normal heart functioning). Emergency open heart surgery was needed to remove the blood with the INR now far above the target range at 8.0. The patient survived the emergency surgery, although the hospital stay was extended to three weeks and the patient required discharge to a rehabilitation facility before being able to return home.

The resident was interrupted by the text message that caused her to suspend completing the order. Suspension of the current task is required with an interruption and continuation of task is required for distracted practice, thereby differentiating these concepts.

Related Case

A case related to the concept is similar to the concept being studied but does not have all the defining attributes (Walker & Avant, 2011). This related case demonstrates three out of the four defining attributes of distracted practice.

An 85-year-old woman with newly diagnosed metastatic breast cancer was admitted to the acute care facility with pneumonia, chest pain, and possible myocardial infarction (MI). After several days in the intensive care unit (ICU), the MI was ruled out and she was transferred to a medical unit for completion of intravenous antibiotic therapy. Chemotherapy was scheduled to begin on an outpatient basis once she was discharged home.

On day two on the medical unit the patient complained of nausea and intravenous Ondansetron (Zofran) was ordered. Approximately one hour after receiving her first dose the patient was found unresponsive and in respiratory distress. Stat labs were drawn and her blood glucose was 28 mg/dl. The patient had no history of diabetes or hypoglycemia.

The patient was given glucagon and immediately transferred back to the ICU. Laboratory results showed an insulin level at the upper end of the reference range of 1500 micro-units/ml. Intravenous glucose and glucagon were continued for several days while her blood glucose was closely monitored and remained in the low 40 mg/dL range. She was eventually discharged without any permanent disability from the adverse event, but her physical condition was weakened and initiation of chemotherapy delayed.

An internal review of the incident found that it was common practice for many nurses on this medical unit to remove medications from the automated dispensing device and insulin from the refrigerator and place them in a portable medication cart to take to the patient's bedside. The nurse caring for this patient on the night of the event worked infrequently and had a demanding assignment of eight patients. Examination of her portable medication cart revealed that the Zofran and insulin had been placed next to each other. It was presumed that the nurse mistakenly administered the insulin for the Zofran. There was no indication of a stimulus, distraction, interruption or awareness that an error took place. Under time pressure nurses will often create workarounds to complete patient care. Workarounds can compromise patient safety and lead to errors; however they differ from distracted practice.

Healthcare Team Perspectives and Distracted Practice:

To provide safe care to patients in the hospital multiple disciplines must work together as a cohesive team (Kaufman & McCaughan, 2013; Reid & Bromiley, 2012). Observing various members of the health care team at work across the acute care setting will allow the researcher to describe the various contexts, antecedents and attributes and the resulting consequences of any distracted practice observed. Describing the characteristics of distracted practice that various members of the team have observed and/or possibly experienced will further the development of this concept and assist in developing a model to be used for future study.

The team responsible for safe medication use includes Medicine, Nursing, and Pharmacy. This team must work effectively together to insure policies and practices that consistently maintain patient safety. When one team member experiences distracted practice, and makes an error, that error may affect another team members practice and lead to an event causing harm to a

patient. Eighty percent of patient care errors are related to human factors (Sitterding et al., 2012).

Summary:

Research is needed to fully describe the healthcare team's characteristics of distracted practice in the acute care setting; including context, antecedents, stimuli and consequences. A model is needed that will provide the foundation for further studies of distracted practice and its impact on patient safety in the acute care setting. Taking a healthcare team approach will assist other researchers to view distracted practice more broadly. This should result in more comprehensive studies that take into account the complexity of distracted practice and the many variables throughout healthcare settings. This will also optimistically lead to enhanced patient safety through increased awareness as well as improved systems designed to support all healthcare personnel as they deal with distracted practice in the provision of patient care on a daily basis.

Methods

Design

For this study a qualitative descriptive (QD) approach will be used to describe the experience of distracted practice by healthcare team members in the acute care setting. A qualitative design has been selected because it is useful when attempting to understand complex experiences, events or processes that are embedded within a human context, which is consistent with distracted practice (Lincoln & Guba, 1985). This approach, primarily uses interviews, observations and documents to get at the precise accounts and tell the stories of the individual experiences (Creswell, 2007). It utilizes the expert knowledge of the researcher, hereafter to be referred to as the principal investigator (PI) in the field as the key instrument for the semi-structured interviews that allow the participants to tell their stories (Richards & Morse, 2007). Additionally, QD has potential for illuminating patterns within the data that can translate into practice providing clear information about ways to change behavior, improve outcomes, or enhance negative consequences all of which are associated with the study of distracted practice. QD will yield a comprehensive descriptive summary of what distracted practice is in the everyday language of the healthcare team members who have experienced it. A combination of observations and semi-structured interviews will be used to develop the data needed for this study.

Sample and Setting

A purposive sample of acute care, health care providers (RNs, MDs and Pharmacists) will be recruited to participate in this study. The PI will recruit health care providers who are able to inform and describe distracted practice. Maximum variation sampling (Lincoln & Guba, 1985) will be used to elicit the greatest range of information possible. The setting for this study

is an academic medical center that has 1982 RNs, 1067 MDs and 63 Pharmacists practicing in the acute care setting as of April 23, 2014. Permission and support have been obtained from the Chief Medical Officer, Chief Quality Officer, Chief Nursing Officer, and Senior VP for Operations to carry out the study.

Inclusion/Exclusion Criteria

Inclusion: Any RN, MD, or Pharm D currently employed at the study site, working in the acute care setting and having completed the orientation period will be included in the study. The potential participants must be able to speak and understand English and participate in a meaningful way in a 60 minute interview related to distracted practice.

Exclusion: Any RN, MD, or Pharm D who is employed in the academic medical center but who has not completed the required orientation period, or practices in a non-acute care setting will be excluded from the study. Additionally any individual observed for more than 15 minutes during any of the unit observation sessions will be excluded from the study.

Observations

Observations of RNs, MDs and Pharmacists will be conducted in various settings across the academic medical center by the student researcher. Observations will be conducted utilizing a formal observation guide (Appendix A). The guide will assist the PI to capture and record information from each of the settings, as well as the behaviors of the individuals related to the antecedents and attributes of distracted practice. Each observation will begin with a description of the specific environment, setting/context, department or practice area under observation. This will include the time of day, day of week, number of individuals working, and volume of work/workload at the time of observation. The PI will make every effort to minimize the impact of observation on the participant. This will be accomplished by following accepted ethnographic

methods of participant observation used in qualitative research. The term “ethnographic methods” has been used in qualitative research methods of data collection that includes interviewing, observation and document analysis (Kawulich, 2005). Participant observation assumes immersion in a setting and is considered one of the best ways to develop knowledge about other’s ways of thinking and acting. It will involve the logistical, ethical and political aspects of gaining their trust to be able to understand their ways of being in their unit setting. While observing individuals in the performance of their work the PI will be paying attention to workload and any observable human factors; such as lighting, technology being used, fatigue, stress, and time pressure. The PI will also be paying attention to stimuli that draw away an individual’s attention while the clinician continues to carry out the work. Observable external stimuli will include visual, auditory, olfactory, and tactile sources.

Each observation will last a minimum of 30 to a maximum of 120 minutes. However, if no instances of distracted practice are observed the observation time will be extended to include observation of at least 4 instances of distracted practice. At no time will an observation last longer than the current shift being observed. This is to insure compliance with prior-notification to the staff being observed. The following departments have been selected for observation: two in-patient pharmacies, two intensive care units, (the neonatal ICU (NICU), one adult ICU) a surgical unit, and a medical unit. The two pharmacies are located at two different campuses of the medical center one at Memorial Campus, and one at University Campus. Each supports both critical care and medical surgical units on their specific campuses. The critical care units provide sampling of both ends of our broad spectrum of patient’s from neonates to adult/geriatric populations. The neonates represent the most at risk population related to medication errors and critical care represents the most complex adult population related to medication management.

The medical and surgical units will provide variation sampling of both medical and surgical adult populations of all ages in the acute care setting. These units have been selected to provide maximum variation across the diversity of units in the acute care setting (see Table 5). By observing these units the PI will be able to identify important common patterns of distracted practice (Lincoln & Guba, 1985; Miles & Huberman, 1994). These units will also provide the largest pool of care providers to participate in the study. Each unit/department will be observed at a minimum on two different occasions to vary the day of the week, time of day, and the shift of workers being observed.

Table 5 Observation Units and Characteristics

Unit being observed	Characteristics of the Unit
Pharmacy #1 Memorial Campus	21 pharmacists, support campus where the NICU and surgical unit are located
Intensive Care Unit-Neonatal	50 bed NICU, divided into 5 pods, serves neonates born in-hospital and transported-in from other hospitals in central Massachusetts, 118 RN staff, 10 MD Staff Neonatologists, a unit based pharmacist
Surgical Unit	25 bed unit, 11 semi private and 3 private rooms, 43 RN staff, covered by various surgical physician teams, no designated unit based pharmacist
Pharmacy #2 University Campus	32 pharmacists, support campus where the Adult ICU and medical unit are located
Intensive Care Unit - Adult	15 bed adult ICU, 65 RN staff, covered by various medical physician teams, designated unit pharmacist
Medical Unit	28 bed medical unit, 12 semi-private and 4 private rooms, 82 RN staff, covered by various medical teams, designated unit pharmacist

The PI will be observing in all areas of the unit. This includes the common areas, nurses station, medication preparation areas, hallways, conference rooms, and individual patient rooms as well. The nurse manager will be requested to obtain verbal permission from patients on the unit so that staff may be observed at the bedside in the delivery of care.

Interviews

Approximately 24 to 30, semi-structured interviews will be conducted. There will be one grand tour question (Richards & Morse, 2007) related to describing one's own experience with distracted practice or that observed of another member of the healthcare team. According to Sandelowski, (1999) time is a critical component for the PI when looking for "phenomenal variation" in the cases described to capture the variations of the target population. Timing of the distracted practice experience being described will be elicited in terms of distance from the day of the interview and provide additional context to the experience being described (Sandelowski, 1999). This will also allow the PI to compare interviews and their stories chronologically, capturing them as moments in time, that may further assist in determining causality, contingency and change over time (Sandelowski, 1999). This will be followed with a few subsequent laddered and probing questions about the antecedents, stimuli and consequences related to the distracted practice descriptions. Laddered questions are an interviewing technique used to select the appropriate level of question or response based on assumptions related to the degree of intrusion being created by the topic being discussed (Price, 2002). Due to the sensitive nature of distracted practice and its consequences related to error, harm and patient safety laddered probing questions will be used. This method will provide a framework to explore the various levels of inquiry while sensitively and effectively dialoguing with participants (Price, 2002). The PI will attempt to have equal numbers of nurses, physicians, and pharmacists to participate with a goal of reaching saturation/redundancy in describing the distracted practice experience. Saturation is achieved when themes and trends are well established and nothing new is being learned in subsequent interviews (Lincoln & Guba, 1985).

Recruitment of participants

The observation units will provide the basis for active recruitment of RNs, MDs and Pharm Ds. Staff working on these units will already be aware of the study from the staff meetings, postings on the units and observation sessions being conducted. To eliminate bias in the study any staff member who is directly observed for greater than 15 minutes will be excluded from the interview portion of the study. Direct face to face conversations with any RN, MD, or Pharm Ds will be used to identify volunteers for participation. The researcher will aim to identify key participants on each of the observation units. It is anticipated that there will be a sufficient number of participants available on the observation units to recruit from. However, if needed, snowball sampling will also be used. Snowball sampling is a recruitment method utilized to increase the sample size allowing the initial participants in the study to refer other potential contributors (Lincoln & Guba, 1985; Richards & Morse, 2007). Passive recruitment will also be used if needed and will include emails to RNs, MDs and Pharm D's across the acute care setting, posting of study flyers, and requests to speak at departmental meetings. Interview participants will be given a \$20.00 Dunkin Donut Card for participating in the study. No stipend will be given to the units where the observations take place.

Procedures

All data collected through observations and semi-structured interviews will be collected by this PI. The unit observations will be done with permission of the unit managers and their superiors including the vice president responsible for the department/unit. The PI will hold a meeting on each unit to explain the study. A notice will be posted on each unit informing staff that an observation for research will be taking place on a specific date and time. A fact sheet describing the study will also be provided. This sheet will also include actions the researcher will take if any "safety/at risk" behaviors are observed or what staff should do if they do not

want to participate in the observations. Appointments for all observations dates, times and locations will be made at least one week in advance with the unit manager and include provisions for cancellations due to unforeseen circumstances.

To minimize the impact to the participants being observed the PI will utilize ethnography methods of observation using the observer as participant stance. In this approach the researcher is the observer, not a member of the group, who is interested in participating with the group to gain a more complete understanding of the group's activities (Kawulich, 2005). This approach will enhance working with each of the different units where observations will be conducted.

Face to face interviews will be scheduled at convenient times for the participants. The setting used will be a private conference room in the hospital or school that insures comfort for the participant to speak freely. Dual digital audio recordings will be used to tape each interview session. A notebook will be used for field notes during each interview session for recording observations of the participant, responses to questions, and any additional pertinent information, as well as any reflections (Creswell, 2007). Field notes will be expanded as close to the interview as possible and used to provide additional context during data analysis.

Observation sessions will be clustered and alternated with interview sessions to provide ongoing context for the study and repeated until saturation is reached (Table 6). The order in which the unit observations and participant interviews are conducted within the cluster may vary; however, the clustering is purposeful to assist in ongoing data collection and analysis. The first two sets of observations are clustered with three interviews. The third set and ongoing until completion will have three observations followed by six or more interviews.

Table 6 Observations and Interviews

Activity	Unit/Participant
Observation	Pharmacy #1

Observation	NICU
Observation	Surgical Unit
Interview	RN
Interview	MD
Interview	Pharmacist
Observation	Pharmacy #2
Observation	Adult ICU
Observation	Medical Unit
Interview	RN
Interview	MD
Interview	Pharmacist
Observation	Pharmacy #1
Observation	NICU
Observation	Surgical Unit
Interview	RN
Interview	MD
Interview	Pharmacist
Interview	RN
Interview	MD
Interview	Pharmacist
Observation	Pharmacy #2
Observation	Adult ICU
Observation	Medical Unit
Interview	RN
Interview	MD
Interview	Pharmacist
Interview	RN
Interview	MD
Interview	Pharmacist

Measures

Observations

An observation guide has been created for this study (see Appendix A). It includes the unit, location, date, time the observation started and the time ended, number of patients, expected admissions, discharges or transfers expected during the observation period, and a list of staff by initials on the unit during the observation. Additional unit information will include: the floor

plan, organizational chart, staffing plan, workloads and any identified policies and procedures that were observed and would be beneficial to this study. A notebook will be utilized to capture any field notes/written information. Pictures of the unit will be taken for descriptive purposes and include only the environment to assist with memory and later data analysis. No pictures of staff, visitors or patients will be taken.

Interviews

Demographic Data

Participants will be asked to complete socio-demographic data on age, gender, number of years/months of experience in their profession and length of time working in their current role. They will also be asked if they have ever filled out an occurrence report, and indicated distractions as a precursor to an adverse event (Appendix B).

Face to Face interviews

Face-to-face interviews will be conducted by the PI in a private room. No interviews will occur on work time. A semi-structured interview guide will be used to conduct the interviews, (Appendix C). The PI will confirm the participants' comfort with the location and ability to speak freely. Pagers and phones will be placed on silent to avoid interruptions. The PI will briefly review the purpose of the study, consent, anonymity, security of data, withdrawal, and answer any questions the participant may have at this time.

The interview will begin with one grand tour question: *Can you please take a few minutes to think about a time when you observed someone who was being distracted and yet continued to perform their work? And/or perhaps a time when you were being distracted and continued to perform your work? Try to remember as much detail as possible about these events.* Then when

the participant is ready she/he will tell their story uninterrupted. Following the story probing laddering questions will be used, depending on the detail of the situation described.

If the participant describes a personal experience of distracted practice in the interview, current demands outside of work related to family, school, social or any additional work may be explored at the end of the interview. This will be done in an effort to explore and understand the cognitive aspect of distracted practice and the possibility of an internal stimulus being the cause of a personal distracted practice experience. This exploration will be included to evaluate the potential impact these other demands outside of work may have had on the specific individual's cognitive availability related to workload and the person's distracted practice experience.

Summary forms will be used to record and identify valuable information from an observation and/or interview. A Document Summary form will be used to capture the range of items that may be identified during observations or discussed during face to face interviews (Appendix D) (Miles & Huberman, 1994). A Contact Summary Form, (Appendix E) will be completed as close to an observation or interview as possible. The form will assist the PI to reflect and answer questions of importance related to the contact (Miles & Huberman, 1994).

Data Management

Observation Data

Observation data will be recorded immediately following each observation session (Polit & Beck, 2012). This will include completion of Appendix A and expansion of any field notes. It will also include taking of any photographs or acquiring any policies and procedures indicated by the observation. Ongoing comparisons between units and observations will be made and recorded in filed notes and later used for analysis.

Interview Data

The audiotapes will be transcribed verbatim by a professional transcriptionist. A unique research identifying number will be assigned to each study participant and placed on all data including audiotapes. Field notes from observations along with all interview data will be collected and entered into a secure UMMS research drive. The audio tapes will be kept in a locked cabinet in the office of the PI. Only the PI and dissertation chairperson will have access to the data that will be password protected to insure its security and to maintain participant anonymity.

The demographic data will be entered into SPSS version 22 for analysis. The data will be stored on the UMMS research drive that is backed up nightly. Data will be cleaned by reviewing for duplicates and missing items to insure accuracy.

All transcripts will be compared to audiotapes to check for accuracy. A summary of each transcript will be written and stored on the research drive utilizing a transcript summary template (Appendix F). Once transcripts are checked for accuracy and the summary transcript form completed, the audio tapes will be destroyed to maintain confidentiality and insure anonymity of the participants.

Data Analysis

Data collection and analysis will be interwoven from the beginning of the study and continue throughout analysis to enhance the fieldwork process (Miles & Huberman, 1994). This will provide constant comparison and ongoing opportunities for the PI to cycle between thinking about existing data and how to improve data collection throughout the remainder of the study (Miles & Huberman, 1994).

Descriptive statistics will be used to describe and summarize the demographic data of the participants in the study and will include central tendency measures (mean, median, standard deviation) (Plichta, Kelvin, & Munro, 2012).

Data analysis for this qualitative study will begin with preparing and organizing the data for analysis. This will include creating data folders, index cards and computer files for each observation and face to face interview component. The transcripts of each interview will be read several times to immerse into the details and understand the interview as a whole prior to breaking it into parts (Creswell, 2007). Memos will be written in the margins during this reading process to capture ideas or identified parts of the distracted practice concept. The interview transcript summary form will be completed. (Appendix F) Then the interview transcript will go through a process of coding where the data will be reduced to themes or meaningful segments utilizing colored markers. Identified codes will then have names/labels assigned to each. An Excel spread-sheet will be used for this part of the analysis process and provide a mechanism for visualization of all the codes. This will assist in condensing the codes into broader categories/themes or families/sub-families. Finally the data will be able to be represented in discussion in the written report as well as in tables, figures, charts, graphs or models (Creswell, 2007). All codes will emerge during the data analysis process; no a priori or pre-figured codes will be used (Creswell, 2007). Additionally, codes will be counted in the process of organizing and prioritizing, but will not be reported as part of this study as counting generally reflects a quantitative orientation (Creswell, 2007).

For specific aim #1 (Describe the characteristics of distracted practice of healthcare team members in the acute care setting, specifically doctors, nurses, and pharmacists.) The PI will read through all the observation guides and expanded field notes to identify and capture specific

observations that included the characteristics of distracted practice. The PI will also use the codes identified from reading through the transcripts and the Excel spread-sheet developed to represent them into condensed codes, broader categories and sub-themes. A role ordered data matrix will be utilized to capture and display these identified characteristics of distracted practice of the healthcare team members (Appendix G) and will include both observation and interview data. The matrix display provides a basis for identifying patterns and drawing conclusions, while also making comparisons between roles and variables for similarities and differences (Miles & Huberman, 1994). From this a summary description of the distracted practice experienced of the healthcare team in the acute care setting will be written.

For specific aim #2 (Describe the context, antecedents, stimuli and consequences surrounding distracted practice.), the PI will read through all the observation guides and expanded field notes to identify and capture specific observations that best demonstrate the context, antecedents, stimuli and consequences of distracted practice. The PI will also use the codes identified from reading through the transcripts and the Excel spread-sheet developed to represent them into condensed codes, broader categories and sub-themes. A role ordered data matrix will be utilized to capture and display the identified antecedents and attributes of distracted practice of the healthcare team members (Appendix G) including both observation and interview data. From this a descriptive summary of the context, antecedents, stimuli, and consequences surrounding the distracted practice experience of the healthcare team in the acute care setting will be written.

For specific aim #3 (Develop a preliminary model that can be used to advance the study of distracted practice as it relates to patient safety in the acute care setting.), the PI will use the written descriptions, Excel spread-sheets of codes, and the role ordered matrix to create a

pictorial diagram/model of distracted practice as it relates to patient safety in the acute care setting. This preliminary model will provide a framework for future studies of distracted practice related to patient safety.

Trustworthiness:

To insure the trustworthiness of these data credibility, transferability, dependability and confirmability will be maintained (Lincoln & Guba, 1985). To establish the credibility of this study, prolonged engagement and persistent observation in the field will be utilized. This will include building trust with the participants and continual checking for misinformation that might originate with distortions introduced by the PI or the informants (Creswell, 2007). The goal will be to achieve triangulation in judgment of the data regarding distracted practice, multiple data sources will be sought that provide corroborating evidence (Creswell, 2007).

To demonstrate accuracy and credibility, as well as to insure the PI adequately represents the participants' views and interpretations of distracted practice, the data, analyses, interpretations and conclusions will be reviewed by the participants (Lincoln & Guba, 1985). As a dissertation study, the chair of my committee will provide the basis of a confirmability audit. She will examine the process by which records of the study are kept to insure accuracy of the results to be reported (Lincoln & Guba, 1985). Essentially she will examine the data, findings, interpretations, and recommendations, and be able to attest that they are supported by the data. Member checks will be conducted with three to five study participants representing each discipline; an RN, MD, and Pharm D.

Reflexivity

I have worked as a nurse for the past 43 years and spent the first 12 years as a direct care provider where the focus was on the delivery of safe, quality care to the patients to whom I was

assigned. Since 1984 I have worked in various educational and leadership operational roles where patient safety and quality continued to be of the utmost importance. Most recently I held the position of Director of Nursing Quality and currently I am a Risk Manager where the focus of my role is to improve overall patient safety in the organization through loss prevention and corrective action planning from adverse events. It is from my current role interviewing staff related to medication events that my focus on distracted practice emerged. Being aware of my bias related to patient safety and quality going into this study I will work tirelessly to remove those biases from both the observations and face-to-face interviews. I want to insure the broadest context for observing on each of the units and avoid the narrowness of focusing only on quality or safety experiences. During interviews I want to listen and hear what each participant is saying to fully appreciate all the individual experiences, thereby providing the broadest context and greatest understanding of what distracted practice truly is.

A reflexive journal will be kept to support the trustworthiness of the data and to serve as a basis for determining if my decisions, judgment calls, and ultimate outcomes might be influenced by my biases (Lincoln & Guba, 1985). As suggested by Lincoln and Guba, it will contain three sections: (a) the daily schedule, consisting of the logistics and schedule of the study; (b) a personal diary, providing opportunity for reflection regarding what is occurring related to my own values, interests, and possible assumptions related to my insights; and (c) a methodological log of decisions and their rationales (Lincoln & Guba, 1985). Entries will be made in the daily schedule and personal diary sections on all dates of observations and interviews. Entries will be made on an as needed basis in the methodological section.

Limitations

This study is being carried out in only one acute care setting. It is further limited in that only six departments are being observed and only three roles of care providers are participating in the face-to-face interviews. The study is also limited by the fact that all participants are aware of being observed, which may impact their practice. The outcomes of the study may not be reflective of distracted practice in other departments or health care settings

Protection of Human Subjects

Institution review board (IRB) approval will be sought from the University of Massachusetts Medical School (UMMS) prior to enrolling any study participants. The participants in this study are the professionals, whose participation will be both voluntary and anonymous. Once participants have been identified, I as the investigator will meet with each of them individually to review the following: (a) purpose of the study; (b) their right to withdraw at any time; (c) the risks and benefits; (d) how the study will be conducted; (e) instruments being used; (f) how the data will be used, stored and managed to insure security and participant anonymity; (g) confidentiality of the findings; (h) obtain their written consent; and (i) answer any questions they may have. If possible, this will be done prior to the scheduled date for their interview; if not it will be done prior to initiating the interview.

The risks to the study participants being interviewed is in possibly sharing a story that is personally stressful. If participants experience stress, they will be provided contact information for the employee assistance program. To protect the confidentiality of the information being shared once the transcripts have been reviewed for accuracy and the summary form completed the audio tapes will be destroyed. The risks to the study participants being observed is having the researcher perceive them as not adhering to standards of care or practice or not following policy and procedures that would place their patient, themselves and the organization at risk.

Observation of serious deviations from practice that may place a patient at direct risk of harm will be discussed with the unit manager. This information will be explained to each unit during a presentation held prior to conducting any observations.

Summary

The purpose of this qualitative descriptive study is to describe the experience of distracted practice by members of the healthcare team in the acute care setting. The concept analysis of distracted practice provides the foundation and organizing framework needed to guide the study. Descriptive statistics will be used to analyze demographic data. Qualitative content data analysis will be used to analyze the interview data. The study findings will be used to develop a model that can then be utilized in future research of distracted practice. The results will be used to identify the next steps needed to improve patient outcomes related to distracted practice and patient safety.

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Appendix A

Observation Guide

Unit: _____ Date: _____ Time started: _____ Time Ended: _____

Floor Plan: Yes/ No Organization Chart: Yes/No Staffing Plan: Yes/ No

Number of beds _____ patients _____ Any expected admissions, discharges, transfers _____

Initial observation of unit: (to describe the level of activity)

Initials of people observed, their roles, and details:

Initials	RN	MD	Pharm	Details: gender, age, ethnicity, clothing, voice, dynamics of interactions
1.				M F
2.				M F
3.				M F
4.				M F
5.				M F
6.				M F
7.				M F
8.				M F
9.				M F
10.				M F

# of obs	Work Activity	Stimuli	Response	Observation

Appendix B

Biographical Data

Age in years _____

Gender:

Male () = 0

Female () = 1

Role:

(1) RN ()

(2) MD ()

(3) Pharmacist ()

What state did you receive your initial education in? _____

Diploma () Associates Degree () Bachelor's Degree ()

of years working in this role _____

of years working at UMASS in this role _____

Area of practice or specialty _____

Average number of hours worked each week? _____

Number of hours worked in the past week? _____

How often do you work over 40 hours/week?

Have you ever filled out an Occurrence (STARS) report? Yes ___ No ___

Have you ever selected distractions as a precursor to an event in completing a STARS report?

Yes _____ No _____

Appendix C

Interview Guide

Interview participant # _____

Date/ time _____

Location _____

Statement	Probes	Conceptual Areas
<p>Please describe a time when either you or someone else was distracted and continued to perform their work.</p>	<p>a. What was the current workload? (staffing, volume, time pressure)</p> <p>b. What was the person doing when the distraction happened?</p> <p>c. What was the distraction?</p> <p>d. Was the individual aware of the distraction?</p> <p>e. Who was involved?</p> <p>f. What was the setting? (unit design, patient volumes, staffing patterns, workloads, staff experience and expectations, policies, procedures, safety culture, and barriers to efficiency)</p> <p>g. What was the outcome? 1) any error? 2) near miss? 3) did it reach the patient? 4) did it cause harm?</p> <p>h. (only if personal experience) Explore demands and impact on cognitive load from areas outside work.</p>	<p>Experience with distracted practice</p> <p>Antecedents of distracted practice available cognitive resources</p> <p>Cognitive burden/ Cognitive workload</p> <p>Engaged in practice activity</p> <p>Stimulus</p> <p>Attributes of distracted practice</p> <p>Human experience</p> <p>Context or setting</p> <p>Consequences of distracted practice</p>

Appendix D

Document Summary Form

Site: _____ Document: _____ Date received: _____

Name or description of document:

Event or contact with which document is associated:

Significance or Importance of document:

Brief Summary of contents:

*Appendix E***Contact Summary Form**

Contact Date _____ Today's Date _____

Observation _____ Unit _____ Face-to Face Interview _____ Number assigned _____

1. What were the main issues or themes encountered?

2. Summarize the information obtained related to the attributes and characteristics of distracted practice.

3. What information related to the attributes and characteristics of distracted practice were missing?

4. What items during the contact struck you as salient, interesting, illuminating or important in this contact?

5. What new/additional questions do you have to consider for the next contact?

Appendix F

Transcript Summary Form

Contact Date _____ Today's Date _____

Face-to Face Interview Number assigned _____

Pick out the most important points in the transcript. Place them in order noting the page number on which the point appears. Attach a theme or aspect to each point in CAPITALS. Invent themes where no existing ones apply and asterisk* those. Comments may be included in double parenthesis.

PAGE:

IMPORTANT POINTS:

THEMES/ASPECTS

Executive Summary

The purpose of this study was to explore the experience of distracted practice across the healthcare team that included; nurses, physicians and pharmacists in the acute care setting. A qualitative descriptive (QD) approach was used that integrated observations with semi-structured interviews. The conceptual framework was based on the distracted driving model and a completed concept analysis. Observations were conducted on six units across an academic medical center. Observations ($N=22$) and interviews ($N=32$) were clustered and alternated to provide ongoing data collection and context for analysis through constant comparison. Coding was done using an inductive, iterative approach to identify themes and subthemes. The study was carried out according to the approved proposal.

Results suggested that distracted practice is based on the main theme of cognitive resources which varies by the subthemes of individual differences; environmental disruptions; team awareness; and “rush mode”/time pressure. Distracted practice is an individual human experience that occurs when there are not enough cognitive resources available to effectively complete the task at hand. In that moment an individual shifts from thinking critically, being able to complete their current task without error, to not thinking critically and working in an automatic mode. This is when errors occur. Understanding distracted practice is essential for reducing errors and improving the quality of care. Additional research is needed to evaluate intervention strategies to reduce distracted practice.



“Distracted Practice and Patient Safety: The Healthcare Team Experience”

A Dissertation Defense Presented by: Lynn Berggren Knapp D’Esmond

Date: Monday, January 11, 2016

Place: UMass Albert Sherman Center (AS6-2072)

Time: 2:00 p.m.

University of Massachusetts Medical School, Graduate School of Nursing



Distracted Practice and Patient Safety: The Healthcare Team Experience

Lynn Berggren Knapp D'Esmond, MSHA, RN
University of Massachusetts, Worcester
Graduate School of Nursing
PhD Program
January 11, 2016

Background and Significance:

Patient Safety

- Healthcare errors: 3rd leading cause of death¹
- Medication errors most frequently reported²
- 80% of errors due to Human Factors^{3,4}

Annually:

- Harm over 1.5 million people⁵
- 400,000 preventable deaths¹
- Costs range from \$3.5 – \$29 million⁶

Background and Significance:

Distractions are detrimental to human functioning

- **Cognitive processing**
- **Large amounts of intricate data**
- **Constantly changing information**

Aviation Industry

- **Crew Resource Management**

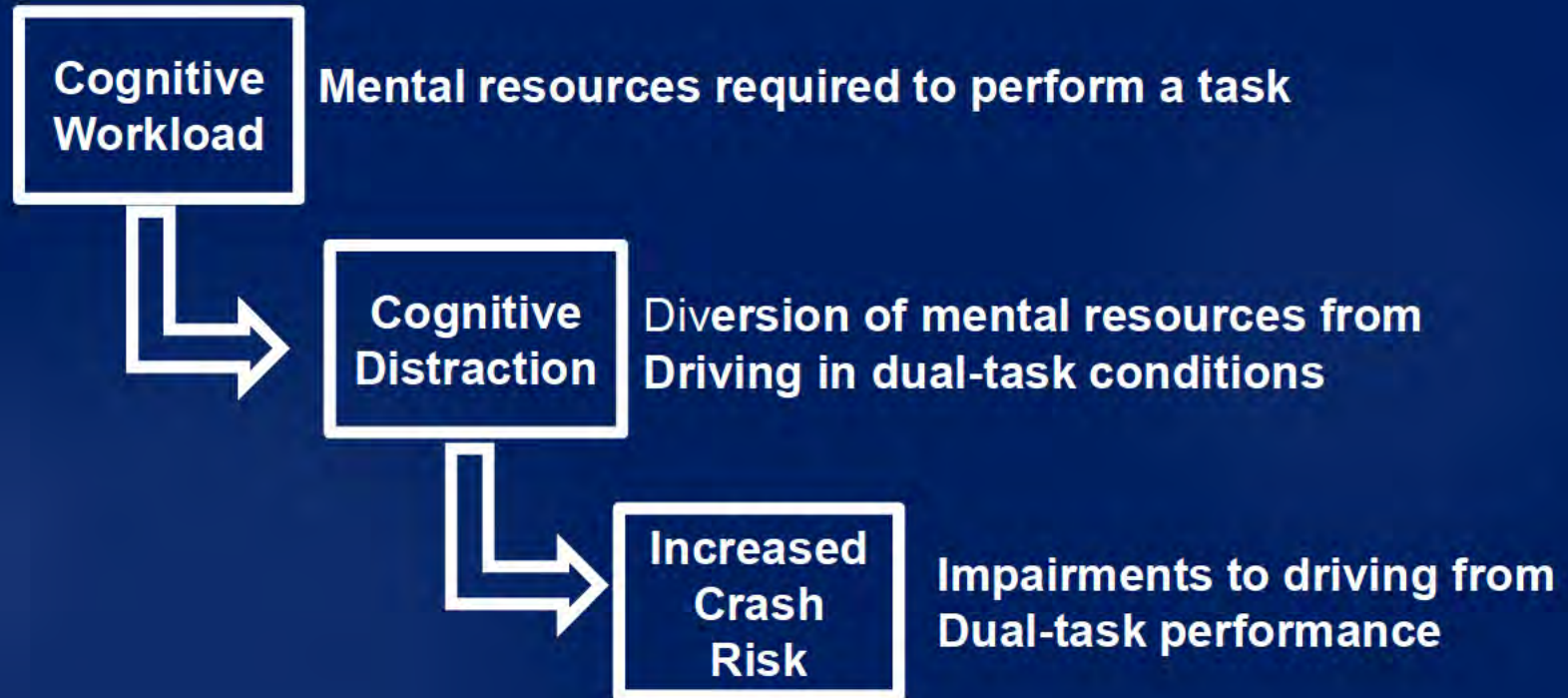
Automobile Industry

- **Distracted Driving**

Distractions blurred with interruptions

Distractions distinctly different from interruptions

Distracted Driving:



Cognitive workload, cognitive distraction and crash risk. (Strayer et al, 2013)⁷

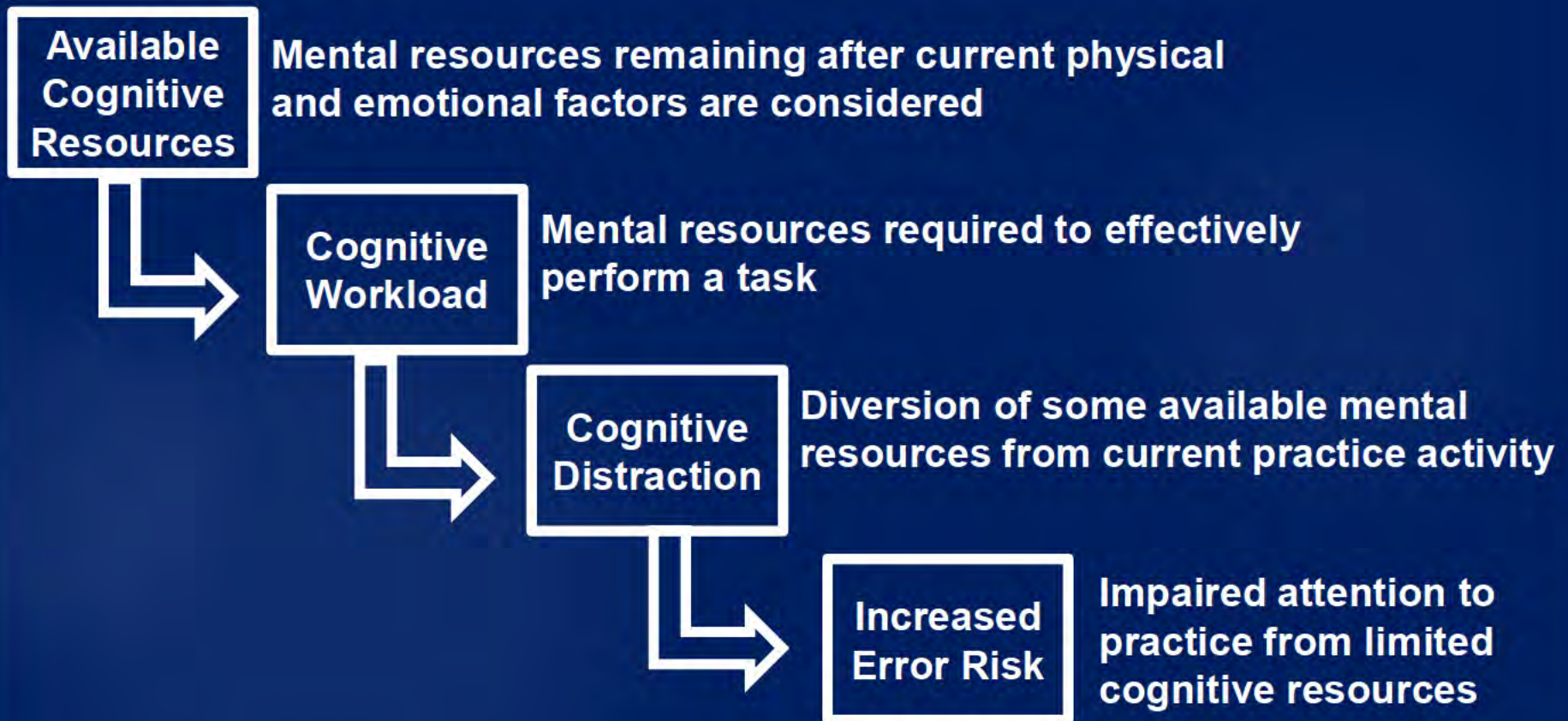
Purpose:

To further explore the experience of distracted practice among healthcare providers in the acute care setting.

Specific Aims:

- 1. Describe the characteristics of distracted practice of healthcare team members in the acute care setting, specifically doctors, nurses, and pharmacists.**
- 2. Describe the context, antecedents, stimuli and consequences surrounding distracted practice.**
- 3. Develop a preliminary model that can be used to advance the study of distracted practice as it relates to patient safety in the acute care setting.**

Framework: Distracted Practice



Distracted Practice: A Concept Analysis, (D'Esmond 2015)⁸

Eligibility Criteria for Interviews:

- **Any RN, MD, or Pharm D**
- **Employed at the study site**
- **>6 months after orientation**
- **Working in Acute Care**

Design :

Qualitative Descriptive

Observations	Interviews
Neonatal ICU	Nurses
Adult ICU	Physicians
Medical Unit	Pharmacists
Surgical Unit	
Two Pharmacies	

Observations clustered and alternated with interviews

Eligibility Criteria for Interviews:

- **Any RN, MD, or Pharm D**
- **Employed at the study site**
- **>6 months after orientation**
- **Working in Acute Care**

Procedures:

- IRB approved
- Staff meetings
- Observation sessions scheduled
- Recruitment of participants for interview
- Interview sessions scheduled
 - Informed consent
 - Tape recorded interviews
 - Transcribed

Procedures:

- **Reflective journal**
- **Data analysis**
 - **Inductive, constant comparison⁹**
 - **Coding**
- **Member checks**
 - **Summary of the distracted practice experience**
 - **List of characteristics**
 - **Discussion**

Results :

Observations N=22	Interviews N=32
December 2014 – July 2015	January 2015 – July 2015
Each unit 3 - 4 times	Nurses (12)
Average time 1 hour 20 minutes	Physicians (11)
All days of the week, all shifts	Pharmacists (9)
Observation guide and contact summary forms	Semi-structured interview guide and contact summary form

Sample Demographics:

- **Gender: Female 69% Male 31%**
- **Age Range: 25 – 67 years**

Mean Age:

Nurses: 47.5

Physicians: 45.4

Pharm D: 37.8

- **Experience: 0.75 – 40 years, mean 15.3 years**
- **Years at facility: 0.5 – 37 years, mean 11.2 years**

87% completed an occurrence report

26% selected distractions as a precursor to an event

Results:

Distracted practice was found to occur:

- All departments
- All disciplines
- All days of the week, including holidays
- All times of the day and night, 24/7

Themes and Sub-themes:

Main theme:

Lack of available cognitive resources

Four sub-themes:

- 1. Individual Differences**
- 2. Environmental Disruptions**
- 3. Team Awareness**
- 4. “Rush Mode”/ Time Pressure**

Lack of Available Cognitive Resources:

Fluctuate throughout the day and varies due to:

- **The individual**
- **The location/environment**
- **The team**
- **Amount of time needed to complete a task**

Lack of Available Cognitive Resources:

“What happened? And did I do everything I was supposed to do, and by the way, hello I'm here to take care of you, and let's finish what we started but yet my mind is still back at did I pick up on everything, did I do what I had to do?”

Individual Differences:

- **Physical health (lack of sleep, time to exercise)**
- **Emotional factors**
 - **Financial or relationship issues**
 - **Being worried about a sick child or parent**
 - **Being consumed with grief**
 - **Being emotional following an event**
- **Varies with the work day and overall cognitive demands**
- **Experience in the role, competence and confidence**

Individual Differences:

“I think it varies on the person, how easily distracted they are or they can focus more with stuff”

“It’s almost hard not to bring your personal issues sometimes to work . . . maybe there is 100 other reasons why their mind isn’t quite there.”

“The emotional distractions can be quite interesting even with colleagues and coworkers, you never know what kind of day they're going to have.”

Environmental Disruptions:

- **Environmental design**
- **Support for the current work being done**
- **Need for renovations**
- **Size of the space and any limitations**
- **Number of people working in the space**
- **Type of activity being performed**
- **Technology and equipment being used**
- **Tactile, Auditory, and Olfactory stimuli**

Environmental Disruptions:

“How can you work in an environment like this where it is so noisy and you're actually making very serious medical decisions and alarms are going off, people are having conversations about something else right next to you and that's all distracting.”

“It's like going into a locker room at half time, you know it's like everything is going on at once.”

Noise:

Voices	Technology	Other
Phones	Alarms	Music
Colleagues	Ventilators	Card stampers
Visitors	Computers	Fax Machines
Huddles/rounds	Pyxis machine	Pneumatic tube
Patients	IV pumps	Ice machine
Call lights	Electronic Health Records	Equipment
Overhead pages	Doors	Environmental Services

Team Awareness:

- **Role and size of the team**
- **Number of patients and their acuity**
- **Safety culture and identification of near misses**
- **Experience working together**
 - **Familiarity with critical aspects of each others roles**
 - **Assistance when needed**
 - **Provide support and understanding**

Team Awareness:

“Your first obligation is to your patient and the team of people with whom you're working”

“The better defined the roles of the people involved, the less distractions.”

“There are many days where somebody says I've been awake since three in the morning, just be my wingman today make sure we are all on top of things so you know we do work together to try and make sure things go right for our patients. ”

“Rush Mode”/ Time Pressure:

- **Sudden change in a patient’s condition**
- **Emergent issue (code blue, code white, trauma)**
- **Sudden increase in patient volume**
- **Lack of available beds and/or adequate staff**
- **Completing work by end of shift**

“Rush Mode” / Time Pressure:

“It’s like a threshold essentially of your distractions of what you’re able to process and able to do. Maybe you can handle 10 distractions every 5 minutes but if it gets to 15 that is when you are just overwhelmed and there is that point of chaos and I can’t control this right now.”

“I just feel like if there was more time, less distractions, where you’re not trying to multitask, listening to the case, reviewing the records, answering other questions you can focus better.”

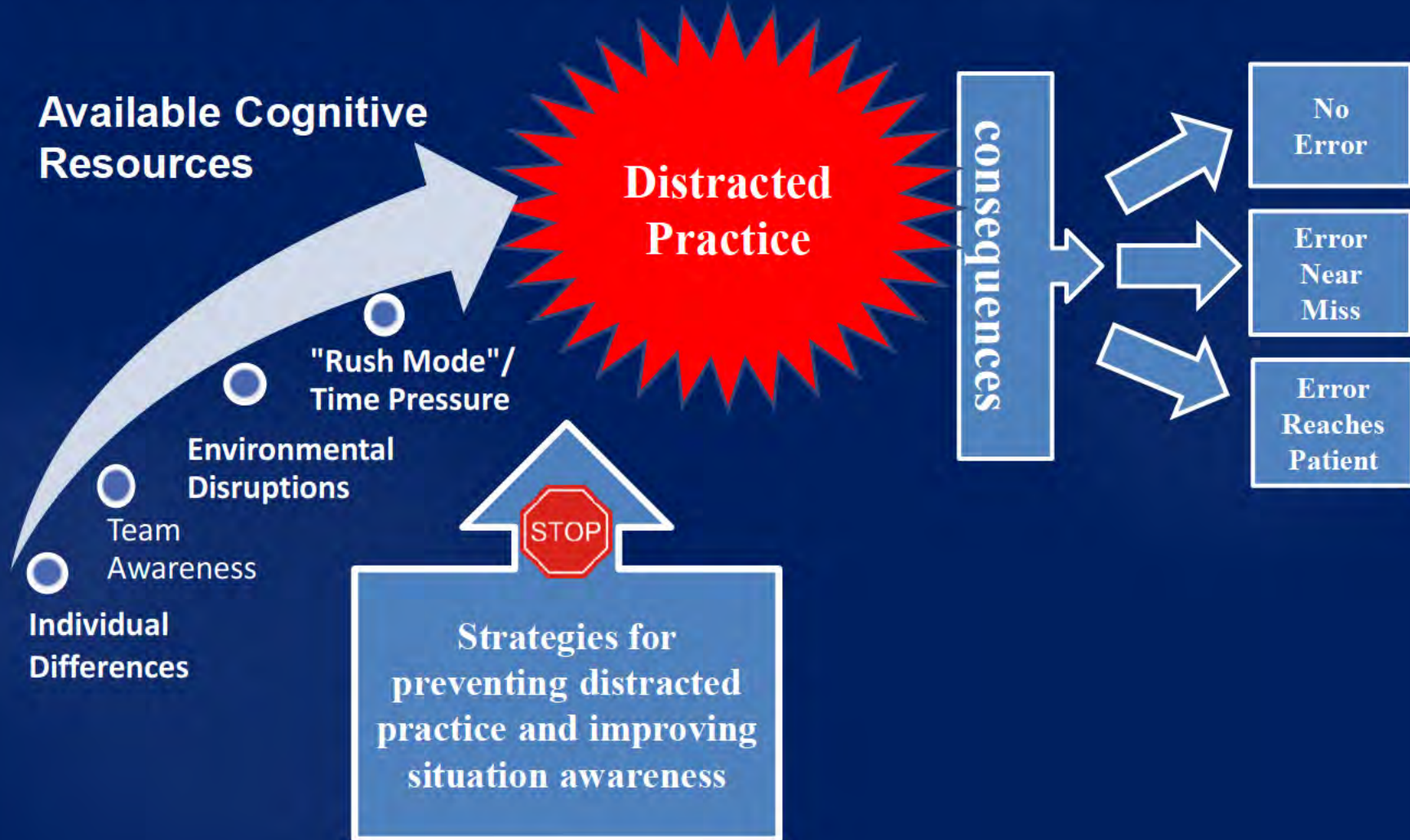
Characteristics of Distracted Practice: Aim 1

- **Human experience**
- **Available cognitive resources that vary**
- **Levels of distraction and “Stacking-up” effect**
- **A stimulus occurs (external or internal)**
- **May/may not be aware of the stimuli**
- **Shift from critical thinking into “AUTOMATIC MODE”**
- **Is dynamic, temporary, and may be only momentary**
- **Fluctuates throughout the day, and day to day**
- **Depending on the workload and level of distractions**


Context, Antecedents, Stimuli and Consequences of Distracted Practice: Aim 2

Context	Antecedents	Stimuli	Consequences
<u>Environment:</u> Specific location Unit design Size of space Work being done Technology	Available cognitive resources Varies by individual Varies day to day Varies throughout day	<u>External Stimulus:</u> Visual Auditory Olfactory Tactile	Completed task/ No error
<u>Working conditions:</u> Patient volumes Staffing/workloads Staff experience Rushing/time pressure	Being engaged in a practice activity/work	<u>Internal Stimulus:</u> Any intrusive thought not related to the current activity	Error caught prior to reaching the patient/Near miss
<u>Circumstances:</u> Policies/procedures Safety Culture Model of Care Barriers to efficiency	A stimulus occurring that the individual may or may not be aware	<u>Stress:</u> Anxiety Greif Time pressure	Error reaches the patient No harm Harm Degree of harm

Distracted Practice Model: Aim 3



Practice Implications:

- **RAISE AWARENESS**
 - Every individual on the healthcare team
 - Simulation
 - Patients and families
 - Behaviors to adopt to avoid being a distraction
 - Strategies to avoid distracted practice
- **Slowing down^{10,11} Take Time to Think** 
- Similar to maintaining situation awareness^{12,13,14}
- All responsible for system's and processes that make up health care

Study Limitations:

- **One Academic Medical Center**
- **6 Departments**
- **3 Roles**
- **Hawthorne Effect**

CONCLUSION:

Distracted Practice impacts patient safety.

- **Distracted practice is experienced by all health care professionals.**
- **Occurs when an individual shifts from thinking critically into an “automatic mode”**
- **Dynamic, temporary, and may be only momentary.**
- **Continually changing throughout the day, depending on the individual and overall workload, the environment, the team and time pressure, and mounting distractions**
- **When errors occur**
- **Important to understand to improve safety**

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Thank you for your attention!



DISTRACTIONS

Can seem important at the time, though later you realize that it was what was around it that was important...

Questions?

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Dissemination Plan

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