Improving Patient Safety and Incident Reporting Through Use of the Incident Decision Tree

Item Type	text; Electronic Dissertation
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Publisher	The University of Arizona.
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Download date	22/05/2018 06:29:34
Link to Item	http://hdl.handle.net/10150/626648

IMPROVING PATIENT SAFETY AND INCIDENT REPORTING THROUGH USE

OF THE INCIDENT DECISION TREE

by

Erin Marie Rasmussen

A DNP Project Submitted to the Faculty of the

COLLEGE OF NURSING

In Partial Fulfillment of the Requirements

For the Degree of

DOCTOR OF NURSING PRACTICE

In the Graduate College

THE UNIVERSITY OF ARIZONA

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THE UNIVERSITY OF ARIZONA
GRADUATE COLLEGE

As members of the DNP Project Committee, we certify that we have read the DNP project prepared by Erin Marie Rasmussen entitled "Improving Patient Safety and Incident Reporting Through Use of the Incident Decision Tree" and recommend that it be accepted as fulfilling the DNP project requirement for the Degree of Doctor of Nursing Practice.

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Final approval and acceptance of this DNP project is contingent upon the candidate's submission of the final copies of the DNP project to the Graduate College.

I hereby certify that I have read this DNP project prepared under my direction and recommend that it be accepted as fulfilling the DNP project requirement.

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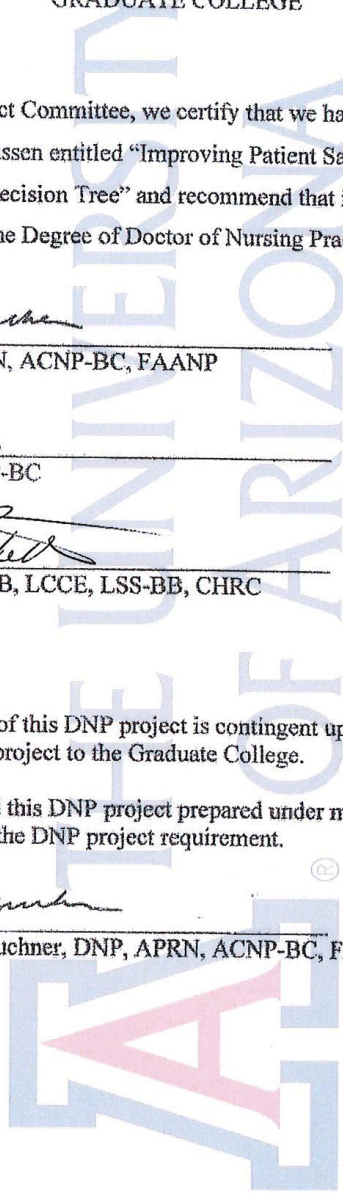
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ACKNOWLEDGMENTS

I would like to thank to my committee chair Dr. Brian Buchner, for his feedback, patience, and guidance. Your unwavering support was invaluable in the completion of this project. I would also like to thank my committee members Dr. Christy Pacheco and Dr. Cindy Beckett for their insight and encouragement throughout this process.

A heartfelt appreciation goes to the entire staff in the Intensive Care Unit at Flagstaff Medical Center. Your desire to improve patient safety speaks volumes about the amount of compassion you have for your work. I am especially indebted to Catherine Riedel, Clinical Nurse Specialist, who worked actively to ensure my project was a success from the beginning. Thank you Catherine, for your dedication and expertise.

Special regards to Sifu Banks and the entire kung fu community at Sacred Mountain. Thank you for teaching me to maintain balance and achieve peace in times of chaos. The eight essential principals of your school (positive mind, healthy body, balanced relationships, meaningful life, inspiration, contribution, sustenance, and legacy) have been a guiding force throughout my academic journey.

I owe my deepest gratitude towards my family for their eternal support and understanding of my goals and aspirations. Most importantly, I would like to thank my husband, Aric, and my two amazing children, Ethan and Alivia. Thank you for your love and inspiration. I am also grateful to my mother who encouraged this educational endeavor.

DEDICATION

This DNP project is dedicated to all of the patients and families who have fallen victim to preventable medical error. My hope is that this project will impact error reporting and promote increased safety culture across the healthcare spectrum.

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ABSTRACT

Background: Preventable medical error accounts for approximately 98,000 deaths in the hospital setting each year. A proposed solution to decreasing medical error encompasses the development of a culture of safety. Safety culture has been defined as a common set of values and beliefs that are shared by individuals within an organization that influence their actions and behaviors. In 2015, the safety culture of Registered Nurses (RN) and Patient Care Technicians (PCT) who regularly worked in the Intensive Care Unit (ICU) and Cardiovascular Intensive Care Unit (CVICU) at Flagstaff Medical Center (FMC) was assessed using the Hospital Survey on Patient Safety Culture. This survey functioned as a needs assessment and demonstrated that ICU/CVICU staff had negative reactions to safety culture and error reporting on eight of twelve composites tested. Based off these results, the Incident Decision Tree (IDT) was selected as an intervention to help improve the areas identified in the needs assessment.

Purpose: The aims of this quality improvement project included: 1) Development of a protocol for IDT use by ICU/CVICU managers; 2) Implementing the IDT; and 3) Administering a post IDT implementation survey.

Methods: The IDT was implemented during a 4-week period in the ICU/CVICU at FMC. During this time, managers used the IDT when processing reported error. Post implementation, an online survey was administered over the course of two weeks to ICU/CVICU managers and unit based RNs and PCTs to reassess their perceptions on the IDT, error reporting, and safety culture.

Results: During the implementation period, 23 errors were reported in the ICU/CVICU at FMC with management utilizing the IDT a total of 12 times. Analysis of the reportable data

demonstrated that of the 12 incidents, seven were attributed to system failures. The remaining five incidents were processed using the "foresight test."

Conclusions: Results from the post implementation survey demonstrated that ICU/CVICU staff felt the IDT contributed to a non-punitive environment. Staff also reported the IDT helped to increase communication after an error occurred. Lastly, the majority of staff felt the IDT increased transparency in the error reporting process.

INTRODUCTION

Background

As outlined in the Institute of Medicines (IOM) 1999 report *To Err is Human*, medical errors in the health care setting result in 98,000 preventable deaths each year. Although this may sound like a relatively low number compared to the amount of patients admitted to the hospital setting each year, the annual number of deaths due to medical error supersedes those caused from motor vehicle crashes (43,458), breast cancer (42,297), and Acquired Immunodeficiency Syndrome (AIDS) (16,516) (National Patient Safety Foundation [NPSF], 2015). Medical error, as defined by the IOM is "the failure of a planned action to be completed as intended or the use of a wrong plan to achieve an aim (IOM, 1999, pg. 1)." The main conclusion from this report is that most medical errors are not the result of individuals or groups, but fragmented systems. In an effort to achieve a better safety record, the IOM recommends a four-tier approach: 1) establishing national standards focusing on leadership, research, and tools to enhance safety; 2) creation of a mandatory reporting system; 3) implementation of safe practices at the delivery level; and 4) creation of a culture of safety (IOM, 1999).

In order to generate a holistic change in safety, the focus needs to shift from reactive, piecemeal interventions to a total systems approach (NPSF, 2015). This entails a constant prioritization of safety culture by leadership and considering safety across the entire patient care continuum. Eight recommendations have been outlined by the NPSF as a way to achieve widespread improvement in patient safety. They are as follows: 1) ensure that leaders establish and sustain a safety culture; 2) create centralized and coordinated oversight of patient safety; 3) create a common set of safety metrics that reflect meaningful outcomes; 4) increase funding for

research in patient safety and implementation science; 5) address safety across the entire care continuum; 6) support the health care workforce; 7) partner with patients and families for the safest care; and 8) ensure that technology is safe and optimized to improve patient safety.

Safety culture is a concept that originated in high reliability organizations (HRO) to create a system that consistently accomplishes goals while working in inherently dangerous situations (Hines et al., 2008). In an effort to avoid catastrophic outcomes, HROs such as the military, the aviation industry, and nuclear power plants, have adopted a set of values that contribute to a culture of safety. The key features of an environment that embraces a culture of safety include: a) acknowledgement of the high-risk nature of an organization's activities and the determination to achieve consistently safe operations; b) a blame-free environment where individuals are able to report errors or near misses without fear of reprimand or punishment; c) encouragement of collaboration across ranks and disciplines to seek solutions to patient safety problems; and, d) organizational commitment of resources to address safety concerns (Agency for Healthcare Research and Quality [AHRQ], 2016). The World Health Organization (2009) has also confirmed that focusing on culture, additional reporting, and learning from errors is one of the most important areas for the improvement of patient safety in hospitals today.

While the concept of creating a blame-free culture sounds ideal, it may not be the best solution for situations that demand accountability. In an effort to merge the joint need for a no-blame culture and appropriate accountability, the concept of "just culture" has been introduced. The focus of a just culture is to identify and address system failures that lead individuals to engage in unsafe behaviors, while maintaining individual accountability (AHRQ, 2016). This is accomplished through establishing zero tolerance for reckless behavior.

There can be wide variations in the perceptions of safety culture within an organization. Fundamentally, safety culture exists on a local level and can vary between management and bedside staff (AHRQ, 2016). These variations in perception may contribute to the types of interventions that are undertaken to reduce errors. Due to this, it is imperative to involve organizational leadership and managers and educate them on the issues frontline works face (AHRQ, 2016).

Problem Identification

In order to decrease medical error, system failures must first be identified. Prompted by the IOM's report detailing the prevalence of medical error, the number of event reporting systems has increased. The purposes of error reporting systems are to (1) allow data collection by creating a forum for healthcare providers to report events or errors, and (2) facilitate an organization to promote change and reduce the likelihood of the reoccurrence of the error (Harper & Helmreich, 2005). Error reporting is integral in improving patient safety as it facilitates learning from past mistakes to prevent future harm, however, it has been suggested that the success of a reporting system is determined by the attitudes and perceptions of frontline staff (Harper & Helmreich, 2005). Many patient safety incidents are infrequently reported, especially in cases where patients have suffered no lasting harm (Meadows, Baker, & Butler, 2005). This may be due to the reluctance among staff to report error due to fear of retaliation or the notion that since the error did not cause a significant problem a problem does not exist.

Nationwide, many organizations are working on improving safety culture. Often times this is achieved through administration of a survey. In order to encourage widespread change in safety culture, measurement of local safety culture before and after an intervention is imperative

in assessing its impact (Cooper & Makary, 2012). In 2015, a grant was awarded to FMC to

support assessment of safety culture and subsequent quality improvement interventions. As the

primary grant holder, I conducted the needs assessment in the Intensive Care Unit (ICU) and

Cardiovascular Intensive Care Unit (CVICU) at Flagstaff Medical Center (FMC) from February

18, 2015 to March 21, 2015. The purpose of the needs assessment was to evaluate what staff in

this unit perceived as the most important areas of concern. The needs assessment consisted of the

administering the Hospital Survey on Patient Safety Culture (HSOPSC) survey from the Agency

for Healthcare Research and Quality (AHRQ). I selected the HSOPSC due to its moderate to

strong reliability and validity (Blegen et al., 2009) along with the ability of HSOPSC to measure

group culture and not just individual attitudes (Smits, Wagner, Spreeuwenberg, Van Der Wal, &

Groenewegen, 2009).

This HSOPSC is a Likert-scale survey consisting of 42 items that measure staff opinions

on patient safety issues, medical errors, and incident reporting. The HSOPSC consists of unit

specific aspects (seven dimensions), a hospital level aspect (three dimensions), two outcome

dimensions, and two outcome items. More specifically, these composites include: (1) teamwork

within units; (2) supervisor/manager expectations and actions promoting patient safety; (3)

organizational learning and continuous improvement; (4) management support for patient safety;

(5) overall perceptions of patient safety; (6) feedback and communication about error; (7)

communication openness; (8) frequency of events reported; (9) teamwork across units; (10)

staffing; (11) handoffs and transitions; and (12) non-punitive response to errors. Each composite

is composed of 3-4 survey questions with answers measured by the percentage of positive

responses to survey items. All items except the outcome items use a Likert scale rating from 1 =

strongly disagree to 5 = *strongly agree* or a frequency rating from 1 = never to 5 = always. The

first outcome item, "number of incidents reported in the last 12 months" is rated from 1 = no

incident, 2 = 1-2 incidents, 3 = 3-5 incidents, 4 = 6-10 incidents, 5 = 11-20 incidents, and 6 ≥ 21

incidents. The second outcome item "patient safety grade" is scored as 1 = failing to 5 =

excellent.

Initial Survey Data

IRB approval was obtained on an organizational level prior to administration of the initial

HSOPSC survey. A convenience sample of all staff specific to the ICU/CVICU clusters

(physicians, nurse practitioners, registered nurses, patient care technicians, respiratory therapists,

physical therapists, occupational therapists, pharmacists, etc.) were invited to participate in the

needs assessment survey. From February 18, 2015 to March 21, 2015, the HSOPSC was made

available electronically through the Survey Monkey platform to all individuals who regularly

worked in the participating ICUs at FMC. The opening of the survey was advertised through the

use of flyers containing the survey link. These flyers were hung in common areas throughout the

ICUs under study. A group email was sent out with a direct link to the HSOPSC on Survey

Monkey. At the beginning of the survey, a disclosure statement let participants know that

informed consent was implied if they chose to complete the survey. Again, no personal

identifying markers were required for survey participation, however, general information on

length of employment and job title were questions present. After the survey closed, data was

collected and statistical analysis was done using an Excel spreadsheet. During this time, the

primary investigator met with a data analyst at FMC to benchmark data against hospitals

nationally, regionally, and locally using the AHRQ Comparative Database Report.

A combination of inferential and descriptive statistics was utilized to analyze data. In order to ensure the same points were compared between the HSOPSC and the post IDT survey data, the dataset for the HSOPSC was narrowed down to include only ICU/CVICU RNs and PCTs. The information gathered from this baseline survey was used as a needs assessment to identify areas requiring improvement. The data set that included all eligible staff members in the ICU/CVICU demonstrated staff had negative reactions to safety culture on 7 of the 12 composites tested. When the data was narrowed down to include RNs and PCTs only, the number of composites staff had negative reactions increased to eight with the majority of scores ranging falling in 10th percentile to below the minimum when benchmarked nationally (Table 1). Within these eight composites, three major themes were identified in regards to error reporting and included: (1) feedback and communication about error (below the minimum), (2) frequency of events reported (below the minimum), and (3) non-punitive response to error (10th percentile). Interestingly, although safety is listed as a core value of FMC, a safety culture survey had never been administered prior to the HSOPSC in February 2015. Based off data obtained, the IDT was selected as an appropriate intervention to improve the rate of error reporting, create transparency in the error reporting process, and improve safety culture.

TABLE 1. *HSOPSC Survey Composite Scores*.

AHRQ Composites	FMC ICU percentile	AHRQ 2014 average (table 6-3)	FMC ICU average (RN and PCT only)
1. Teamwork Within Units	90th	81%	89%
2. Supervisor/Manager Expectations & Actions Promoting Patient Safety	50th (median)	76%	78%
3. Organizational Learning—Continuous Improvement	10th	73%	67%
4. Management Support for Patient Safety	Above minimum, below 10th percentile	72%	52%
5. Feedback & Communication About Error	below minimum	67%	39%
6. Overall Perceptions of Patient Safety	Above minimum, below 10th percentile	66%	46%
7. Frequency of Events Reported	Above minimum, below 10th percentile	66%	55%
8. Communication Openness	25th	62%	57%
9. Teamwork Across Units	25th	61%	52%
10. Staffing	10th	55%	46%
11. Handoffs & Transitions	10th	47%	35%
12. Non punitive Response to Error	Above minimum, below 10th percentile	44%	31%

Local Problem

Data from the HSOPSC survey was collected and analyzed for themes. A total of 99 ICU

staff members (91.6%) completed the questionnaire. Registered Nurses (RN) accounted for 86%

of responses (n=62) with PCTs accounting for 14% (n=8). The majority of respondents worked

between 20-39 hours per week and had 1-5 years of experience. The obtained results were

benchmarked nationally against 653 hospitals in the AHRQ database and then benchmarked

against different indicators such as bed size (98 hospitals), nonteaching hospitals (410 hospitals),

and hospitals with in the mountain region (17 hospitals).

As demonstrated by Table 1, staff in the ICU at FMC perceived the teamwork to be

above average, however, major fallouts in regards to feedback and communication, hand-offs

and transitions, and error reporting were identified. Of the 12 composites tested, eight

composites showed staff responses to be at the 10th percentile to below minimum, meaning that

FMCs scores were below what AHRQ has as the lowest point for comparison. This only applies

for comparing FMC with the AHRQ Comparative Database Report (Appendix A), which places

facilities in percentiles. Within the eight composites with the lowest scores, three held themes

related to error reporting. The three error reporting composites were listed as: (1) feedback and

communication about error (below the minimum), (2) frequency of events reported (below the

minimum), and (3) non-punitive response to error (10th percentile).

Based off this data, the Incident Decision Tree (described further in the next section) was

selected as a means to improve the rate of error reporting and increase the transparency in the

process as to improve safety culture within the ICU. A second reason why the intervention was

selected was due to its focus on the management team versus bedside staff. The importance

behind this selection was to promote managerial involvement in facilitating communication after

an error is reported to increase feedback and loop closure. These aspects are important as they

help to validate staff concerns and promote increased staff engagement through the use of

transformational leadership techniques (Manning, 2016). This in return may also help to increase

the number of errors reported, thus identifying (and correcting) system failures.

Currently, error reporting at FMC consists of entering data from an incident into an

anonymous electronic reporting system called MIDAS. These incidents are then routed to the

appropriate clinical manager for review. Based off the data entered, the clinical manager decides

how to proceed with investigating the incident and subsequently the actions that should be

undertaken with the individual(s) involved. The current system is very subjective and is not

guided by any framework or decision tree but by manager discretion only. In addition, not all

incidents (or their outcomes) are communicated to staff creating a knowledge deficit about

current practice and staff expectations to prevent future error.

Incident Decision Tree

The Incident Decision Tree (IDT) is the tool that was implemented in this quality

improvement project. The IDT was originally developed by the National Patient Safety Agency

in an effort to help National Health Service (NHS) managers in the United Kingdom establish a

just and consistent system toward staff involved in safety incidents (Meadows, Baker, & Butler,

2005). The IDT is comprised of an algorithm with supplementary guidelines that pose a series of

structured questions aimed at assisting managers in determining if error was the result of an

individual's actions or a system failure (Figure 1). The objective of the IDT is to create an open

and just culture where employees feel able to report patient safety incidents without the

unwarranted fear of consequences (Meadows, Baker, & Butler, 2005). As demonstrated by the

data obtained from the HSOPSC survey, three composites had weak scores in relation to error

reporting. The IDT can be a viable intervention to address these issues among staff while raising

awareness of patient safety issues, improving understanding of the causes of adverse incidents,

and promoting a just culture within the work environment.

Implementation of the IDT did not have an affect on FMC's existing practice of using the

MIDAS system or how information surrounding an incident was disseminated to the appropriate

managerial sources. The intent behind the IDT was to create a just culture, thus helping to focus

energies on identifying system failures that warrant change and can lead to better patient

outcomes. This tool may prove to be the most beneficial for individuals with decision-making

capability in that it will be objective and act as a road map to guide them to the appropriate course of action. Staff may benefit from this tool because it will make the incident reporting process more transparent and allow them to anticipate what actions (if any) may be taken. Communication and loop closure regarding an incident may not be affected by the IDT; however, it could be an area of increased focus for managers.
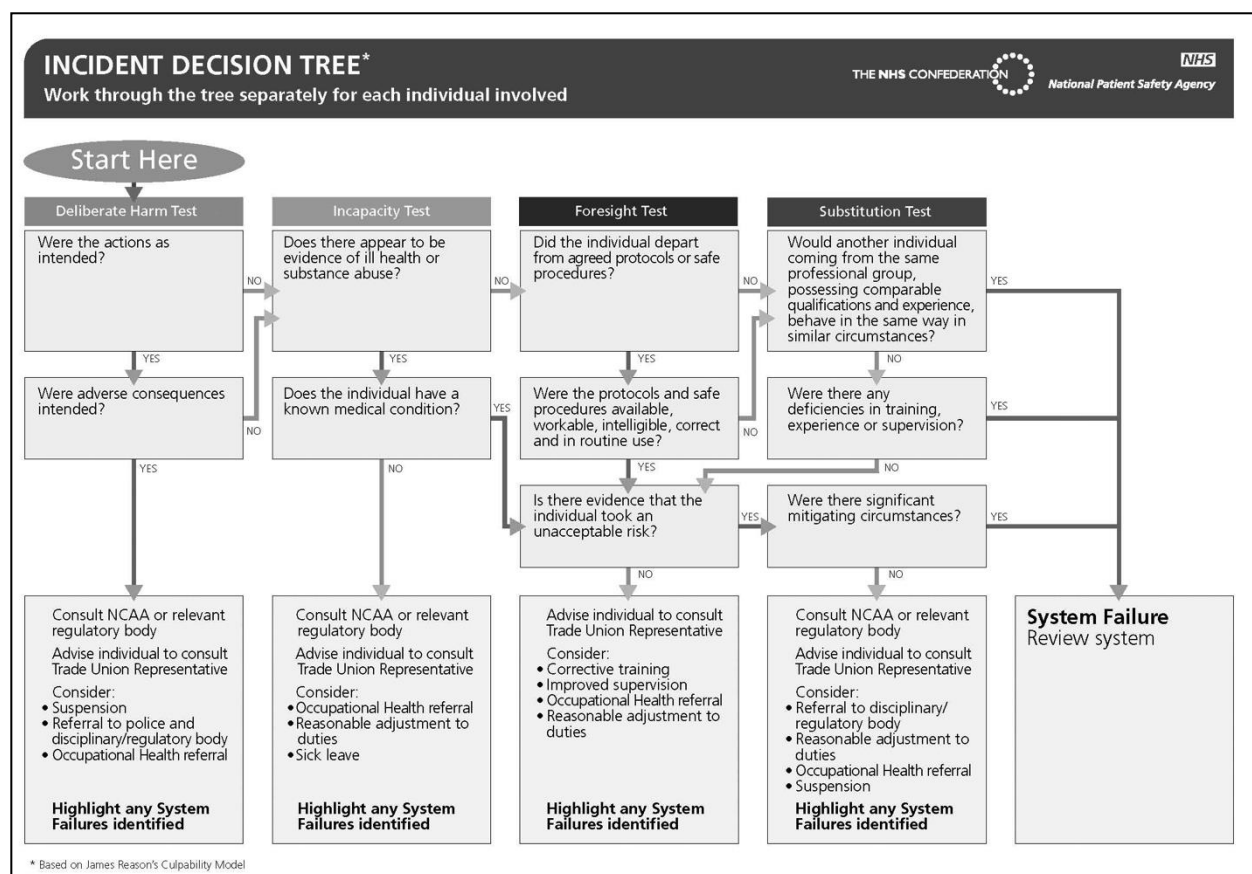
FIGURE 1. The Incident Decision Tree (IDT)

Purpose and Aims

The purpose of this project was to implement the IDT Tree in the ICU/CVICU at Flagstaff Medical Center. The goal of this tool was to promote an open and just culture in which staff feel able to report incidents without fear of retaliation or reprimand. In return, the number of errors reported should increase, helping to identify system failures and decrease medical error.

The aims of this project included:

1. Development of a protocol that includes use of the IDT by all managers in the ICU and CVICU at FMC.

2. Implementing the IDT in the ICU and CVICU at FMC.

3. Administering a post implementation survey for both managers and ICU specific bedside staff (Registered Nurses [RNs] and Patient Care Technicians [PCTs]) to assess the influence the IDT has on the three main safety cultures areas identified in the HSOPSC: (1) feedback and communication about error, (2) likelihood of reporting an error, and (3) non-punitive response to error.

Literature Review

A literature review was performed using Cumulative Index to Nursing and Allied Health Literature (CINAHL), Cochrane Library, and PubMed in January 2017. Combinations of key words were used to gather the best results for review. Medical subject headings (MeSH) terms included: safety culture, patient safety, error reporting, intensive care unit, Incident Decision Tree, and safety culture survey. Articles were excluded on the following criteria: full text unavailable, date of publication greater than 10 years, articles not published in English, non-

human subjects, and those not relating to area of study. Using the above parameter, 73 articles were obtained and seven were used for the literature review.

In a study completed by Livorsi et al. (2016), the HSOPSC was used to identify opportunities for safety culture improvement in a 30-bed ICU in the mid-western United States. This ICU was a mixed unit and cared for trauma, medical and surgical patients. In June 2014, individuals who regularly worked in the ICU were invited to complete an electronic version of the HSOPSC. After survey completion, a multidisciplinary group composed of ICU nurse leaders, an ICU staff physician, an infection prevention specialist, the chief nursing officer, and the hospital epidemiologist reviewed the data. There were three main themes that emerged, indicating where unit scores were the lowest. These areas include error reporting, providing feedback to authority figures, and nursing handoffs (Livorsi et al., 2016). To gather more insight into these areas, two nursing students were hired to interview ICU employees in October and November 2014. A semi-structured approach was utilized and each interview lasted between 10-15 minutes. All interviews were de-identified, audio recorded and transcribed. Results from Livorsi et al. (2016), show that of the 270 ICU staff members, only 44 (16%) participated in the HSOPSC survey with 39 participating in interviews (14%). In regards to the first theme, largest barrier to reporting errors was fear of repercussions from either physicians or other staff. According to one participant, submitting an incident report was "scary" as the report would be a permanent record of the event. This fear was rooted in two perceptions: 1) that managers 'don't treat all staff members the same' and 2) some staff members 'do not have a great relationship' with their supervisor. Solutions offered to address this barrier included establishing anonymity or providing positive feedback to help alleviate fears. Other barriers identified under this theme

include: complexities of error reporting form, confusion regarding what events justified an error

report, lack of motivation stemming from concerns that feedback would not be given, fear that

error reporting would affect a positive change in the system, and the mentality that if no harm

was caused, there was not a need to report an incident (Livorsi et al., 2016). The two other areas

identified on the HSOPSC as needing improvement were approachability of authority figures and

handovers at nursing change. As stated by Livorsi et al. (2016), difficult personality types

perceived by staff included physicians whose 'egos are too strong,' nurse manages who are

'intimidating,' and individuals who 'might take feedback the wrong way.' In addition, staff

interviews reveled that it was easier to remain silent than to 'stick their neck' out since they felt

nothing ever changed once an incident occurred. In response to these results, a recommended

solution for facilitating staff input was to include nurses in team rounds.

Ballangrud, Hedelin, and Hall-Lord (2012) aimed to investigate registered nurses' (RNs)

perceptions of the patient safety climate in ten ICUs located in six hospitals under one hospital

trust in Norway. Using the same 42-item Likert scale survey that was administered as a needs

assessment at FMC, the HSOPSC measured ICU staff opinions about patient safety issues,

medical errors, and incident reporting in ten ICUs. A total of 220 registered nurses responded to

the survey (72%) with 7 of the 12 dimensions achieving a positive score over 55% (Ballangrud,

Hedelin, & Hall-Lord, 2012). The dimensions that a high proportion of RNs scored as very good

were "overall perception of safety," and "patient safety grade." Conversely, the outcome

dimensions "overall perception of safety," and "frequency of incident reporting," indicate that

areas in need of improvement are incident reporting, feedback and communication about errors,

organizational learning, and continuous improvement (Ballangrud, Hedelin, & Hall-Lord, 2012).

In a study conducted by Richter, McAlearney, and Pennell (2015), the primary objectives

were to identify the organizational factors with the greatest perceived effect on error reporting

and to determine whether associates differ between management and clinical staff. The data

source for this study was the HSOPSC comparative database with the data set incorporating

surveys completed by hospital staff annually from 2008 to 2011. Data obtained came

proportionally from the following survey years 2008 (4%), 2009 (20%), 2010 (35%), and 2011

(41%). In total, 1081 hospitals contributed to the data set; 29 hospitals were eliminated due to

missing data. This provided a total study sample of 1,052 hospitals and 515,637 individual

responses. The majority of hospitals (1,047) had responses from both managers (36,290) and

clinical staff (237,409) with clinical staff including physicians, physician assistants, nurse

practitioners, registered nurses, licensed practical nurses, and medical assistants. The HSOPSC

survey administered by Richter, McAlearney, and Pennell (2015), was the same tool that was

used in both the needs assessment for my project and the Livorsi et al (2016), and Ballangrud,

Hedelin, and Hall-Lord (2012) study. The mean hospital survey response rate was 52% with 458

surveys completed by each hospital. Results gleaned from Richter, McAlearney, and Pennell

(2015) showed that error feedback had the strongest positive effect on error reporting for each

group: all hospital staff ($\beta = 0.47$, 95% confidence interval [CI] = 0.39-0.54), management ($\beta =$

0.44, 95% CI = 0.35-0.53), and clinical staff ($\beta = 0.37$, 95% CI = 0.30-0.44). The second largest

effect on error reporting was organizational learning for both management ($\beta = 0.20$, 95% CI =

0.09-0.31) and clinical groups ($\beta = 0.14$, 95% CI = 0.06-0.23). The significance of these findings

may indicate that staff wanted to see their prior error reporting taken seriously. Another finding

from this study was the notion that communication openness was negatively associated with

error reporting. As discussed by Richter, McAlearney, and Pennell (2015), this finding may demonstrate that hospitals with more communication openness may have staff that are more inclined to fix problems as they learn about them versus waiting and formally reporting errors.

The main objective in Elder, Brungs, Nagy, Kudel, and Render (2008) study was to understand nurses' beliefs and experiences with error communication in the ICU. To begin, ten Midwestern hospitals participated in a two-year project to implement evidence-based practices to reduce catheter related bloodstream infections (CRBSIs) in ICUs. During the second year of the quality improvement initiative, a convenience sample of ICU nurses from four hospitals participated in focus group interviews to discuss patient safety. The second part of this study included the administration of the HSOPSC to a random sample of nurses, ancillary personnel, and hospital leadership in 9 of the 10 participating hospitals during the second year of the CRBSI intervention. Findings from the ICU nurses from the four hospitals that concurrently participated in focus group interviews were the only ones reported. Given the anonymity of the study, it was difficult to know if any of the focus group participants had previously completed a HSOPSC survey. The survey was administered twice with the first one completed between 5 to 15 months with the second one completed 15 to 24 months after implementing the CRBSI intervention. Results gleaned from this study showed that 33 nurses attended eight focus groups and 92 nurses completed surveys. Nurses in the focus groups were conflicted about error reporting stating time constraints and the presence or absence of actual patient harm to prioritize formal reporting. For example, if a mistake was made and caught before it affected the patient, 55% of RNs reported that they would "never, rarely, or sometimes" report the event compared to the 45% that would. In a second example, 46% of RNs stated they would not report a mistake that was made that did

not have the potential to harm a patient, versus the 54% who stated they would. Lastly, if a

mistake was made that could harm a patient, 28% of RNs stated they would refrain from

reporting the error versus the 72% that stated they would (Elder, Brungs, Nagy, Kudel, &

Render, 2008). When error was formally reported, nurse feedback from management was rare.

On the contrary, responses from the HSOPSC reveled that a majority of nurses state that they

"usually," or "always," reported error and received appropriate feedback. The HSOPSC also

found that nurses were intensely conflicted about disclosing their errors to peers and physicians

and prefer reporting witnessed error to supervisors. Information gleaned from Elder, Brungs,

Nagy, Kudel, and Render (2008) indicates that lack of feedback from managers regarding error

reporting reinforces the sense that reporting is not useful. In addition, recognizing barriers to

error reporting such as time constraints and potential to generate conflict between peers are

essential components in working towards decreasing medical error.

Snijders, Kollen, van Lingen, Fetter, and Molendijk (2008) examined which aspects of

safety culture predict incident-reporting behavior in a neonatal intensive care unit (NICU),

before and after the application of a voluntary, non-punitive incident reporting system called the

Neonatology System for Analysis and Feedback on medical events (NEOSAFE). Prior to

NEOSAFE, only severe or catastrophic NICU incidents were gathered through mandatory

reporting through a central agency. From December 2004 through June 2005, NEOSAFE was

implemented in eight Dutch tertiary care NICUs and one surgical pediatric ICU in three non-

university hospitals and five university hospitals in (Snijders, Kollen, van Lingen, Fetter, &

Molendijk, 2008). Before implementation of NEOSAFE, it was emphasized that a system

approach would be used to identify system failures versus individual deficiencies. For the

NEOSAFE program, both anonymous and non-anonymous reporting was accepted and information was managed in an electronic database. Every month, a summary of reported events were presented by the patient safety committee along with preventative actions to be taken by each unit (Snijders, Kollen, van Lingen, Fetter, & Molendijk, 2008). The second component of the Snijders, Kollen, van Lingen, Fetter, and Molendijk (2008) study was administration of a language-translated and validated version HSOPSC survey to all unit personnel. The researches selected this tool because it met four previously defined criteria: (1) measurement of multiple dimensions of patient-safety culture; (2) individual response, with potential for inter-institutional comparisons at the same level; (3) association with reporting rates; and (4) psychometric test performed (Snijders, Kollen, van Lingen, Fetter, & Molendijk, 2008). Due to translation and validation, the final survey consisted of 40 items representing 11 safety culture dimensions. When compared to the original tool, this represents two less questions and one less safety dimension. The survey was distributed in May 2005 and June 2006 between all full- and part-time staff. Units were divided into two groups consisting of four units. At the time of the first survey in May 2005, Group A had not been introduced to voluntary, non-punitive reporting whereas Group B had introduced these concepts >3 months prior (Snijders, Kollen, van Lingen, Fetter, & Molendijk, 2008). The overall response rate in 2005 was 80% and 76% in 2006. The response group primarily consisted of nurses (78% in 2005 versus 77% in 2006) and physicians (15% of the response group each year). The final multivariate multilevel regression analysis produced a prediction model that showed a positive association with the number of incidents reported and a non-punitive response to error. A negative association was seen between the number of incidents reported and the overall perceptions of safety and hospital management

support for patient safety (Snijders, Kollen, van Lingen, Fetter, & Molendijk, 2008). Since the number of errors reported increased between 2005 and 2006 after the introduction of non-punitive incident error reporting, is hypothesized that the increase in incident reports represent a short-term effect of a non-punitive safety climate (Snijders, Kollen, van Lingen, Fetter, & Molendijk, 2008).

In a study completed by Singer, Lin, Falwell, Gaba, and Baker (2008), the relationship between hospital safety climates and a group of hospital-level indicators of potential safety events were assessed. This cross sectional study of 91 hospitals used an un-weighted, risk-adjusted PSI composite as dependent variables and safety climate scores and controls as independent variables. The central hypothesis of the Singer, Lin, Falwell, Gaba, and Baker (2008) study presumed that safety climate attains its maximum impact when personnel are inclined toward what they feel is required to provide safe care, even if it is at the expense of production and efficiency. Three additional hypotheses were also tested. The first hypothesis stated, "Higher levels of hospital safety climate will relate to lower rates of hospital PSIs," (Singer, Lin, Falwell, Gaba, & Baker, 2008). Results gleaned from this study showed that a 1% higher Percent Problematic Response (PPR) overall was associated with a 3.4% relative increase in the risk of experiencing of the PSIs included in the composite. In this study, the PPR was considered an inverse indicator or safety climate with a high PPR suggesting a poor climate of safety and vice versa. Hypothesis two stated "Safety climate scores on dimensions reflecting the contribution of interpersonal beliefs to safety climate will be more strongly associated with PSIs than will be safety climate scores on dimensions that reflect beliefs about work units or hospitals," (Singer, Lin, Falwell, Gaba, & Baker, 2008). Results demonstrated that employees

who reported more problems with fear and shame were at a significantly higher risk for experiencing a PSI themselves. Lastly, the third hypothesis from Singer, Lin, Falwell, Gaba, and Baker (2008) stated, "Safety climate scores among frontline personnel will be more strongly associated with PSIs than will be senior managers' scores." Again, results supported this hypothesis and showed frontline personnel's perceptions of a better safety climate predicted a lower risk of experiencing a PSI whereas senior manager perceptions did not.

Finally, De Freitas et al. (2011) used a qualitative approach to investigate the perceptions and attitudes experienced by RNs towards adverse events (AE) in an ICU in Brazil. As stated by De Freitas et al. (2011, p. 332), "an understanding of nurses' perceptions and expectations regarding AE is essential for the implementation of appropriate strategies to manage nursing care." Five themes emerged from the De Freitas et al. (2011), study involving RN perceptions towards AE's in the ICU. Associated with each theme were components that comprised each descriptive category. The first theme that surfaced stated, "The occurrence of AE's is inherent to the human condition but provokes a feeling of insecurity" (De Freitas et al., 2011, p. 334). The components that made up this theme included feelings of insecurity by the professional, and that AE's were not provoked intentionally.

The second theme that emerged surrounded the existence of failures with the healthcare system itself. Central components to this theme included: AE's were not an isolated event, its occurrence is an alert, reflection of the occurrence of an AE is essential to understand factors involved, comprehensive understanding is key to identify failures in the healthcare system, and identification of errors in the healthcare system is essential to avoid recurrence (De Freitas et al, 2011).

Third, researchers found that attitudes towards AE were based on ethical principals of the RN. There were three components that comprised this theme. They included, personal values should be respected, ethical values learned from family and professors should be respected, and peace of mind is essential (De Freitas et al., 2011).

The fourth theme in the De Freitas et al. (2011), study found the priority regarding AE's should be the mitigation of harm to patients. The components underlying this belief was to adopt measures to diminish negative repercussions, no omission is essential for adopting immediate measures, and immediate measures are key to avoid major damages (De Freitas et al., 2011).

Lastly, the fifth theme identified surrounded decisions regarding the communication of AE's were determined by the severity of the error (De Freitas et al., 2011). Two components supported this belief: communication to professions geared towards adopting measures to mitigate damages, and communication to patients and their families in the event of damages to health or fatal errors (De Freitas et al., 2011).

Results from the literature review support findings collected from the HSOPSC data at FMC. For example, Livorsi et al. (2016) demonstrated that error reporting was associated with fear of reprimand. Compared to the HSOPSC, ICU/CVICU bedside staff member's scores were above the minimum but below the 10th percentile when benchmarked nationally on this composite. Richter, McAlearney, and Pennell (2015) and Elder, Brungs, Nagy, Kudel, and Render (2008) demonstrated that feedback on error and organizational learning were areas in need of improvement and were viewed differently by managers and frontline staff. These two areas were also identified as primary concerns at FMC with both areas falling below the minimum and at the 10th percentile respectively (Table 1).

The aforementioned studies highlight the integral relationships between error reporting and front line staff. From the data gathered, a couple of themes have emerged related to nurse managers including: mistrust (Livorsi et al., 2016), and lack of communication, feedback, and organizational learning (Elder, Brungs, Nagy, Kudel, & Render, 2008; Ballangrud, Hedelin, & Hall-Lord, 2012; Richter, McAlearney, & Pennell, 2015). Although not explicitly stated in any of these studies, managerial style may be a contributing factor in error reporting. In a study conducted by Manning (2016), nurse manager (NM) leadership styles were examined to assess the level of influence they had on staff nurse work engagement. Using a descriptive correlational research design, 441 staff nurses who worked in three acute care settings were surveyed using the Utrecht Work Engagement Scale and the Multifactorial Leadership Questionnaire 5x short form. Findings from the Manning (2016) showed that the passive-avoidant leadership style negatively influenced staff nurse work engagement as this type of management provides little to no feedback to employees. Second, the transactional leadership style showed a mixed result of both positive and negative relations. Positive findings were associated with behaviors that were rewarded while a negative impact was seen when a passive leadership style conveyed limited communication and feedback (Manning, 2016). Lastly, NMs exhibiting the transformational leadership style were examined. The fundamentals of transformational leadership are defined by individualized consideration, intellectual stimulation, charisma, inspirational motivation, and idealized influence (Drenkard, 2012). These ideals are rooted in NMs ability to communicate with followers and showed the most positive impact in regards to increased staff nurse work engagement. Relating this back to error reporting, this study demonstrates the importance of managerial communication and the effect is has on staff reporting future errors.

Limitations

Since the Institute of Medicine's revolutionary report *To Err is Human*, there has been an increasing growing body of literature demonstrating the importance safety culture plays in healthcare. This contributes to a large database of peer-reviewed literature to choose from when researching safety culture, however, there are several limitations regarding this cache of evidence. Results gleaned from a literature review conducted by Halligan and Zecevic (2011) demonstrate that safety culture is a poorly defined concept with much disagreement on how safety culture should be conceptualized. Halligan and Zecevic (2011) aimed to summarize definitions of safety culture and safety climate, identifying theoretical underpinnings, assess dimensions and measures of safety culture in healthcare, and review the impact interventions have had on improving culture. To begin, Halligan and Zecevic (2011) conducted a literature search of electronic databases such as Scopus, Web of Science, CINAHL, PubMed, and PsycINFO. Studies retrieved from this search were limited to English-language studies and those published between 1980 and 2009. The final search yielded 1,341 articles and after 17 duplicates were removed, 1,324 titles were reviewed. Of these titles, only 58 used theory to guide their studies or proposed theories to direct their research forward. Lack of an identified framework was also a common theme within my own literature review. This may be due to the fact that researchers failed to select a framework or there was no framework available that aligned with the study design. In studies that listed a framework, the authors did not explicitly suggest preference for one model over another. Finally, many of the studies examined by Halligan and Zecevic (2011) proposed improving safety culture through the implementation of an intervention, however, none of the articles reviewed the effectiveness of the interventions.

METHODOLOGY

Theoretical Underpinning

Over the past 50 years, advances in medical technology have contributed to a gap in translating knowledge into action. It estimated that it takes an average of 17 years from the publication of a study be instituted into practice (IOM, 2001). In an attempt to increase quality patient care, improve safety culture, and reduce wasteful healthcare spending, the use of an evidence-based practice (EBP) paradigm may help bridge the knowledge to practice gap and create a high-reliability organization (Melnyk, 2012). Since quality enhancement was the main purpose for this endeavor, the Advancing Research and Clinical Practice through Close Collaboration (ARCC) model was selected.

Dr. Bernadette Melnyk originally created the ARCC model in 1999 as part of a research strategic planning initiative in an effort to advance EBP (Melnyk, 2012). The main objective of the ARCC model is to improve the quality of healthcare and patient outcomes through merging research and clinical practice (Rycroft-Malone & Bucknall, 2010) in a variety of settings both locally and nationally (Fineout-Overhold, Levin, & Melnyk, 2004).

Using the four assumptions of the ARCC model and applying them to my project, a culture of EBP can be cultivated, thus contributing to successful implementation. The first assumption of ARCC states that within a healthcare system, there are barriers and facilitators of EBP from an organizational level down to the individual learner (Melnyk, 2012). Some of these anticipated barriers include lack of organizational support, lack of organizational EBP knowledge, lack of mentorship, lack of staff buy-in, and the complexity of the implementation itself. Under the second assumption, barriers must be mitigated in order for successful

implementation of EBP (Melnyk, 2012). The third assumption of ARCC states that in order to

instill change, confidence and beliefs related to EBP need to be strengthened (Melnyk, 2012).

There are many obstacles providers may need to overcome in order to reinforce EBP teachings.

These obstacles include a resistance to change due to long held beliefs, lack of communication or

trust, and staff fearing the unknown in regards to new practices. Educating staff will help to over

these challenges and increase staff knowledge and comfort with EBP changes. The final

assumption of ARCC relies on mentors for creating an EBP culture.

In order to improve safety culture and patient outcomes at FMC, the ARCC model was

used to provide an organized conceptual framework to guide implementation and sustainability

of the IDT. The first step of this model was to assess the culture of an organization, looking at

the factors that would support or hinder successful implementation (Rycroft-Malone & Bucknall,

2010). This was accomplished through the administration of the HSOPSC survey. This survey

served as a needs assessment and provided vital information on areas in need of improvement

within the sample organization. The next step in the project plan was to meet with the Clinical

Nurse Specialist (CNS), the ICU/CVICU director, and clinical managers to determine potential

strengths and barriers to IDT implementation. This information was used to develop a protocol

that was by both managers and staff during IDT implementation. A strength of this project was

that ICU administration demonstrated support for the IDT early on. In addition, FMC housed a

strong network of evidence based practice champions that were eager to assist in the

implementation of the IDT. There were many potential barriers identified prior to IDT

implementation including: lack of EBP knowledge and skills, lack of administrative support, lack

of EBP mentors, and decreased attitudes about the effectiveness of outcomes resulting from EBP

implementation (Rycroft-Malone & Bucknall, 2010). Although the IDT was geared towards managerial use, it was essential to make staff aware of its implications and the new process of how errors were being addressed. Before the IDT was implemented, education was provided to staff during regularly scheduled staff meetings. The goal of this education was to increase staff buy in and promote the value of the IDT as an effective tool to improve the error reporting process in the ICU/CVICU. During the meetings, additional EBP mentors were identified. Moving forward, a team consisting of the CNS, bedside nurses, clinical managers, and myself were assembled. A date was then set for the IDT to "go live." The goals of implementing the IDT was to assess whether the tool influenced the safety culture in the ICU/CVICU and the impact it has had on the three main areas identified in the HSOPSC.

Setting and Design

The setting for this project was two adult ICUs in a 267 bed, not-for-profit, hospital in Flagstaff, Arizona, USA. Of the two ICUs, one was specifically designated as an 11-bed cardiovascular unit and cares for post-operative open-heart patients and patients who have undergone other cardiovascular procedures. The second ICU was a combined medical, surgical, and trauma unit that consisted of 20-beds. Flagstaff Medical Center is one of two organizations that are apart of Northern Arizona Healthcare with the other being Verde Valley Medical Center. Flagstaff Medical Center is unique in that it is the only level one trauma center in Northern Arizona and serves a large rural population. The organizational values of this facility encompass patients, colleagues, quality, safety, leadership, teamwork, integrity, and diversity (Northern Arizona Healthcare, 2016).

The Incident Decision Tree

The IDT works by guiding the user through a series of structured questions regarding individuals' actions, motives, and behavior at the time an incident occurred (Meadows, Baker, & Butler, 2005). In some circumstances, these questions may need to be answered using information available at the time until more data is gathered. The questions are designed to move through four sequential "tests" to assess possible reasons for an individual's actions and the most likely explanation (Meadows, Baker, & Butler, 2005). The user is prompted to start at the first test and work their way through each one until and underlying cause is determined. This tool is unique in that it does not take away from a manager's judgment or authority by imposing definite solutions but places emphasis on investigating the root cause of the incident.

When using the IDT, the user is prompted to start at the first test and work their way through the remaining three tests until and underlying cause of the incident is determined. The four IDT tests include (a) deliberate harm; (b) incapacity; (c) foresight, and (d) substitution (Figure 1). The deliberate harm test helps to identify the rare instance where harm was intended. During this test, the manager is asked to consider whether an individual's actions were intended and whether the outcome was intended. The majority of the time the individual's actions will be as intended but not the outcome (Meadows, Baker, & Butler, 2005). Once the intent to harm has been ruled out, the second test seeks to identify whether ill health or substance abuse was a causative factor in contributing to a patient safety event. During the incapacity test, the manager is asked to reflect on whether the employee was aware of their condition at the time of the incident, whether they realized the implications of their condition, and whether they took proper safeguards to protect patients from harm (Meadows, Baker, & Butler, 2005). The third test in this

series is the foresight test. This test assesses whether or not protocols and safe working practices

were adhered to (Meadows, Baker, & Butler, 2005). During this test, the manager is asked to

consider whether the incident resulted from the lack of protocols or safety procedures,

insufficient protocols, conflicting protocols, suitable protocols that were misapplied, routinely

violated, or not in regular use, or the action of an individual to ignore a protocol(s) (Meadows,

Baker, & Butler, 2005). The foresight test is useful in identifying protocols that seem logical in

writing but highly problematic in the clinical setting. In instances were individual's violated a

sound protocol, additional factors are examined to determine if the protocol was violated for no

apparent reason or if other factors such as motivation, available information, urgency of making

a decision, or risk awareness were driving forces during the decision making process (Meadows,

Baker, & Butler, 2005). The final test in the IDT is the substitution test. This test utilizes input

from peers that are placed in a situation where protocols are found to either be ineffective or

absent. This test is beneficial because it emphasizes deficiencies in training, experience, or

supervision and weighs whether an individual was properly equipped to handle a situation

(Meadows, Baker, & Butler, 2005). When administering this test, managers are asked to avoid

prejudices and consider what a sensible peer acting reasonably, maturely, and sensitively wound

have done (Meadows, Baker, & Butler, 2005).

According to Meadows, Baker, and Butler (2005), the feasibility, effectiveness, and

usability of the IDT was piloted by five NHS secondary health care organizations from July to

November 2003. The population for this study included 35,000 staff members and 350

individuals with the potential power to suspend. A dedicated National Patient Safety Agency

(NPSA) project manager delivered onsite training in addition to offering continued telephone and

e-mail support. During the testing and evaluation process, feedback obtained portrayed the IDT as being a robust tool to aid in focus and fairness. In addition, it was deemed as an effective way to open dialogue between staff and managers (Meadows, Baker, & Butler, 2005). However, reliability or validity testing was not discussed in this study, and there is little information on the long-term outcomes and the sustainability of this tool.

Sample

After IDT implementation, the sample for this project included the director and two managers from the ICU/CVICU at FMC, as they were the primary group that supervised the new process pertaining to how individuals were managed after an error was reported. During the implementation and post-test phase, all ICU RNs and PCTs who worked in the ICU/CVICU were also included as members of the sample. Other members of the interdisciplinary team were not included in the sample since they had different supervisory management.

Methodology

In alignment with the first aim, the CNS and I met with the director of the ICU/CVICU along director of Human Resources with the purpose obtaining stakeholder buy-in. This meeting occurred at a mutually agreed upon location and time. The importance of gaining stakeholder buy-in was to have organizational support at the beginning of project to help ensure success. During this meeting, background information on the IDT along was presented along with how the tool could be used to improve upon the areas identified in the needs assessment. At the end of this meeting, permission was granted to move forward with the project. During the process of obtaining stakeholder buy-in, one obstacle that arose pertained to organizational restructuring of the Quality Department at FMC. To ensure that the Quality Department was on board with IDT

implementation, an email was sent to them explaining the intended purpose of the project along

expressed support on a local and organizational level. Since the department was in the process of

undergoing many changes, they did not contest the project as they saw it as a positive

contribution to the organization. In addition, they stated that the IDT was in line with their

projected vision of improving patient safety in the future. Following stakeholder buy-in, I meet

with the CNS on a weekly basis for four weeks to develop a protocol, lesson plan, and post IDT

implementation survey. The purpose of the protocol was to provide a set of objective guidelines

for staff and ICU/CVICU managers to follow when using the IDT. The protocol also provided

background information on the IDT is and its intended use (Appendix B). Next, a lesson plan

was created for staff to educate them on the IDT. Data from the original HSOPSC was the

introduction to the IDT lesson plan. This information highlighted the local problems identified in

the ICU/CVICU and helped lend support as to why the IDT was selected as an intervention. The

lesson plan also discussed what the IDT was and how the four algorithms were to be used when

processing an error (Appendix C). Finally, a survey was designed to evaluate participant's

responses post IDT implementation (to be discussed further below).

     Following this, I met with the CNS, director and two clinical managers of the

ICU/CVICU to provide an overview on the IDT and its proper use. The CNS and I provided

education in the form of a PowerPoint presentation (Appendix C) at a mutually agreed upon time

in the CVICU conference room. After this education, the CNS and I met to design a series of

calibration tests for ICU/CVICU managers prior to IDT implementation to ensure everyone was

in agreement on how to utilize the tool. Approximately one week later, another meeting was set

up, and the CNS and I reviewed the calibration tests with the ICU/CVICU director and two

managers. Case scenarios pertaining to each of the IDTs four specific tests were presented and managers were provided an opportunity to navigate through them using the IDT. After the end of the calibration exercise, the director and managers were given an opportunity to ask questions or address any concerns. After manager education was complete, I presented the same PowerPoint presentation (Appendix C) to ICU/CVICU RNs and PCTs at a two regularly scheduled meetings. These meetings occurred in a large conference room at FMC at 7:00 AM and 7:00 PM. The primary investigator also provided additional education to members of the target sample on both day and night shift. This education occurred in the ICU and CVICU break rooms and consisted of utilizing the same PowerPoint presentation shown at staff meetings. Lastly, to ensure all staff has received suitable education, an email was sent to the complete distribution list for the ICU and CVICU clusters. This email included the protocol and a copy of the IDT. A hard copy of this information was also hung up in the ICU and CVICU break rooms.

After IRB approval was obtained at the organization and through the University of Arizona, the IDT was implemented. The implementation period was set to end after 10 responsive incidents have been sent to managers for review and the IDT has been utilized, or after four weeks had expired. During the implementation period, the primary investigator emailed managers on a weekly basis to ask how many times they have used the IDT and to address and questions that had arisen. Once either of the above criteria was met, the implementation period ended. In 2016, the average number of incidents reported per month was 21. Using the IDT to assess approximately 10 incidents may show an impact in how staff members feel regarding the incident reporting process.

During implementation, managers were encouraged to use the IDT 100% of the time if they decide further investigation of an error was warranted. Paper copies of the IDT were provided to managers as a way to track their decisions. After the paper forms were completed, they were uploaded and attached to the specific MIDAS incident. Having the IDT electronically attached to the MIDAS report allowed it to be stored in a database for future access. At FMC, data is currently stored for an unlimited period of time.

According to outcome of the IDT, managers proceeded with the recommended course of action. Flagstaff Medical Center does not have a union representative; therefore, this suggested outcome did not apply as a potential intervention. In addition to utilizing the tool when an error occurred, managers were also responsible for keeping tracking of how many times they use the IDT within the implementation period and any process issues that arose.

To ensure managers and staff felt supported throughout the implementation process, the CNS and I were available by phone and email seven days a week from 7 AM to 7 PM to ensure all questions are addressed and that the tool was being used appropriately.

The third aim of this project focused on assessing whether or not the IDT had an impact on the three main safety culture areas identified in the HSOPSC survey. This was accomplished by the administration of a short survey via the Survey Monkey platform (Appendix D). This survey consisted of 15 items and was a combination of Likert Scale and open-ended questions (Appendix D). The survey questions were designed to assess participant's views in areas that had previously held low scores on the original HSOPSC survey. The first question was the only item that collected identifying information in regards to the participant's role within the unit. The next three questions were worded very similar to questions found on the HSOPSC and were selected

to determine the IDTs effect on how staff viewed communication about error. The following

seven questions addressed specific features related to the IDT tool itself. The final four questions

were open-ended items geared towards collecting data that was not previously addressed. The

Monday following the end of IDT implantation, the ICU/CVICU management team (director and

managers) and ICU/CVICU specific RNs and PCTs were emailed a link to the post intervention

survey. Just like the HSOPSC, this survey was completely anonymous. The purpose of the study

along with participant consent was presented at the beginning of the survey. After participants

concluded the survey, they were encouraged to email the primary investigator or the CNS to

claim an incentive of their choice. Money from the original grant was used to purchase these

incentives which include a coffee vouchers (valued at $5.00) or a movie ticket (valued at $7.50).

Since the survey was anonymous, there was not a way to confirm an individual had completed

the survey and incentives were handed out based on the honor system. The number awards

handed out were tallied and compared to the number of people who actually took the survey. The

survey was open for a total of two weeks from 8/21/2017 to 9/4/2017. After this time, data was

collected analyzed for common themes.

Data Collection and Analysis

With the aid of a data analyst from FMC, results from the post IDT implementation

survey was analyzed using Excel for frequency of themes and was displayed in a table format.

Narrative feedback was listed out and analyzed for common themes. This data was also

presented in a table.

Ethical Considerations

Beneficence

Beneficence is the duty of the researcher to minimize harm and maximize benefits through the principal of beneficence (Polit & Beck, 2012, p. 152). Participants in a study have the right to freedom from harm and discomfort when partaking in a study. This not only includes physical harm, but emotional, social, or financial discomfort as well (Polit & Beck, 2012, p. 153). In regards to this quality improvement project, the safety culture survey may have posed emotional or psychological stress as participants were asked to divulge their personal views. This aspect was protected through making the survey anonymous. Second, participants in the survey were assured that their participation/lack of participation or the information they provide would not be used against them.

Respect for Persons

Respect for persons is the second principal in the *Belmont Report* and focuses on the right to self-determination and full disclosure (Polit & Beck, 2012, p. 154). This was accomplished by allowing participants to voluntarily participate completely, partially, or not at all. As the primary investigator, I aimed to create a study design that was free from coercion. Participants were not threatened or penalized for lack of participation. In addition, excessive rewards were not offered. A small incentive was offered for those willing to participate in the initial safety culture needs assessment and the post IDT survey. This consisted of either a $5 coffee coupon or one movie ticket valued at $7.50. No further incentives were planned for the intervention or program evaluation phases. The right to full disclosure was accomplished by explaining the purpose of the needs assessment and post survey prior to administration of each.

Right to Fair Treatment

The right to fair treatment is a concept surrounding the equitable distribution of benefits and burdens of research (Polit & Beck, 2012, p. 155). This was met by allowing ICU/CVICU managers along with unit based RNs and PCTs to participate in the needs assessment (HSOPSC), the IDT intervention, and post-test implementation survey. The participants for this project represented my target population and did not meet the criteria for a vulnerable population since they were all capable of giving full informed consent.

RESULTS

The IDT was implemented over the course of four-weeks from 7/17/2017 to 8/19/2017 to process applicable incident reports in the respective manager's electronic MIDAS queues. During this period, 23 incidents were reported in the ICU and CVICU. Of these incidents, clinical managers were able to utilize the IDT tool 12 times. The managers used the paper copies of the IDT when navigating through the reported error. Review of these papers demonstrated that the mangers filled out the tool completely and drew arrows from each box, which allowed future viewers to trace their thought process. In addition, it appeared that both managers utilized the tool appropriately when processing their error reports. Managers also provided a brief summary of the outcomes they selected based on the corresponding test. These paper copies were then uploaded electronically and attached to the original MIDAS report. The primary investigator contacted the managers via email on a weekly basis throughout the implementation period to ensure all questions and concerns were addressed in real time. No issues or concerns that were reported by managers or staff about the IDT tool during implementation.

Analysis of the reportable incidents demonstrated that of the 12 incidents, seven were attributed to system failures. Within these system failures, numerous departments were associated with the events including laboratory (two events), pharmacy (one event), and the operating room (one event) (Table 2). Of the three remaining events, two pertained to lack of education regarding travel nurses and FMC policy, and one event was related to equipment failure.

The remaining five events were managed using the "foresight test." The foresight test is used to determine if individuals took an acceptable risk when departing from safe protocols. All five incidents that fell into this category were unique in regards to the error that had occurred (Table 2).

TABLE 2. *IDT Incidents Related to System Failures (n=7)*

- Lack of laboratory standardization protocols (two events).
- Lack of education. EMR listed TPN goal rate with no further instructions. RN began TPN at goal rate rather than up titrating it as protocol states. RN was a traveler.
- IABP not able to function as expected.
- Lack of policy regarding staff assault prevention measures.
- Discrepancy in protocol regarding NPO times for surgery.
- Lack of education. Controlled substance was not placed in a secure location. RN was a traveler.

TABLE 3. *IDT Incidents Using the Foresight Test (n=5)*

- Cardizem drip powder administration set was not activated.
- Prolonged peripheral IV infiltrated while running insulin at a high rate.
- Blood exposure. Staff not wearing proper personal protective equipment.
- Swallow evaluation not completed prior to feeding patient.
- RN did not secure patient belongings with security. Patient attempted to self-administer medications from purse.

As illustrated in Table 2, there are two common themes that emerge in regards to system failures. Both surround the lack of hospital wide protocols and education and highlight the importance of having an organization that accepts accountability for error. In regards to themes associated with the foresight test, the majority of errors were the result of staff taking unacceptable risk and veering away from standard protocols. In these instances, the individuals were held accountable and received corrective training and increased education as a result.

The Monday following the four-week IDT implementation period, a post implementation survey was administered to ICU/CVICU managers, RNs, and PCTs. The opening of the survey was announced through flyers that were hung in common areas such as the staff lounge and bathrooms throughout the ICU and CVICU. An email was then sent out to staff that explained the nature of the survey along with a survey link and instructions on how to claim the completion incentive. One week into the survey, a second email was sent out to staff reminding them of the purpose of the survey. After a two-week period elapsed, the survey was closed and data was collected and analyzed for themes.

The total eligible population to take the post IDT survey was 117 people in both the ICU and CVICU. Of this sample, only 31 individuals chose to participate in the survey with bedside staff members accounting for 30 responses and one ICU management team member accounting for the remaining response. Of the 10 Likert styles questions, items 2-5 were nearly identical to questions from the HSOPSC survey and focused on communication and error reporting. As depicted in Table 4, response rates on the first theme showed that majority of individuals previously held neutral belief in regards to receiving communication when an error occurs. However, this option became more negative after IDT implementation. The second theme looked

to gauge staff views on receiving feedback after an error has occurred. Interestingly, the percentage of individuals who agreed on this matter was nearly identical. As demonstrated with the first theme, there was a shift from a more neutral mindset to more of a negative one with the second theme. The final theme aimed to assess staff perceptions regarding ways to prevent future error. The initial data from the first HSOPSC survey showed that the majority of individuals agreed with this concept. Post IDT implementation, a shift toward the negative spectrum was again observed in the majority of respondents.

TABLE 4. *Comparison Between HSOPSC and Post IDT Survey Data*

Theme	Agree		Neutral		Disagree	
	Pre (n)	Post (n)	Pre (n)	Post (n)	Pre (n)	Post (n)
We are informed about errors that occur in the unit.	25% (17)	32% (10)	54% (37)	26% (8)	22% (15)	42% (13)
We are given feedback about changes put into place based on error reports.	37% (26)	39% (12)	40% (28)	23% (7)	23% (16)	39% (12)
In this unit, we discuss ways to prevent errors from happening.	54% (38)	39% (12)	37% (26)	19% (6)	9% (6)	42% (13)

Questions 5-10 in the post IDT survey sought to evaluate staff views regarding specific features of the IDT tool. Table 5 depicts the staff answers regarding these themes. In regards to the first theme, the majority of ICU/CVICU staff had a neutral response pertaining to the ability of the IDT to make the error reporting process more transparent. However, staff overwhelmingly agreed that the IDT had a positive impact on communication between managers and staff, the likelihood of reporting future error, promotion of a just culture, and individual blame.

TABLE 5. *Post IDT Survey Questions 5-10*

Survey Question	Agree % (n)	Neutral % (n)	Disagree % (n)
The IDT made the error evaluation process more transparent.	39% (12)	55% (17)	6% (2)
The IDT is an effective tool to open dialogue between staff and managers in regards to errors.	61% (19)	36% (11)	3% (1)
After the implementation of the IDT, I am more inclined to report an error.	65% (20)	32% (10)	3% (1)
The IDT contributes to a just culture.	74% (23)	23% (7)	3% (1)
The IDT helps to identify system failures versus individual blame.	90% (28)	10% (3)	0% (0)
After implementation of the IDT, I feel errors are less likely to be held against me.	58% (18)	36% (11)	6% (2)

The last five items on the post IDT survey were open-ended questions aimed at gathering

information not previously addressed by the other Likert scale questions. The answers to these

questions are depicted in Table 6. Of the 31 individuals who took the post IDT survey, only 20

participants (65%) chose to complete the open-ended portion.

TABLE 6. *Themes Obtained from Post-IDT Survey Open-Ended Questions*

Question	Themes
How do you feel the IDT positively affects safety culture in the ICU?	• Improves patient safety • Promotes/encourages reporting • Staff will be more forthcoming on errors without fear of retribution • Increases communication • Increases transparency • Increases honesty
In general, what other changes to the error reporting system can be improved?	• Follow up on errors to prevent future error. • Less time consuming reporting form • More discussion on how to prevent errors. • Increased transparency
In general, what do you think can improve follow up after an error has occurred?	• Increased communication, debriefing • Education • Encouragement • Team effort • Looking at the process vs. the individual • Real time follow up • Transparency
What changes to the IDT process can be improved?	• Increased education on using the tool.
Please feel free to share additional comments.	• Thank you for implementing this! • Nice job on your presentation.

Of the 31 ICU/CVICU staff members who engaged in the survey, only 11 sent an email

to claim their incentive. It is unclear why only one third of participants chose to come forward to

claim their reward. Within this group, the majority of individuals selected the movie voucher

(n=8) while the remaining opted for a coffee coupon (n=3). A list of individuals who completed

the post IDT survey were given to the ICU and CVICU managers along with their desired

incentive for disbursement.

DISCUSSION

Though essential for improving patient safety, error reporting in healthcare is often under

utilized by frontline staff and is often a reflection of decreased safety culture. Safety culture is

influenced across the healthcare spectrum from individual interactions on a micro level to

organizational policies on a macro level. Improving patient safety should extend beyond the individual and include the systems in which they operate in order to create a lasting solution.

The purpose of this quality improvement project was to institute the IDT as a method of evaluating reported error and to assess its impact on three safety culture areas identified in the HSOPSC. In evaluating the data, a central theme that surfaced in both the needs assessment and in the post IDT survey surrounded the fear of reprimand among front line staff when reporting an error. As demonstrated by the literature, environments that were not tolerant of mistakes or placed individual blame had decreased safety culture (Livorsi, 2016; Elder, Brungs, Nagy, Kudel, & Render, 2008; Singer, Lin, Falwell, Gaba, & Bake, 2008). This theme highlights the importance of the managerial role in creating a safe environment that promotes open communication about error. In relation to this, it is also for managers to treat all employees the same regardless of personal affiliations. Although not cited in any current studies, the IDT would help to address many of the issues identified by previous research as it can help to remove the subjectivity when processing an incident report. As demonstrated in Table 6, the majority of respondents on the post survey felt that error was less likely to be held against them after implementation of the IDT. The results from this project demonstrate that creating a non-punitive environment may lead to increased number of errors reported as illustrated by Snijders, Kollen, van Lingen, Fetter, and Molendijk (2008).

In this quality improvement project, a second predominate theme that was identified surrounded feedback and communication after an error has occurred. This lack of loop closure from managers reinforces the notion that reporting is not useful (Elder, Brungs, Nagy, Kudel, & Render, 2008). As demonstrated by the post IDT implementation survey, the majority of

respondents felt that the IDT helped to promote communication between managers and staff (61%) with 65% of respondents stating they would be more likely to report an error. The significance of these factors likely indicates that individuals whom are involved in an error may be inclined to become part of the process improvement if a system failure has been identified. Changes to the current system can then be relayed to staff in form of emails or huddles in an effort to increase communication about the current process and the planned interventions aimed and fixing the broken system.

Finally, increased transparency in the error reporting process was a theme staff identified as needing improvement. Additionally, staff felt that this void was addressed through the use of the IDT tool. One way to promote transparency in the error reporting process among staff and management is to mutually discuss situations surrounding error. A potential way to achieve this goal may be through the creation of a committee dedicated to improving ICU/CVICU safety. This committee would consist of a member of the ICU management team along with bedside staff RNs and PCTs. The committee could meet on a monthly basis and ways to prevent error. Another possibility may be to develop a monthly newsletter that informs staff about error that has occurred and actions that are being undertaken to prevent future error. Opening up the discussion regarding error may help to improve teamwork and strengthen the bond between various members of the healthcare team. Potential sequelae of this interaction may be increased trust and accountability among individuals and improved safety culture within a unit.

Study Limitations

There are limitations to this study that should be acknowledged. First, the initial needs assessment was completed in 2015, and although the contextual variables studied remain

important to patient safety, the information obtained may not accurately reflect current perspectives of ICU/CVICU staff regarding safety culture. Second, both the HSOPSC and the post IDT surveys were self-report questionnaires and may be subject to social desirability biases. Although efforts were made to reassure participants that their response were confidential, it is unclear how much this may have influenced the data. Third, response rates for the post IDT survey was only about 30% as compared to 70% for the HSOPSC although the total number of eligible staff remained the same during both administration times. Fourth, responses were based solely on perceptions and may not correlate with the reality of the situation. Fifth, there has been staff turnover since the needs assessment was completed and the IDT was implemented. A constant stream of new employees may have impacted safety culture given the constant flux in the beliefs and attitudes of staff members. Lastly, the findings reflect a single unit in a single nonprofit hospital in Northern Arizona and may not be generalizable to other settings.

Research Implications

Many barriers to error reporting have been well described in the literature. Among these barriers, fear of punishment is a recurrent theme. Implementation of non-punitive error reporting systems have been shown to improve error reporting rates among bedside staff and is instrumental in developing open communication (Snijders, Kollen, van Lingen, Fetter, & Molendijk, 2008; Okafor, 2015). To date, there is not any empirical research using the IDT to improve error reporting. However, data gathered from IDT implementation at FMC demonstrated that staff felt it was a good tool to improve patient safety, promote/encourage error reporting, and increase communication, transparency, and honesty. In addition, ICU/CVICU staff felt that the IDT helped to identify system failures instead of emphasizing individual fault.

The importance of utilizing a tool such as the IDT to improve error reporting is a relatively new area of research. The current project contributes to scientific knowledge in the area of safety culture and patient safety by demonstrating that the IDT improves dialogue between staff and mangers, supports to a non-punitive environment, and creates a just culture. As outlined in table 6, the majority of respondents (74%) reported that the IDT contributed to a just culture. The importance of creating a just culture is to see events as opportunities for improvement versus events that need fixing. Furthermore, it emphasizes accountability and reinforces the roles of the unit mangers, Human Resources, and the Quality Department. Further research is needed utilizing the IDT tool to evaluate its long-term effectiveness and sustainability.

Practical Implications

The primary purpose of reporting error is to learn from experiences and implement changes to prevent future mistakes. Results from the post implementation survey, demonstrated that the IDT might have improved patient safety at FMC by encouraging staff to report error in a non-punitive environment. Potential sequelae of increased error reporting may be the creation of a remediation process that fosters staff education and policy clarification. Furthermore, the IDT tool may have contributed to improved communication and honesty, both key features of a just culture. Moving forward, the data obtained from this project will go toward supporting continued use of the IDT in both the ICU and CVICU at FMC. The projected long-term goal of this project is to develop a policy incorporating the IDT into the error reporting process with the intent of implementing the IDT hospital wide. This will be accomplished by obtaining backing from key stakeholders in Human Resources and the Quality Management Department who will support

continued future use of the tool. In order to make this a reality, the next steps would entail

disseminating study findings to hospital management in a meeting at a mutually decided upon

time and location. Potential barriers that could arise during long term IDT implementation may

include lack of organizational buy-in, lack of unit buy-in, unwillingness to change current

practice due to set cultural standards, and lack of IDT compliance. Ways to overcome these

barriers may potentially include organizational support, increased education, and enhanced

managerial and staff support.

Conclusion

Although awareness of patient safety has grown since the Institute of Medicine's report

To Err is Human, preventable medical error continues to occur throughout the healthcare system.

This quality improvement project builds off past research and demonstrates that low safety

culture is related to decreased error reporting. The results indicate that error reporting was

influenced by factors including fear of reprimand and lack of communication between beside

staff and unit managers. In an effort to address both of these findings, managers can cultivate

support for staff and implement non-punitive methods for error reporting. In addition, continued

use of the IDT may help to improve safety culture through making the error reporting process

more transparent and closing gas in commination gaps. To my knowledge, this is the first report

that describes use of the IDT as part of a comprehensive quality improvement initiative to

improve error reporting. The findings of this project have important research and practical

implications moving forward as managers and organizations aim at improving safety culture.

APPENDIX A:

HOSPITAL SURVEY ON PATIENT SAFETY CULTURE: 2014 USER COMPARATIVE

DATABASE REPORT

Item-Level Comparative Results—2014 Database Hospitals

Item	Survey Items by Composite	Average % Positive	s.d.	Min	10th %ile	25th %ile	Median/ 50th %ile	75th %ile	90th %ile	Max
				Survey Item % Positive Response Percentiles						
1.	**Teamwork Within Units**									
A1	1. People support one another in this unit.	86%	6.03%	46%	79%	83%	87%	90%	93%	100%
A3	2. When a lot of work needs to be done quickly, we work together as a team to get the work done.	86%	5.68%	46%	80%	83%	87%	90%	93%	100%
A4	3. In this unit, people treat each other with respect.	80%	7.09%	38%	70%	76%	80%	84%	88%	96%
A11	4. When one area in this unit gets really busy, others help out.	71%	7.48%	49%	62%	66%	71%	76%	80%	94%
2.	**Supervisor/Manager Expectations & Actions Promoting Patient Safety**									
B1	1. My supv/mgr says a good word when he/she sees a job done according to established patient safety procedures.	75%	7.41%	42%	67%	70%	75%	80%	85%	94%
B2	2. My supv/mgr seriously considers staff suggestions for improving patient safety.	77%	7.31%	43%	68%	72%	77%	82%	86%	100%
B3R	3. Whenever pressure builds up, my supv/mgr wants us to work faster, even if it means taking shortcuts.	75%	7.51%	47%	65%	69%	75%	80%	85%	95%
B4R	4. My supv/mgr overlooks patient safety problems that happen over and over.	77%	6.60%	51%	68%	73%	77%	81%	85%	94%
3.	**Organizational Learning—Continuous Improvement**									
A6	1. We are actively doing things to improve patient safety.	84%	6.27%	59%	76%	81%	84%	89%	92%	100%
A9	2. Mistakes have led to positive changes here.	64%	8.48%	32%	54%	58%	63%	69%	76%	89%
A13	3. After we make changes to improve patient safety, we evaluate their effectiveness.	71%	8.58%	47%	60%	65%	70%	76%	82%	95%

4.	**Management Support for Patient Safety**									
F1	1. Hospital mgmt provides a work climate that promotes patient safety.	81%	8.51%	40%	70%	75%	81%	87%	92%	100%
F8	2. The actions of hospital mgmt show that patient safety is a top priority.	75%	9.22%	39%	63%	70%	75%	82%	88%	100%
F9R	3. Hospital mgmt seems interested in patient safety only after an adverse event happens.	61%	10.40%	19%	48%	54%	60%	67%	75%	100%
5.	**Feedback & Communication About Error**									
C1	1. We are given feedback about changes put into place based on event reports.	59%	9.79%	27%	48%	53%	59%	67%	73%	91%
C3	2. We are informed about errors that happen in this unit.	67%	8.42%	37%	58%	62%	67%	72%	79%	93%
C5	3. In this unit, we discuss ways to prevent errors from happening again.	73%	7.85%	38%	64%	68%	73%	79%	84%	100%
6.	**Overall Perceptions of Patient Safety**									
A10R	1. It is just by chance that more serious mistakes don't happen around here.	62%	9.35%	29%	51%	56%	62%	69%	75%	92%
A15	2. Patient safety is never sacrificed to get more work done.	64%	10.70%	23%	52%	58%	64%	70%	76%	100%
A17R	3. We have patient safety problems in this unit.	65%	9.63%	22%	54%	59%	65%	71%	77%	100%
A18	4. Our procedures and systems are good at preventing errors from happening.	73%	8.10%	40%	63%	68%	73%	79%	84%	94%
7.	**Frequency of Events Reported**									
D1	1. When a mistake is made, but is *caught and corrected before affecting the patient*, how often is this reported?	60%	8.72%	38%	50%	54%	60%	66%	72%	89%
D2	2. When a mistake is made, but has *no potential to harm the patient*, how often is this reported?	62%	8.36%	38%	52%	56%	61%	67%	73%	87%
D3	3. When a mistake is made that *could harm the patient*, but does not, how often is this reported?	75%	6.86%	50%	67%	71%	75%	80%	84%	100%

8.	Communication Openness									
C2	1. Staff will freely speak up if they see something that may negatively affect patient care.	76%	7.22%	38%	67%	71%	76%	81%	84%	100%
C4	2. Staff feel free to question the decisions or actions of those with more authority.	48%	8.06%	20%	39%	43%	48%	53%	58%	75%
C6R	3. Staff are afraid to ask questions when something does not seem right.	63%	7.56%	25%	54%	58%	63%	67%	73%	85%
9.	Teamwork Across Units									
F2R	1. Hospital units do not coordinate well with each other.	48%	12.22%	21%	34%	40%	47%	56%	66%	85%
F4	2. There is good cooperation among hospital units that need to work together.	62%	10.72%	29%	49%	54%	61%	69%	77%	90%
F6R	3. It is often unpleasant to work with staff from other hospital units.	62%	9.40%	40%	50%	55%	61%	68%	75%	90%
F10	4. Hospital units work well together to provide the best care for patients.	71%	9.92%	41%	59%	64%	70%	78%	84%	100%
10.	Staffing									
A2	**1. We have enough staff to handle the workload.**	**54%**	**12.60%**	**11%**	**39%**	**45%**	**53%**	**61%**	**71%**	**94%**
A5R	2. Staff in this unit work longer hours than is best for patient care.	52%	9.47%	25%	40%	45%	51%	58%	64%	78%
A7R	3. We use more agency/temporary staff than is best for patient care.	66%	10.67%	11%	53%	60%	67%	73%	79%	100%
A14R	4. We work in "crisis mode" trying to do too much, too quickly.	50%	11.01%	17%	37%	42%	48%	56%	66%	81%
11.	Handoffs & Transitions									
F3R	1. Things "fall between the cracks" when transferring patients from one unit to another.	43%	12.26%	16%	29%	34%	41%	49%	61%	84%
F5R	2. Important patient care information is often lost during shift changes.	53%	10.50%	27%	41%	46%	52%	58%	67%	100%
F7R	3. Problems often occur in the exchange of information across hospital units.	46%	11.15%	13%	33%	38%	45%	52%	62%	89%
F11R	4. Shift changes are problematic for patients in this hospital.	47%	11.74%	24%	35%	39%	46%	53%	65%	89%

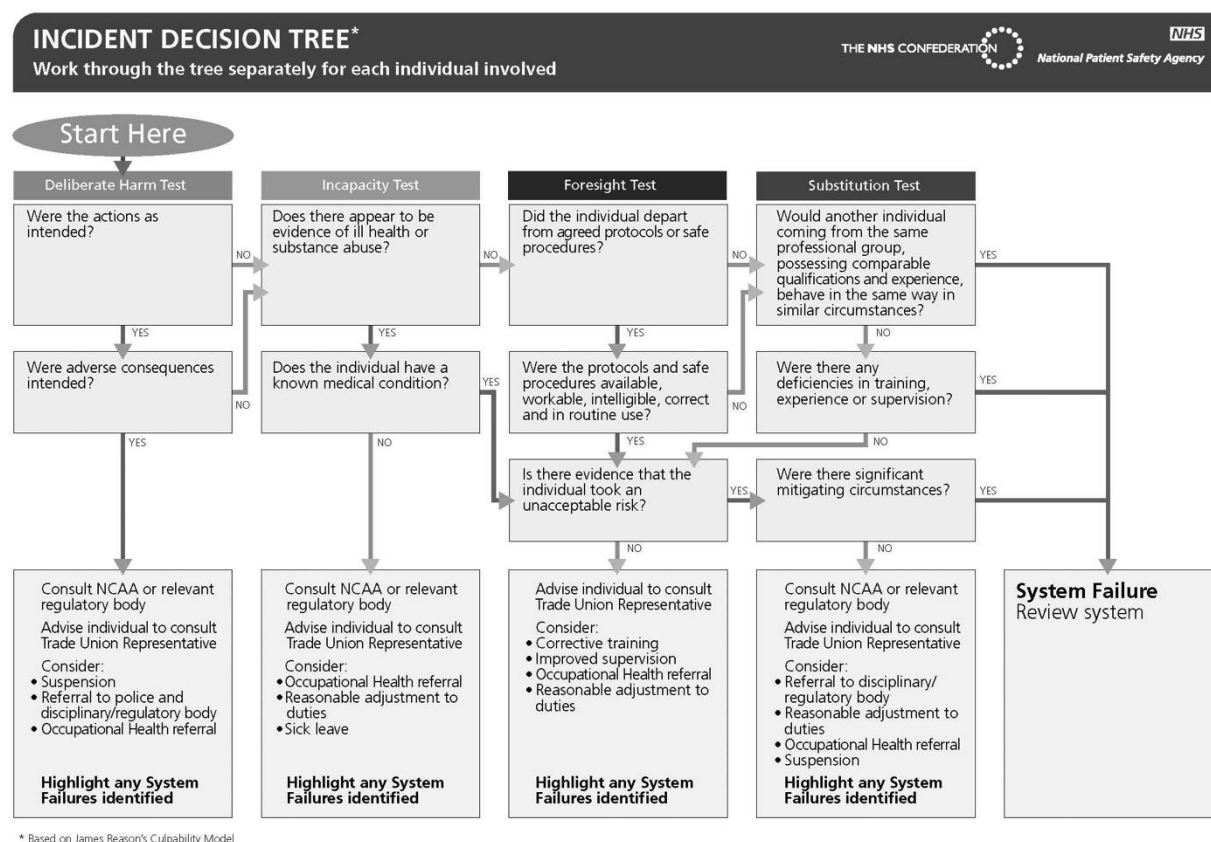| 12.	**Nonpunitive Response to Error**									
A8R	1. Staff feel like their mistakes are held against them.	50%	9.75%	20%	38%	44%	49%	56%	63%	82%
A12R	2. When an event is reported, it feels like the person is being written up, not the problem.	48%	9.29%	16%	37%	41%	47%	53%	60%	81%
A16R	3. Staff worry that mistakes they make are kept in their personnel file.	35%	10.03%	0%	24%	29%	35%	41%	49%	75%

Note: The item's survey location is shown to the left. An "R" indicates a negatively worded item, where the percent positive response is based on those who responded "Strongly disagree" or "Disagree," or "Never" or "Rarely" (depending on the response category used for the item).

APPENDIX B:

PROTOCOL FOR INCIDENT DECISION TREE (IDT)

Background: The Incident Decision Tree (IDT) is a tool originally developed by the National

Patient Safety Agency in an effort to help National Health Service (NHS) managers in the United

Kingdom establishes a just and consistent system toward staff involved in safety incidents. The

IDT is comprised of an algorithm with supplementary guidelines that pose a series of structured

questions aimed at assisting managers in determining if error was the result of an individual's

actions or a system failure. The objective of the IDT is to create an open and just culture where

employees feel able to report patient safety incidents without the unwarranted fear of

consequences.

The Incident Decision Tree Algorithm:

INCIDENT DECISION TREE*
Work through the tree separately for each individual involved

THE NHS CONFEDERATION National Patient Safety Agency

Start Here

Deliberate Harm Test	Incapacity Test	Foresight Test	Substitution Test

Were the actions as intended? — NO → Does there appear to be evidence of ill health or substance abuse? — NO → Did the individual depart from agreed protocols or safe procedures? — NO → Would another individual coming from the same professional group, possessing comparable qualifications and experience, behave in the same way in similar circumstances? — YES →

YES ↓ YES ↓ YES ↓ NO ↓

Were adverse consequences intended? Does the individual have a known medical condition? — YES → Were the protocols and safe procedures available, workable, intelligible, correct and in routine use? — YES → Were there any deficiencies in training, experience or supervision? — YES →

YES ↓ NO ↓ YES ↓ NO →

Is there evidence that the individual took an unacceptable risk? — YES → Were there significant mitigating circumstances? — YES →

NO ↓ NO ↓

Consult NCAA or relevant regulatory body

Advise individual to consult Trade Union Representative

Consider:
• Suspension
• Referral to police and disciplinary/regulatory body
• Occupational Health referral

Highlight any System Failures identified

Consult NCAA or relevant regulatory body

Advise individual to consult Trade Union Representative

Consider:
• Occupational Health referral
• Reasonable adjustment to duties
• Sick leave

Highlight any System Failures identified

Advise individual to consult Trade Union Representative

Consider:
• Corrective training
• Improved supervision
• Occupational Health referral
• Reasonable adjustment to duties

Highlight any System Failures identified

Consult NCAA or relevant regulatory body

Advise individual to consult Trade Union Representative

Consider:
• Referral to disciplinary/regulatory body
• Reasonable adjustment to duties
• Occupational Health referral
• Suspension

Highlight any System Failures identified

System Failure
Review system

* Based on James Reason's Culpability Model

Process:

- Managers and staff will be educated on the IDT tool.
- The IDT will be implemented no later than July 15, 2017.
- During this time, errors will continue to be reported through the MIDAS system anonymously and will then be routed to the appropriate ICU clinical manager.
- The ICU clinical manager will review the MIDAS report and decide if further investigation is warranted on the error.
- If the error is pursued, the manager will be encouraged to utilize the IDT. Copies of the IDT will be provided to managers to be used during the decision making process. These copies will be marked on with either pen or marker to show how the manager came to the appropriate conclusion. An additional copy of the IDT will be posted on the employee education board in the staff break room in the ICU and CVICU so that employees can navigate through errors themselves. After managers fill out the paper copy of the IDT, it will be uploaded on to the corresponding MIDAS report.
- According to outcome of the IDT, the manager will proceed with the recommended action plan. Flagstaff Medical Center does not have a union representative and therefore this portion will not apply.
- Managers will be responsible for keeping tracking of how many times they use the IDT within the implementation period and any issues that may affect its use. This will be recorded in the MIDAS report.

Support for managers and bedside staff will be available via phone and email 7 days a week from 7 AM to 7 PM to ensure all questions are addressed and the tool is being used appropriately.

APPENDIX C:

IDT LESSON PLAN

- *Safety culture* is a concept that originated in high reliability organizations (HRO) to create a system that consistently accomplishes goals while working in inherently dangerous situations (Hines et al, 2008).
- The key features of an environment that embraces a culture of safety include:
    - a) Acknowledgement of the high-risk nature of an organization's activities and the determination to achieve consistently safe operations
    - b) A blame-free environment where individuals are able to report errors or near misses without fear of reprimand or punishment
    - c) Encouragement of collaboration across ranks and disciplines to seek solutions to patient safety problems
    - d) Organizational commitment of resources to address safety concerns (Agency for Healthcare Research and Quality [AHRQ], 2016).
- The Hospital Survey on Patient Safety Culture (HSOPSC)
    - 42 item, Likert-scale survey
    - Composed of 12 composites that measured staff opinions on patient safety issues, medical errors, and incident reporting.
    - Administered from February 18th 2015 to March 21st 2015 to ICU and CVICU staff to evaluate what they perceived as the most important areas of concern.
- The Hospital Survey on Patient Safety Culture (HSOPSC) con't
    - The composites the HSOPSC tested include:
        - Teamwork within units
        - Supervisor/manager expectations and actions promoting patient safety
        - Organizational learning and continuous improvement
        - Management support for patient safety
        - Overall perceptions of patient safety
        - Feedback and communication about error
        - Communication openness
        - Frequency of events reported
        - Teamwork across units
        - Staffing
        - Handoffs and transitions
        - Nonpunitive response to errors
- Results
    - 108 total responses
        - 99 responses with data
        - 9 responses with unit name only, eliminated for analysis
    - 99 responses with data (91.6% response rate)
        - 93 complete responses (over 80% of questions answered)
        - 6 incomplete responses (between 36% and 76% of questions answered)
        - All responses considered for analysis by HRQ guidelines

- Results con't
  - Staff in the ICU/ CVICU perceived the teamwork to be above average, however, there are major fallouts in regards to feedback and communication, hand-offs and transitions, and error reporting.
  - Of the twelve composites tested, seven composites showed staff responses to be at the 10th percentile to below minimum.
  - Within the seven composites with the lowest scores, three held themes related to error reporting.
- Survey Composites with lower scores-TABLE
- The Incident Decision Tree
  - The Incident Decision Tree (IDT) is a tool originally developed by the National Patient Safety Agency in an effort to establish a just and consistent system toward staff involved in safety incidents.
  - The IDT is comprised of an algorithm with supplementary guidelines that pose a series of structured questions aimed at assisting managers in determining if error was the result of an individual's actions or a system failure.
  - The objective of the IDT is to create an open and just culture where employees feel able to report patient safety incidents without the unwarranted fear of consequences.
  - When using the IDT, the user is prompted to start at the first test and work their way through the remaining three tests until and underlying cause of the incident is determined. The four IDT tests include (a) deliberate harm; (b) incapacity; (c) foresight; and (d) substitution.
- Deliberate Harm Test
  - The deliberate harm test helps to identify the rare instance where harm was intended.
  - Example:
    - Nurse MJ realizes that the trauma patient he is about to receive has committed a string of violent crimes against children. Immediately, MJ is reluctant to provide care for this individual. When the patient arrives from the OR extubated, MJ helps to settle him in. While doing so, he discovers a syringe full of propofol that must have fallen out of the anesthesiologist's pocket. After everyone has cleared the room, MJ administers the entire syringe to the patient with the intention to harm him. The patient subsequently dies as a result.
- Incapacity Test
  - During the incapacity test, the manager is asked to reflect on whether the employee was aware of their condition at the time of the incident, whether they realized the implications of their condition, and whether they took proper safeguards to protect patients from harm.
  - Example:
    - Nurse AZ has spent the past 72 hours in Las Vegas for her sister's bachelorette party. She returns home from her trip only hours before her scheduled shift. Instead of calling off sick, she decides "the hair of the dog"

may be the better choice and consumes a couple of whiskey chai's prior to going in. While at work, AZ makes a medication error that results in an adverse effect on one of her patients.

- Foresight Test
  - o This test assesses whether or not protocols and safe working practices were adhered to.
  - o Example:
    - A patient is found down with aspiration pneumonia. He is intubated and placed on mechanical ventilation. A Propofol infusion is ordered with a target RASS of -2 to 0 along with daily wake up assessments. On day 1, the patient does not meet criteria for wake up assessment. On day 2, the patient meets criteria, however the RN gets a crashing patient at shift change. Staffing is tight. The charge RN is busy with another critically ill patient. The only PCT on the floor is assigned to be a sitter for a suicidal patient. By 1500, the RN finally gets lunch and realizes she has not completed a wake up assessment.
- Substitution test
  - o This test utilizes input from peers that are placed in a situation where protocols are found to either be ineffective or absent. This test is beneficial because it emphasizes deficiencies in training, experience, or supervision and weighs whether an individual was properly equipped to handle a situation.
  - o Example
    - A patient is admitted to a Medical Surgical floor with alcohol withdrawal. The admitting provider places her on the appropriate alcohol withdrawal protocol for the unit. Over the course of the evening, the patient receives numerous doses of benzodiazepines. In the middle of the night, the patient uses her call light and states she needs to go to the bathroom. The patient seems appropriate, and alert and oriented. The bedside nurse walks the patient to the bathroom and notes she has a steady gait. She instructs the patient to use the call light for assistance and shuts the door for her privacy. A few moments later, the patient falls and hits her head. A MIDAS is written and the incident is sent to the manager for review. The manger reviews the incident and speaks with the staff member involved. The manager points out patient was on benzodiazepines with a diagnosis of alcohol withdrawal and questions whether it was prudent to close door while the patient was using the bathroom. The manager then talks to another nurse with a similar skill set and expertise. The manager describes the situation and asks the second RN what they would do in that situation. The second RN confirms they would have likely done the same thing. Upon review of the policy, the manager confirms the policy does not clarify toileting protocol or how to manage impulsive patients that are at risk for falling. A system failure is identified!

- The next steps:
  - Managers and staff will be educated on the IDT
  - The IDT will be implemented
  - Post IDT survey will be conducted
  - IDT is evaluated for continued use in the ICU
  - The long term goal is organizational implementation of the IDT
- Questions?

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APPENDIX D:

INCIDENT DECISION TREE (IDT) POST-IMPLEMENTATION SURVEY

Consent:

The purpose of this quality improvement project is to assess the impact the Incident Decision Tree (IDT) has had on the safety culture in the Intensive Care Unit at Flagstaff Medical Center. This is a quality improvement project being conducted by Erin Rasmussen at the University of Arizona. You are invited to participate in this quality improvement project because you are part of the sample being studied.

Your participation in this quality improvement study is voluntary. You may choose not to participate. If you decide to participate in this quality improvement survey, you may withdraw at any time. If you decide not to participate in this study or if you withdrawal from participating at any time, you will not be penalized.

The procedure involves filling an online survey that will take approximately 10 minutes. Your responses will be confidential and we do not collect identifying information such as your name, email address or IP address. The survey questions will be about your attitude about the Incident Decision Tree and its effect on the error reporting system.

We will do our best to keep your information confidential. All data is stored in a password protected electronic format. To help protect your confidentiality, the surveys will not contain information that will personally identify you. The results of this study will be used for scholarly purposes only and may be shared with University of Arizona representatives.

If you have any questions about the quality improvement project, please contact Erin Rasmussen or Catherine Reidel. This quality improvement has been reviewed according to the University of Arizona IRB procedures for quality improvement involving human subjects.

Background information:

The Incident Decision Tree (IDT) is a tool that was implemented in the ICU and CVICU at Flagstaff Medical Center as part of quality improvement initiative. The purpose of the IDT was to help guide decision-making around patient incidents at Flagstaff Medical Center. A goal of the IDT was to promote a virtuous circle of patient safety emphasizing the development of a "just culture".

1. I am a:

   _____ Clinical manager

   _____ Bedside staff member (RN or PCT)

2. We are informed about errors that occur in this unit:

   Strongly agree
   Agree
   Neutral
   Disagree
   Strongly disagree

3. We are given feedback about changes put into place based on error reports:

   Strongly agree
   Agree
   Neutral
   Disagree
   Strongly disagree

4. In this unit, we discuss ways to prevent errors from happening again:

   Strongly agree
   Agree
   Neutral
   Disagree
   Strongly disagree

5. The IDT made the error evaluation process more transparent:

   Strongly agree
   Agree
   Neutral
   Disagree
   Strongly disagree

6. The IDT is an effective tool to open dialogue between staff and managers in regards to errors:

   Strongly agree
   Agree
   Neutral
   Disagree
   Strongly disagree

7. After the implementation of the IDT, I am more inclined to report an error:

   Strongly agree
   Agree
   Neutral
   Disagree
   Strongly disagree

8. The IDT contributes to a just culture:

   Strongly agree
   Agree
   Neutral
   Disagree
   Strongly disagree

9. The IDT helps to identify system failures versus individual blame:

   Strongly agree
   Agree
   Neutral
   Disagree
   Strongly disagree

10. After implementation of the IDT, I feel errors are less likely to be held against me.

    Strongly agree
    Agree
    Neutral
    Disagree
    Strongly disagree

11. How you feel the IDT affects safety culture in the ICU?

12. In general, what other changes to the error reporting system can be improved?

13. In general, what do you think can improve follow up after an error has occurred?

14. What changes to the IDT process can be improved?

Additional comments:

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