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Program Evaluation of Patient Safety and Risk Mitigation Educational Interventions for Medical Errors in Primary Care Settings by Patricia Rose Gould

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This is to certify that the doctoral study by

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Abstract

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MS, Clarkson College, 2004

BS, Methodist College of Nursing, 1996

Project Submitted in Partial Fulfillment

of the Requirements for the Degree of

Doctor of Nursing Practice

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Abstract

The Institute of Medicine reported in 2016 that medical errors are the 3rd leading cause of death in the United States. In the primary care setting, frequency and severity are unknown. Medical error research is limited related to evaluation of interventions conducted by medical professional liability (MPL) companies of risk mitigation strategies. The purpose of this program evaluation was to determine the impact of multifaceted patient safety and risk mitigation educational interventions conducted in primary care settings on patient safety, reporting, and liability. The program evaluation employed a retrospective secondary analysis of actuarial data from a MPL carrier's educational interventions of 10 randomly selected Midwestern primary care clinics. Actuarial data consisted of nonparametric testing of categorical data to examine means and averages on previously conducted assessments, questionnaire responses, occurrence reports, and claims frequency. Outcome analysis of actuarial data revealed that the study population meet assessment criteria. Further actuarial analysis suggested that actual medical error occurrence reporting was inconsistent. Retrospective analysis of questionnaire responses demonstrated that despite educational interventions, more research is warranted to examine medical error understanding, language, and prevention in the primary care setting. Outcome evaluation conclusions suggest that healthcare providers are in a pivotal position to engage in proactive strategies in the primary care settings to mitigate risk; improve patient safety; and increase overall individual, organizational, and community understanding of medical error prevention. Unrecognized medical errors create a burden on society. Risk mitigation strategies of medical errors promote positive social change through improved community health.

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Dedication

Heartfelt love and gratitude are expressed to my husband and family for all the sacrifices made. Jeff, Tiffany, and Madeline, your support, unconditional love, and encouragement have blessed my life. To my family of friends, your support and friendship are honored. To Dr. Catherine Garner for your support, encouragement, guidance, and role modeling the attributes of success. To Dr. Donna Bailey for all your support and encouragement. To Laura, Gerry, Patrick, and Company XYZ for your support, faith, and guidance. Thank you!

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Section 1: Nature of the Project

Introduction

Preventable medical errors are the third leading cause of death in the United States, claiming nearly 400,000 lives each year (Makary, 2016; McCann, 2014; Rice, 2016). Medical errors were deemed a crisis by the Centers for Disease Control and Prevention (CDC) in 2013 and 2016 (CDC, 2015, n.d.b; Makary, 2016; McCann, 2014; Rice, 2016). Renewed interest at both the organizational and federal level prompted investigation into the issue. McCann (2014) discussed testimony before the Senate Subcommittee on Primary Health and Aging regarding reported occurrences of over 1,000 people dying each day due to preventable medical errors, costing the nation over one trillion dollars each year. McCann (2014) added that immediate action was needed to address the 10,000 serious complications occurring daily that are related to unreported medical errors.

A great deal of information exists regarding medical error reporting related to patient safety in the hospital setting. In recent years, research has focused attention on the primary care setting. Per the Agency for Healthcare Research and Quality (AHRQ) (2014) and Phillips, Dovey, Graham, Elder, and Hickner (2006), the primary care setting has proven that the sheer volume of patients seen combined with the complexity associated with practicing medicine, create an error-prone environment in which patient harm occurs. The severity of the issue is validated by Drake-White, et al.'s (2015) meta-synthesis of qualitative studies of medical errors and patient safety in primary care. Their

findings suggest system issues, communication failures, and use of the electronic medical record (EMR) increased medical errors, resulting in compromised patient safety (Drake-White, et al., 2015).

Medical professional liability (MPL) companies, along with other professional organizations such as AHRQ, have directed their attention towards the primary care setting to raise awareness and understanding of standard risk reduction practices. The goal is to increase physician awareness of medical errors and reporting, improve best practice, increase quality and safety, and prevent malpractice (AHRQ, 2014; Institute of Medicine [IOM], 2000). AHRQ (2014) offered that despite prevention strategies implemented in primary care that capture reportable quality measures such as Meaningful Use or the Physician Quality Reporting System (PQRS), few had significant impact on practice behavior or medical error reduction (IOM, 2000; Robert Wood Johnson Foundation [RWJF], 2011). Limited literature exists evaluating the impact of comprehensive risk management programs aimed at increasing patient safety awareness, risk mitigation, and reporting of medical errors (AHRQ, 2015).

This DNP project focused on program evaluation outcomes of multiyear, multifaceted risk mitigation strategies initiated by a large multistate MPL company. Findings of the program evaluation offer insight to Company XYZs stakeholders whether educational interventions achieved their intended outcome of risk mitigation and medical error reduction. Outcome information can be used to validate approaches or suggest areas

for modification. Educational interventions that improve the quality of primary care and prevent medical errors are beneficial to society (IOM, 2000, 2011).

Problem Statement

Medical errors are of great concern to all. MPL carriers, which provide medical malpractice insurance to a variety of organizations, may incorporate multiple educational methods to ensure their insureds are kept informed on current trends and mitigation strategies. Company XYZ was evaluated for this project based on their proactive patient safety and risk management strategies that ensure knowledge integration of best practices via multifaceted educational interventions. Company XYZ, a doctor-owned MPL, has decades of experience evaluating risk and promoting patient safety with their insured. Their philosophy calls for proactive risk education directed towards improving patient lives and mitigating overall risk (Company XYZ, 2016). Company XYZ was selected for this project because it provides free on-site multifaceted educational interventions to all their outpatient, ambulatory, and hospital settings. Company XYZ provided interventions based on early identification of risk areas such as documentation, systems, processes, communication, and error mitigation (Company XYZ, 2016).

Retrospective data collected from Company XYZ was examined for outcome evaluation related to claims paid and frequency, occurrence reported, and the copyrighted practice quality assessments (PQAs). Information from the PQA interventions concentrated on level one guidelines (LOGs), which denote high risk areas such as systems, processes, and communication. Company XYZ's customer reporting

questionnaire (CRQ) was evaluated to understand reporting patterns and whether commonality of language existed among staff regarding medical errors. The program evaluation problem is a retrospective evaluation of Company XYZ's comprehensive PQA educational interventions, CRQ responses, and actuarial data to evaluate the effectiveness of the MPL's desire to mitigate risk, improve recognition of reporting, and decrease overall incidence of medical malpractice claims.

Company XYZ's actuarial data has shown that educational interventions can decrease risky practices by 25 % over the lifetime of a practice (Company XYZ, 2016). In addition, similar actuarial data from Company XYZ demonstrated that providers meeting 9 out of 10 LOGs on the PQA had a 23 % decrease in paid claim dollars compared to the national average as reported by Physician Insurers Association of America (Physician Insurers Association of America [PIAA], 2016; Company XYZ, 2016). Those providers that met 6 or fewer of LOGs demonstrated a 12.7 % decrease in paid claims dollars (Company XYZ, 2016). The need for additional retrospective examination of the impact of education interventions of primary care practices related to the outcomes of error preventions required exploration.

Program Evaluation Question

Did five-year multifaceted patient safety and risk mitigation educational interventions in the primary care setting impact patient safety and reduce liability?

Purpose Statement

The purpose of this program evaluation was to review summative outcomes of multifaceted patient safety educational interventions conducted in 10 randomly selected primary care settings in Nebraska. The program evaluation sought to determine if the use of educational interventions conducted by Company XYZ influenced outcomes in selected primary care practices in Nebraska increasing provider and staff awareness and understanding of medical error reporting.

Definitions used in the common patient safety literature facilitate an appreciation for standardized language and meaning of medical errors. Summative indicators evaluated included Company XYZ's actuarial data of reported medical error occurrences and claims and payment frequency. Summative outcome measures evaluated from the CRQ included awareness of common terms of language understood or spoken among staff and providers.

Philosophy of Theories to Guide Intervention

A multitude of theories exist that provide insight into the complexity of medical errors. These theories provide foundations that assist in understanding rationales related to outcomes (White & Dudley-Brown, 2012). Educational interventions begin with understanding perceptions of staff and providers working on the front lines. Educational interventions related to medical error should empower primary care staff and providers to grasp the enormity of the problem and understand their roles in prevention as change agents. Two theories that assist in understanding how staff and provider behaviors can

effect change outcomes are Ajzen and Fishbein's theory of reasoned action (TRA; 1980) and Ajzen's (1991) theory of planned behavior (TPB) (Ajzen, 2006). Both are well suited to assist in early identification of individual staff and provider attitudes, behaviors, and norms that could be perceived as barriers to understanding and acceptance of their roles in medical error prevention (Millstein, 1996; Planning Tank, 2015). For the purposes of this program evaluation, the TRA offered simplified rationales for potential explanation of outcomes.

To plan, implement, introduce, or evaluate educational interventions that propose new concepts creates challenges for most. These challenges can be related to preconceived attitudes, beliefs, or behaviors of the targeted population. In addition, organizational and individual culture must be taken into consideration for success. Basic understanding of the TRA offers the researcher rich insight based upon simple observation of incongruent language patterns or behaviors upon initial contact.

The simplicity of the TRA can be surmised in several easy steps: (a) behavioral beliefs regarding medical errors, (b) attitude towards the educational intervention, (c) normative beliefs such as social or peer pressure in doing the right thing, (d) subjective norm of willingness to change belief, (e) intention to engage in the intervention, and (f) ultimate behavior change. In this case, behavior change would be indicated by engagement in reporting or participating in an education intervention to increase awareness and understanding (Ajzen, 2006; White & Dudley-Brown, 2012). TRA theory

knowledge can assist in quick identification of barriers, and once identified, interventions or programs can be augmented quickly to meet the needs of the target audience.

Philosophy of the Educational Interventions

Practice Quality Assessment

The PQA intervention consists of an interview segment followed by detailed chart auditing. The interview segment provides insight into the organizational leadership's readiness to change. The questions are written to indicate that the providers are either engaged or not in suggested best practices and strategies to reduce risk (Company XYZ, 2016). An in-person interview is conducted on premise with providers and management. The PQA intervention was developed by Company XYZ to examine if a correlation existed between a provider's total claim loss and the incorporation of standardized practices based upon a list of risky practice behaviors also known as LOGs (Company XYZ, 2016). The LOGs identify a set of risk items that practices face based upon claims frequency, dollar payout, and loss runs from Company XYZ. Data obtained from PIAA (2016) suggested that identified LOG risks closely paralleled known litigation patterns throughout the United States. Company XYZ utilized basic informational processes such as patient notification, security, and documentation practices, then added an additional subset of questions termed LOGs to focus on high risk areas such as tracking, follow up, informed consent, and the actual progress note (Company XYZ, 2016).

The PQA intervention is an interactive process that includes an interview, chart assessment, debriefing, and an action plan if required. The PQA intervention offers

baseline data of practice issues on a bi-annual basis. Information gleaned can be used as a comparison of improvement or demonstrate areas where risk may occur. The PQA process allows cultural norms, behaviors, practice patterns, and standardization to be identified and educational interventions developed. Information is gleaned from responses to questions as well as nuances such as the interviewees or staff's congruent behavioral cues. Shared information from leadership offers insight into the overall culture, readiness for change, and potential barriers. The information garnered assesses the readiness of a primary care practice (PCP) regarding the introduction of additional interventions to reduce risk and increase patient safety.

Discussion of medical errors can provoke many emotions. Those who initiate a PQA intervention must be mindful of this in addition to the many factors that create unintentional barriers such as time, staff attitude, and overall culture in each organization. Many factors must be considered prior to assessing the readiness for change, such as organizational structure, leadership and stakeholder participation, or even if the change is realistic. White and Dudley-Brown (2012) offered that implementation of change can create tension and resistance due to fear of change or of learning new methods.

Matthew-Maich, Ploeg, Jack, and Dobbins (2010) suggest that the use of a theory can assist in understanding complex issues associated with change to facilitate positive outcomes. The TRA theoretical framework selected takes into consideration the complexities of the clinical setting. The TRA examines the individual's behaviors, beliefs, attitudes, and intentions. This theory assists in understanding that behavior

change is dependent upon the individuals or organizational attitudes and norms (White & Dudley-Brown, 2012). Understanding the basic premise of the TRA offers a solid foundation for examining resistance or barriers to change. The importance of quickly identifying behaviors of both the individual and organization should be explored to ensure change and growth can occur and medical error risk mitigation strategies can be implemented.

When evaluating the readiness for change in a PCP, simple strategies such as observing staff in their environment offer insight into the culture. This can provide an impression of attitudes, beliefs, and temperament of those being observed. Another consideration when introducing change is the knowledge and skill level of the staff. This offers insight into how interventions are delivered. The TRA suggests that individuals bring with them varying degrees of education, literacy, and personal perceptions (Ajzen, 2006; White & Dudley-Brown, 2012). People have their own defined knowledge base and skill set. Educational interventions and discussions must be directed towards the adult learner to ensure barriers are considered so effective change facilitation is understood.

Individual and Group Education

Despite interventions and education, medical errors continue to occur (AHRQ, 2015; Bal, 2009; CDC, 2014). Evaluation of individual perceptions regarding medical error definition and meaning assist in identification of areas where educational interventions can be deployed. Kirk, Parker, Claridge, Esmail, and Martin (2007), Singh

et al. (2013), and Webster et al. (2010) offer that shared meaning, definitions, values, and beliefs help shape behaviors which enforce cultures within an organization. Standard definitions and meanings may also improve overall quality as there will not be deviations due to ambiguous personal meaning.

The relevance of medical errors in healthcare should be addressed in each organization so that all staff understand their role in prevention. With estimates of over 3.3 million medical errors occurring annually in the outpatient setting, organizational stewardship must become a priority (National Quality Forum [NQF], 2010). Limited research studies in the United States regarding medical errors in the primary care setting may create a perception that the problem is not of significance or relevance (Rice, 2016). A possible rationale for error increase may be found in how medical errors, patient safety, and reporting are defined. Per Colla, Bracken, Kinney, and Weeks (2005), differences in definitions and meaning existed between patient safety, patient outcomes, reporting, and what constitutes an error.

Educational interventions aimed at preventing medical errors range from the World Health Organization (WHO) surgical checklist, AHRQs TeamSTEPPS, to AHRQs assessment tools that identify areas of risk and improve quality (AHRQ, 2014; NQF, 2010). A multitude of educational interventions are done daily in healthcare related to patient safety and error reduction; however, their primary focus is on the inpatient or hospital setting. In the outpatient setting, educational interventions are limited (AHRQ, 2014; NQF, 2010; Singh et al., 2013). If the outpatient setting is attached to a hospital,

the chances of educational interventions is increased; however, free standing clinics often are limited in or omitted from hosting such efforts (Perna, 2012).

Implementation of Strategies

Implementation of simple strategies that address staff awareness of medical errors, reporting requirements, and standardized definitions or meanings allow for misconceptions or misperceptions to be addressed at both the individual and practice level. Educational interventions can be developed to empower staff, help increase understanding, and facilitate early intervention to create a safe culture.

Individual Practice/Provider Consultation

Research is limited regarding educational intervention outcomes related to medical error or common language. Schiff et al. (2013) conducted retrospective reviews of primary care closed malpractice claims focused on error type but did not address interventions aimed at prevention. This is supported by a Veterans Affairs retrospective medical chart review conducted by Singh et al. (2013). When conducting a review of systematic literature to explore educational intervention success in primary care using an evidence-based search method called PICO (P-population/problem, I-intervention/ indicator, C-comparator, and O-outcome), information was broken down into categories such as primary care, medical errors, interventions, and malpractice, to name a few (Laureate Education, 2011). Subsets were drilled down to the subject matter of evaluation outcomes related to individualized or group interventions from a MPL carrier. The PICO framework allowed for the questions being asked to be broken down into four areas so

that key words could facilitate an appropriate question (Laureate Education, 2011). Results demonstrated information was scarce.

Company XYZ has collected actuarial data to support individual practice or provider's responses related to the PQA interventions in Nebraska. The uniqueness of the information gleaned from PQA interventions relies on interviews with leadership and observation of staff interactions with processes, systems, and communication. Evaluation of the PQA provide rich detail in perceptions of errors and language spoken, which allows for specialized interventions to be created based upon on individual or group need.

Cost Benefit

Company XYZ's multifaceted educational interventions are free to their insured and staff. Factoring other variables such as time into the equation, the initial cost of implementing multifaceted educational interventions that increase awareness of medical errors can easily be absorbed. The cost savings a practice experiences is proportionally related to better compliance. Staff awareness of the impact of medical errors, personal accountability, and understanding standardized definitions and meanings offer safeguards to the patient, staff, and organization. From an individual, organizational, community, and national perspective, the short-term implications of failing to address the issue of medical errors in the primary care setting can have short- and long-term consequences. From a patient safety perspective, educational interventions need to occur. All staff from housekeeping to CEO must understand common language and definitions of what

medical errors are and how to report them, and must realize the integral role they play in prevention.

The financial, emotional, or societal implications if errors continue to go unreported or acknowledged cannot be estimated. Short term (annually), over a trillion dollars may be lost on indirect and direct costs (Perna, 2012). In terms of long term consequences, the economic impact to healthcare is devastating and remains unknown in the primary care setting. Van Den Bos et al. (2012) noted the United States has missed an opportunity to ensure that every healthcare setting understands the necessity of medical error reporting to decrease incidences and improve safety. Howie (2009) postulates that despite overall savings that could occur due to standardized policy, language, and understanding, additional savings could be seen in malpractice premiums, lawyer fees, decreased complaints to boards of medicine or boards of nursing, and organizational and provider fees lost for not meeting quality indicators.

From the MPL perspective, claims paid and associated legal costs represent the costs paid. Malpractice insurance rates represent a broader coverage of the risks associated with the practice of medicine. Thus, decline in claims based upon reported medical errors results in savings to the MPL, provider, organization, society, and most importantly, the patient.

Population

The MPL reviewed 10 primary care practices in Nebraska that have participated in the multifaceted educational interventions over the last five years using their program evaluation. The practices ranged from single to multi-physician provider groups.

Significance/Relevance to Practice

Estimates from organizations such as the AHRQ and the Centers for Medicare and Medicaid Services (CMS) indicate that the cost of medical errors is increasing at an alarming pace. Medical errors cost over $16.4 billion annually in the inpatient setting and $4.2 billion in the outpatient (NQF, 2010). From an organizational perspective, medical errors create undue burden as most are preventable (Crane et al. 2015). The costs of associated medical errors can be financially devastating to any organization. However, primary care may feel the impact of financial loss to a greater degree due to frequency and complexity of the patient type seen there.

The byproducts of medical errors are significant and felt on an economic, organizational, community, and individual level. Medical errors have not adequately been researched or addressed in the outpatient clinical setting (AHRQ, 2015). Van Den Bos et al., (2011) argue that prior research of administrative data may have grossly underestimated the overall incidence of medical errors in the United States. Andel, Davidow, Hollander and Moreno (2012) supported this by reporting that direct costs associated with medical errors are estimated to exceed $98 billion annually when quality adjusted life years are applied, while indirect costs such as lost productivity, other

incurred expenses, and lost human potential exceed $1 trillion annually. Perna (2012) offered that the economic impact of medical errors is poorly understood due to reporting requirements, awareness of error meaning, and accurate data collection. While most statistical data on errors relates to the inpatient setting, limited research in the outpatient setting creates unknown burdens to healthcare due to potential financial implications (AHRQ, 2015).

Program Evaluation Question

Did 5-year multifaceted patient safety and risk mitigation educational interventions in the primary care setting impact patient safety and reduce liability?

Evidence-Based Significance of the Program Evaluation

Medical errors in the United States are at an epidemic proportion (CDC, 2014; Makary, 2016). Organizations such as the CDC, CMS, and the WHO have taken actions to understand the severity and scope of the problem (NQF, 2010). Despite healthcare education, awareness activities, and interventions to nationally address the issue, the problem of medical errors remains a concern. The CDC, CMS, and many other private, federal, and national organizations have asked for governmental interventions to impose and enforce stricter reporting requirements (CMS, 2014; NCQA, 2010). The federal government has created special task forces to examine root causes of medical error increases with a focus on prevention at a national level (AHRQ, 2014; CMS, 2014; NQF, 2010). Groups such as the American Hospital Association, American Nurse Association, American Medical Association, AHRQ, and CMS have rallied to collect statistics,

formulate solutions, and impose financial incentives and penalties for medical errors that are preventable (AHRQ, 2014, CMS, 2014). Nursing organizations such as American Association of Critical-Care Nurses (AACN), American Nurse Association, Association of Perioperative Registered Nurses (AORN), along with a multitude of other nursing professional and specialist groups have joined the ranks of expressing concern and taking a proactive approach to encouraging change. Despite the national attention, the prevalence of the medical errors continues to rise. The impact of the problem is multifaceted, affecting all segments of society.

Implications for Social Change in Practice

Reduction in errors is an important goal for all providers and staff. Change can be difficult, especially in the outpatient primary care setting. Many factors, such as personal ideology, the clinic philosophy, to literacy rates of staff members factor into how change is both perceived and implemented. Dependent upon the culture and norms of the clinic, many of these factors may be perceived as a barrier to change which can affect the overall readiness of staff to take ownership of an issue such as medical errors. Based upon the current climate in most PCP clinics, the concept of introducing more change is usually met with resistance. The outpatient setting, especially PCP clinics, have felt the brunt of constant change from the introduction of health informatics technology (HIT), electronic medical record (EMRs), to ICD 10, both in terms of role stress to the economic burden associated with the changes.

Education intervention aimed at facilitating social change related to medical errors in the primary care setting can include the internal processes to reduce claim frequency though knowledge integration of errors and risk mitigation strategies. PCPs require an understanding that submitting quality indicators or patient safety data for financial incentive has no bearing on medical error awareness nor reporting. External concerns arise with national reporting of medical error statistics, accuracy, and breakdown of meaning related to the outpatient setting. AHRQ, CMS, NQF, IHI, data collection requirements demonstrate fragmented areas as each organization boost pre-determined indicators (AHRQ, 2014). This data may provide certain information and incentives aimed at quality and safety, but does not address the fundamental culture of medical errors at a basic level.

Promotion of social change include evaluation of the targeted primary care clinics reporting structure of medical errors, effects on claims frequency, and if educational interventions facilitated change. Can it be associated retrospectively and if so what is the defined timeline to ensure meaningfulness. This information affects those at the organizational level as it requires accurate interventions directed at error identification, personal responsibility, and standardized language so recognition is attainable by all staff despite knowledge or skill level. Externally, at the actual primary care site, organizational leadership behaviors, cultures, and participation must be examined to ensure interventions aimed at medical errors that are mindful of individual needs. Gifford,

Davies, Tourangeau, & Lefebre, (2011) offer that an association between leaderships attitudes, involvement and commitment can affect the success of a change.

Definition of Terms

Medical professional liability (MPL): "Medical professional liability insurance, also known as medical malpractice insurance, is a type of professional liability insurance which protects physicians and other licensed health care professionals from liability associated with wrongful practices resulting in bodily injury, medical expenses and property damage, as well as the cost of defending lawsuits related to such claims" (Cohen and Hughes, 2007, p. 6).

Professional negligence: "An abrogation of a duty owed by a health care provider to the patient; the failure to exercise the degree of care used by reasonably careful practitioners of like qualifications in the same or similar circumstances" (Cohen and Hughes, 2007, p. 6).

Claims: Cohen and Hughes (2007) define a claim as a written notice, demand, lawsuit, arbitration proceeding or screening panel in which a demand is made for money or a bill reduction. PIAA (2012) refers to claim as a written or oral demand made on behalf or by the patient or their representative asking for money and/ or services.

Claims data and frequency: Bal (2008) defines claims data as information collected on occurrences reported, payout with indemnity or non-indemnity. Data is aggregated over a period time and aggregated to demonstrate severity, frequency, and dollar spent (PIAA, 2012).

Malpractice: Medical malpractice is defined as any act or omission by a provider that deviates from treatment of accepted norms or standards of practice in the medical community that causes injury or harm to the patient (Bal, 2008).

Primary care physicians/providers (PCP): Primary care providers are physicians, advanced practice nurses, or physician assistants that work in an outpatient primary or family care setting. For this program evaluation PCP refers to Family Practice.

Medical error: Medical errors can be defined as the failure of a planned action to be completed as intended or the use of a wrong plan to achieve an aim (IOM, 2000; PIAA, 2012). For this program evaluation occurrences, may be interchanged or used in design, collection, and findings segments. Company XYZ requires reporting of medical errors which are captured as occurrences.

Practice Quality Assessment (PQA): The PQA intervention is an instrument that examines the correlation between a provider's total claim loss related to the incorporation of standardized practices based upon a defined list of risky practice behaviors (Company XYZ, 2016). It utilizes basic informational processes such as patient notification, security, documentation practices, subsets of question termed LOG that are related to high risk areas with claims dollar payout such as tracking, follow up, informed consent, and the actual progress note (Company XYZ, 2016).

Assumptions and Limitations

It is assumed that the PQA interventions correctly focused on data that truly represented the practice of medicine in the clinical setting. It is presumed that

management, providers, and staff are honest in their reporting of errors. Limitations are related to actual reporting frequency and their association related to medical error understanding and reporting. Another limitation is that the claims data will be broken down by Family Practice (PCP) and Family Practice (PCP) performing a specialty and not evaluated for error type. This study is limited to primary care practices in one state and the interventions of one MPL company. Thus, the results may not be representative of all practices and MPLs, creating overall limitation to the study.

Summary

Medical errors remain an issue. Long-term medical error interventions have been conducted, but research is limited in primary care. This program evaluation offers insight regarding medical errors and contributing factors. These factors, such as personal ideology, clinic philosophy, literacy rates, attitudes, beliefs, and norms of staff members factor into how change is both perceived and implemented. Primary care culture and norms, may contribute to barriers towards change. These can affect the overall readiness of staff to begin the change process leading to tension and resistance (AHRQ, 2015). The outpatient setting, especially primary care has felt the brunt of constant change and will continue to do so.

When assessing the readiness to change to increase compliance with medical errors and reporting, one should be mindful of the many factors that create unintentional barriers such as time, staff attitude, and the overall culture. Many questions must be thought of prior to assessing the readiness for change, such as the organization structure,

leadership and stakeholder participation, or even if the change is realistic. White and Dudley-Brown (2012) argue implementation of new ideas, unless realistic, may jeopardize implementation of change due to fear of improving or of learning new methods.

Section 2: Background and Context

Introduction

The purpose of this program evaluation was to review summative outcomes of multifaceted patient safety educational interventions conducted in selected primary care settings in Nebraska. The program evaluation retrospectively examined the PQA interventions, CRQ responses, occurrence reporting, and claims paid actuarial data to understand outcomes in primary care practices in Nebraska. I sought to determine whether staff awareness of patient safety, commonality of language, and increased awareness of reporting medical errors affected risk mitigation and decreased liability claims paid by the MPL. The program evaluation of the outcomes of the MPL's intervention was designed to answer the central question of this project: "Did 5-year multifaceted patient safety and risk mitigation educational interventions in the primary care setting impact patient safety and reduce liability".

Review of Scholarly Literature, Conceptual and Theoretical Framework

Specific Literature

Medical errors in the primary care setting cannot be attributed to a single mechanism of action (AHRQ, 2014; Office of Inspector General [OIG], 2014; RWJF, 2011). There is a vast array of issues that can contribute to errors, such as communication, organizational culture, commonality and meaning of language spoken in the practice setting, and perceived importance (Kettner, Moroney, & Martin, 2008; Pronovost et al., 2009). Three main concerns noted in literature reviews related to

systems, processes, and prescribing patterns (AHRQ, 2014; U.S. Department of Health and Human Services [DHHS], 2015). Statistical reports from AHRQ, CDC, and the IOM suggest that the death toll from errors is estimated at 400,000 or higher, with 1,000 deaths occurring daily, and 10,000 serious complications attributed to medical errors of some sort (AHRQ, 2014; CDC, 2015; CMS, 2015; McCann, 2014). The IOM and AHRQ acknowledge that the numbers may be much higher than reported (NQF, 2010; McCann, 2014).

The OIG, in conjunction with CMS and DHHS, conducted a national study of adverse events and national incidents among Medicare beneficiaries. The 2010 study provided key insight into physician perceptions and behaviors regarding medical error and adverse events. Using the Sudaan statistical analysis program, results for physician rationale for all preventable events (n = 133, CI of 95 %) were as follows: poor communication between caregivers (n = 10, 7.52 %, CI = 3.86 % - 14.14%); error related to medical judgment, skill, or patient engagement, (n = 77, 57.89 %, CI = 49.04 % - 66.27 %); or appropriate treatment was provided in a substandard manner (n = 61, 45.86 %, CI = 37.64 % - 54.33 %; OIG, 2010, 2012; DHHS, 2014). The OIG (2010) report offered that projections related to Medicare costs associated with a medical error that did not include death but resulted in hospital inpatient days for all events (n = 836,646) had an estimated cost of $9,167,576,966 (CI = $8,505,456,013 - $9,826,697,918; OIG, 2010). Although the OIG study is dated, a current study is underway, and preliminary projections indicate cost estimates of medical errors that occur that will result in

hospitalization for Medicare beneficiaries will triple if not be higher (AHRQ, 2014; CMS, 2015; OIG, 2010, 2012).

AHRQ's (2014) Patient Safety Network study of patient safety in the ambulatory setting have identified certain characteristics that influence safety and error type. These characteristics include the role of patient and caregiver behaviors, role of provider and their patient interactions, and the role of community and health systems (AHRQ, 2014). Each of these characteristics can be further examined to assist in identification and understanding of barriers or limitations that create tension in primary care settings and can lead to medical errors.

Accreditation Association for Ambulatory Health Care's Institute for Quality Improvement (IQI; 2014) survey of 334 Accreditation Association for Ambulatory Health Care accredited primary care organizations examined safety attitudes based upon IOM patient safety definitions and adaptation of the Safety Attitude Questionnaire developed in 2006 by Sexton and others (Sexton et al., 2006). Results supported AHRQ's assertions that certain characteristics influence outcomes and error types. The IQI report noted that 27 % of study participants felt communication of medical errors was an issue, whereas another 23 % found difficulty in speaking up when issues were perceived with patient care (IQI, 2014).

Summarization of literature pertaining to medical errors reveals multiple rationales as to why they occur. Unique barriers such as individual attitudes, perceptions, and beliefs can contribute to appropriate understanding, communication, and reporting.

The Controlled Risk Insurance Company (CRICO) /Risk Management Foundation of the Harvard Medical Institutions (2016) conducted a national study on perception of organizational cultures about speaking up, communication issues, and patient safety. Utilizing the Comparative Benchmarking System (CBS), a national database that collects over 350,000 MPL claims, CRICO (2016) indicated that 30 % of cases involved communication errors. Of those cases, 57 % involved provider to provider communication, and 55 % involved communication between provider and patient (CRICO, 2016).

A systematic literature review conducted by Wallace, Lowry, Smith, and Fahey (2013) of 7,152 articles related to the epidemiology of medical errors in primary care related to risk management and educational strategies revealed only 34 studies. These 34 studies examined the correlation of errors, reporting, and common language usage in primary care recommending further research is warranted (Wallace et al., 2013). Elder, Pallerla, and Regan (2006) conducted a systematic literature review of the U.S. National Library of Medicine for medical error definitions and then surveyed the American Academy of Family Physicians, finding that a lack of consensus regarding the definition of an error existed in both literature and physician's perceptions of what constitutes an error.

General Literature

While numerous programs have been in place for decades regarding the problem of medical errors, they have focused on hospitals (NQF, 2010; AHRQ, 2014). Medical

error reporting is not a new problem. The question remains why educational programs initiated by federal, organizational, and private sectors have not been effective. In doing research on the magnitude of the problem, the DHHS (2015) and the CDC (2015) both suggested immediate action be taken to combat the epidemic of errors and the harm they cause. The RWJF (2011), AHRQ, (2014), and McCann (2014) posited that organizational support, economic factors, and the issue of personal accountability in understanding the complexity of the issue must all be explored to effectively address the issue. Creative and effective program planning is needed so educational interventions can be developed that are meaningful and engage the primary care setting (Aspy et al, 2008).

Understanding the behaviors and perceptions of staff and providers in the primary care setting is important (RWJF, 2011). Personal held meaning of medical error type, reporting, and barriers are needed due to limited research in the United States (Nash, 2011). The focus of this needs assessment centered on perceptions and understanding of personal awareness, organizational culture, and norms of staff and providers. A questionnaire or survey tool would be used to explore the individual meaning of errors, language, and reporting. A tool can provide the program planner a global view of barriers, limitations, and where educational interventions are needed (Kettner et al., 2008; Howie, 2009). The overall objective of the needs assessment was to identify health, educational, and resource needs of the target population of the primary care setting (Hodges & Videto, 2011).

Systematic collection of information is directed at identification, antecedents, programming needs, and ideas to provide solutions for the problem, as well as identify possible barriers and limitations to implementing interventions (Hodges & Videto, 2011; Kettner et al., 2008). Due to the enormity of the literature regarding medical errors available, the needs assessment for this paper was focused on the perceived need of those working in the primary care setting. This allowed information to be ascertained regarding knowledge deficits, gaps in education, and perceived importance by staff (Kettner et al., 2008). Although the identified need was education for providers and staff in the primary care setting, clear cut objectives and goals that are directed towards the primary care providers, staff, stakeholders, and organizations one must be decided on. Resources and funding will need to be considered to ensure the feasibility of educational interventions. An action plan would be created that details step-by-step procedures to assist in cohesively collecting and communicating information. Constant evaluation would be needed in each step of the process so that barriers, limitations, and perceptions could be identified to facilitate planning and decision processes (Kettner et al., 2008).

Data collection of medical errors and reporting begins with examining the U.S. population for risk. To understand the magnitude and impact of the problem of medical errors, information from primary and secondary resources provided data to assist in defining what types of interventions or services are needed (Kettner et al., 2008). Qualitative and quantitative research provide information rich insight into how past, present, and future studies contribute to literature and where further study is warranted.

Each methodology can address the problem in terms of interventions, education, and psychosocial, economic, organizational, and cultural barriers from the individual, community, state, and national level (Laureate Education, 2011; Hodges & Videto, 2011).

Secondary sources, such as the National Center for Health Statistics, CDC, WHO, AHRQ, CMS, IOM, National Institute of Health, and NQF can be queried to ascertain public health information and statistics. Primary resources such as reports about questionnaires or surveys on provider attitudes, beliefs, norms, and intent would offer insight into gaps or perceived needs regarding error reporting, meaning of definitions, and the importance of the problem. These resources can further provide data by offering insight and definition of the problem in conceptual or operational terms (Kettner et al., 2008). A social survey or questionnaire may be utilized to investigate the patients', staff's, stakeholders', or organizations' perception of the problem (Laureate Video, 2011). This could provide valuable insight into whether the problem is viewed as an issue within the primary care setting or a fragment of a community or a societal issue.

Dealing with individual, organizational, or community perceptions can provide rich detail as well as limitations (Kettner et al., 2008). Surveys and questionnaires may demonstrate personal attitudes that are in direct opposition to organizational or team philosophy. If staff do not feel reporting medical errors is important, educational interventions must be developed to ensure change. If staff perceive retaliation or repercussions for reporting, a just culture must be introduced. If results suggest that lack

of understanding regarding terminology definition exists regarding what a medical error is, language must be introduced.

Potential challenges can be discovered throughout the evaluation (Kettner et al., 2008). Information discovered would be evaluated, re-evaluated for strengths and limitations, and then discussed with the providers, staff, and stakeholders. Forward movement would include planning interventions to address each problem. Careful analysis of existing systemic literature on what does and does not work is needed to ensure meaningful participation and engagement.

Conceptual Models, Theoretical Frameworks

Multiple theories exist that can and do deal with the complexity of medical error and subsequent reporting. It is this author's opinion that interventions should begin with education of providers and staff in primary care settings. Many studies document the problem. Federal, state, and community programs exist that delve deep into the complex rationale for errors, yet limited research has addressed contributing factors, and the role the primary care setting has in identification and prevention (Howie, 2009; McCann, 2014; Nash, 2011). Provider and staff attitudes and behaviors are key to effective engagement of change (Kettner et al., 2008; Pronovost et al., 2009; White & Dudley-Brown, 2012).

Educational interventions are needed to empower those in primary care that deal with the complexity of prescribing, assessing, or interacting with patients. Ajzen (1985) The Theory of Planned Behavior (TPB) and Fishbein and Ajzen (1975) The Theory of

Reasoned Action (TRA), are well suited to assist in identifying individual provider and nursing attitudes, behaviors, and norms that could be perceived as barriers to understanding and taking ownership for their role of medical error prevention (Goldenberg & Laschinger, 1991; Pronovost et al., 2009; White & Dudley-Brown, 2012). However, for the purposes of this paper the TRA will be utilized for its simplicity, reliability, and validity.

The Theory Reasoned Action (TRA) was developed by Fishbein and Ajzen in 1975. The basic premise of the theory offers explanation of an individual's intentions to engage in certain behaviors based upon the individual's attitude towards performing the behavior, the individual's intention or beliefs, and the subjective norms or perceptions held (Goldenberg & Laschinger, 1991; White & Dudley-Brown, 2012).

The TRA assists in barrier identification, which is needed to ensure successful implementation of program planning for educational interventions regarding medical error prevention and reporting (Kettner et al., 2008; Millstein, 1996). If the providers or staff have preconceived perceptions regarding what constitutes medical error, these beliefs may be their norms, which can affect underlying attitudes, which can inadvertently affect their behaviors (Aspy et al., 2008; Laureate Video, 2011).

The TRA has been used successfully in many different professions from private business to healthcare to predict change and forward movement (White & Dudley-Brown, 2012). The TRA is not one dimensional. It views the individual's attitude, intention to change, norms, towards a specific behavior. The TRA has demonstrated.

validity, is a well-developed behavioral model that can predict many health-related issues such as HIV/AIDS, STD, and physician and nursing student attitudes and behaviors towards these issues (Goldenberg & Laschinger, 1991; Millstein, 1996). The TRA has been used with patients regarding medication compliance, dietary compliance, and numerous other areas where an association exists between attitudes, intentions, and norms affecting behavioral change.

The TRA and its framework allow program planning to extend beyond the provider to the stakeholders, community, and society as it helps explain gaps and needs for change. Although literature supports change from a social and community perspective, one must focus on the minute aspects that can reasonably be addressed at an individual or community level (AHRQ, 2014; Pronovost et al., 2009). The narrowed focus of program planning is especially important due to estimates that a primary care provider would need over seven hours each day to implement the goals and guidelines set forth by The United States Preventive Services Task Forces for recommended preventative services (Aspy et al., 2008; CMS, 2014). In addition, diagnostic and documentation criteria required by governmental, state, and insurance agencies, CMS, and quality reporting initiatives add to the increased burden (Aspy et al., 2008; CMS, 2014).

For the purposes of this program evaluation, the actual premise and concepts of the TRA are conceptualized only. Embracing the basic tenets of the theory to understand attitudes, behaviors regarding medical errors and reporting offered plausible insight only.

Several categories will be extracted from Company XYZ's CRQ. The following questions from the CRQ were utilized:

1. Do all staff members understand the meaning/definition of a medical error? (i.e., standardized language, meaning/definition as to what constitutes).
2. As management, do you feel a common language spoken by all staff regarding what a medical error is?
3. Do staff (all) know how to report a medical error?

Analysis of these questions will assist in identifying behaviors towards reporting and to a degree if an attitude organizationally exists to promote reporting and awareness. Educational interventions can then be facilitated to increase awareness.

Evaluation Framework

The evaluation model selected, Four Stages of Evaluation (FSE), by Kilbourne Neumann, Pincus, Bauer, and Stall (2007), is based upon U.S. Centers for Disease Control and Prevention (CDC) Framework for Program Evaluation (FPE). This framework involves six steps which assist in evaluating systematic and effective interventions developed initially for the public health sector, to assist in guiding practice and policy (CDC, 2015; Kilbourne et al., 2007). The FPE framework differs from traditional evaluation approaches in that it views the evaluation process as ongoing, evaluating change processes over the duration of the program, rather than as a single summative evaluation at the end (CDC, 2006, 2011; Hodges & Videto, 2011; White & Dudley-Brown, 2012). The CDC, along with the World Health Organization (WHO),

utilize the FPE worldwide. The CDC and the WHO utilize the logic and process model to assist in formulating clear, concise steps to ensure forward movement of the entire planning and evaluation process (CDC, 2006, 2011). The FPE offers three approaches to evaluation: (a) a formative approach that seeks to understand how the intervention was viewed by target audiences, (b) a process evaluation to understand if the intervention reached its intended audience, and (c) an outcome/impact evaluation to see what changes occurred or were witnessed (CDC, 2006, 2011). Kilbourne et al. (2007) created an instrument by utilizing components of the Replicating Effective Programs (REP), FPE, The Change Theory, and the Theory of Reasoned Action (TRA) to devise a simple yet effective way to evaluate interventional outcomes called the Four Stages of Evaluation (FSE). This is important as the overall purpose of evaluating outcomes begins at the conception of the idea, or the planning phase, to ensure the intervention or purposed change has merit, is feasible, and will work as planned (CDC, 2011; Gard, Flannigan, & Cluskey, 2004; Hodges & Videto, 2011; White & Dudley-Brown, 2012). Utilizing the premise of the CDC's FPE (2006), the Four Stages of Evaluation (FSE) framework by Kilbourne et al. (2007) offers a guide to evaluating interventions for future interventions. The FSE begins with assessing staff and providers in the primary care settings readiness for change consists of the four phases shown in Table 1.

Table 1

Example Four Stages of Evaluation Framework.

Precondition	for example, identifying need and evaluating audience/ target population of primary care staff and stakeholders for suitability of intervention that is, education on errors and reporting reevaluation needed
Pre-implementation	for example, intervention, questionnaires/ surveys, assessments of knowledge, behaviors, perceptions of medical errors in setting and community input such as claims frequency for practice for example, barriers, costs, and so forth, reevaluation needed
Implementation	for example, training, technical assistance, and evaluation reevaluation needed
Maintenance and evaluation	for example, feedback and evaluation evaluation of strengths, weaknesses, what worked and what did not

Sources: CDC, 2006, 2011; Kilbourne et al., 2007.

Because outcome evaluations should be ongoing continuously assessed process, the FSE allows for change to be implemented at any phase. This can be beneficial with interventions utilizing surveys, assessments, questionnaires, or other types of measurement tools that are geared towards behavioral, cultural, or attitudinal change (CDC, 2011; Gard et al, 2004; Hodges & Videto, 2011; White & Dudley-Brown, 2012). The FSE have demonstrated validity in a multitude of public health settings, such as HIV/AIDS prevention, immunization, adolescent risky behaviors such as drugs,

pregnancy, and STD prevention, nutritional, and mental health programs (CDC, 2011; Kilbourne et al., 2007).

Because the FPE, REP, and FSE are widely used worldwide, the validity of the framework is well established. International and national policy guidelines on health prevention utilized by the CDC, WHO, IHI, and a bevy of other organizations have adapted the frameworks to ensure development is based on research evidence of the highest standard (AHRQ, 2014; CDC, 2011; Hodges & Videto, 2011). Interestingly, the FSE is ideally suited to programs where interventions are directed to fostering behavior, perception, or attitude changes. The underlying constructs of the FSE are built upon Change Theory and the TRA. Each instrument builds upon the premise of utility (knowing who needs the evaluation and receiving it in a timely manner), feasibility (is it realistic, cost effective, and obtainable), propriety (serving the needs of those who need the intervention, protecting rights and welfare), and accuracy (valid, reliable, and useful information; CDC, 2011; Hodges & Videto, 2011). As previously noted, use of the TRA and FSE offer potential guidelines for future interventions.

Stewardship

Each year it is estimated that over 3.3 million medical errors occur annually in the outpatient setting (NQF, 2010). This number may be low as there are limited studies to support medical errors in the primary care setting. A possible reason for that may be found in how medical errors, patient safety, and reporting are defined. Per Colla,

Bracken, Kinney, and Weeks (2005) differences in definition and meaning existed between patient safety, patient outcomes, reporting and what constitutes an error.

Crane et al. (2015) examined multiple primary care practices regarding reporting, including definitions and potential taxonomy barriers. Crane et al. concluded that common language and meaning offer better understanding and compliance. Kirk et al. (2007) offered that use of established language, taxonomy, and frameworks assisted the practices in understanding meaning, which can be better operationalized. Discovering individual perceptions of the definitions of meanings of terms can identify areas where educational interventions can be deployed. Kirk et al. (2007) offered that shared meaning, definition, values, and beliefs help shape behaviors, which in turn help enforce cultures within an organization. Standard definitions and meanings will also improve overall quality, as there will not be deviations due to ambiguous personal meaning. Surveying all staff would offer the ability to increase quality through understanding, awareness, and risk identification.

Past qualitative research conducted by Dovey, Phillips, Green, and Fryer (2003) of practicing physicians in primary care (N = 416) found five distinct patterns of medical errors, related to prescribing (54%), the correct laboratory or diagnostic testing (16%), on the correct patient in an appropriate time frame (27%); system issues (25%); dispensing medications (57%); and follow up on abnormal testing (16%). Hickner et al.'s (2008) study demonstrated similar results, with medical errors (N = 590) consisting of reported

events of test ordering (12.9%), follow up (24.6%), patient notification (6.8%), communication (5.7%), and system issues (14.5%).

Schiff et al.'s (2013) retrospective examination of pooled closed claims of two Massachusetts MPL companies during a five-year period found primary care practice claims (N = 551), with medical error types as follows: diagnosis (72.7%), medication (12.3%), medical treatment (7.4%), communication (2.7%), patient rights (2.0%), and patient safety (1.5%). Data analysis from Company XYZ will provide information demonstrating that multifaceted educational interventions pay play a pivotal role in mitigating risk and improving patient safety.

Summary

As discussed, the impact of errors is far-reaching. Developing a sense of stewardship within the organization as well as the individual will assist in change and accountability. O'Hagan & Persuad (2009) suggested that to adequately address stewardship we must first understand that creating a culture of accountability begins with addressing the organizational culture. O'Hagan & Persuad (2009) acknowledged that most organizational change will not succeed due to human, financial and physical resources, and individual acceptance of responsibility for varied roles in the cultures process. The concept of accountability or stewardship is not only ethically responsible, but also promotes quality improvement, mitigates risk, and improves patient safety. The goal of creating a culture of accountability is to create environments of continuously learning (O'Hagan & Persuad, 2009). Cultural accountability creates continuous learning

promotes acquisition and use of new knowledge as a strategy for coping with change, and recognizes the critical need to empower the individual to their role in learning and participate in continuous improvement (Scott, Mannion, Davies, & Marshall, 2003). In the primary care setting, the use of the TRA can identify barriers which can allow for interventions to be introduced that promote cultural and individual accountability. If knowledge deficits, system issues, and ill-defined or misunderstood processes are not addressed, the environment is set for errors.

Research exists that postulate multiple rationales as to why medical error reporting remains difficult in healthcare. Communicating information can be riddled with differing opinions and thoughts about medical errors. Stakeholder involvement may not always arrive at agreement as to importance medical errors. Stakeholders may not feel the need to disseminate information due to failure to understand the goals, objectives that address the issue of errors and reporting. When disagreement occurs from an organizational, stakeholder, and end user perspective, evidence-based information must be utilized to validate the magnitude of the issue from multiple perspectives, viewpoints, and understanding (Hodges & Videto, 2011).

Section 3: Collection and Analysis of Evidence

Introduction

Medical error data reporting has existed for decades (AHRQ, 2014). The Patient Safety and Quality Improvement Act, also known as The Patient Safety Act, (Public Law 109- 41) was created to report patient safety events, specifically medical errors. In addition to the Patient Safety and Quality Improvement Act, the Patient Safety Rule (42.C.F.R. Part 3) was established to create Patient Safety Organizations designed to address safety issues that cause harm, injury, or adverse events to a national databank (DHHS, 2014; Howie, 2009). This information, along with the CMS Final Rules, established the PQRS, encouraging physicians' practices to submit indicator reports for safe practices (AHRQ, 2014). Information obtained from these federal entities provide detailed data related to patient safety and medical error events. This information can assist in understanding the enormity of the situation from a community, organizational, and social perspective.

Information gleaned from AHRQ, Patient Safety Organizations or PQRS reports may provide worthwhile insight into patient safety and medical errors. Yet the same information may create challenges in deciphering data into useful information. The United States does not have a mandatory reporting system for medical errors (DHHS, 2014). Currently, the U.S. system is based on voluntary reporting, which may not truly reflect the scope and severity of the problem (Howie, 2009). The purposes of this program evaluation involved evaluating summative outcomes of an MPL carrier's

multifaceted patient safety educational interventions conducted in selected Nebraska primary care settings. The practice issues of concern addressed were whether the use of the PQA assessment, CRQ reported findings, and actuarial occurrence and claims data supported that these interventions influenced primary care practice outcomes in Nebraska related to risk mitigation and reporting. Specifically, it addressed whether it increased staff awareness of patient safety, increased reporting of medical errors, and decreased frequency of liability claims.

Research is limited regarding outcome evaluation of MPL company efforts to proactively engage in educational interventions to address medical errors. This program evaluation considered that few if any comprehensive assessments have been performed to evaluate the effectiveness of an MPL insurer's assessments and educational approaches related to error prevention, recognition, and reporting, or to the incidence of medical errors related to malpractice claims. The specifics of the program evaluation were retrospective and summative.

Project Design/Methods

Prior to commencement of activity, ethical considerations were addressed and Walden Institutional Review Board (IRB) queried for permission. The Walden IRB approval number for this study is (12-01-16-0187925).

The evidence based practice project was a program evaluation of a major MPL company's efforts to improve medical error reporting, patient safety, and risk mitigation. The practice issue of concern related to past educational interventions and whether they

influenced outcomes of increased reporting of medical errors and claims. Per Phillips et al. (2006), past studies from malpractice claims in primary care suggest that medical error related outcomes have been substantial, resulting in serious harm, financial burden, and death.

Actuarial retrospective data of Company XYZ's past educational interventions conducted in primary care practices were examined to determine whether an association existed with four outcomes of interest: (a) staff awareness of common language, (b) errors and reporting, (c) staff adoption of best practices (PQA comparison), and (d) claims paid and frequency.

Population and Sampling

Company XYZ is a multistate MPL carrier with a primary focus on proactive patient safety and risk management. Company XYZ entered the Nebraska market in 2003, with subsequent insured interventions beginning in late 2004/ early 2005. Nebraska was selected for this program evaluation project due to Company XYZ's fresh approach to risk mitigation and its newness in the state. From a PCP perspective, the concepts of proactive patient safety and risk management were new. Utilizing principles of knowledge management along with knowledge integration of risk mitigation strategies allowed for an ideal sample of Nebraska PCPs to be selected to address the purpose of this study.

A random sampling of 10 Nebraska PCPs were selected from Company XYZs Nebraska database. Selection criteria included the following: actively insured by

Company XYZ, insured before or as of 2010, and engagement in PQA interventions on at least two occasions from 2010-2015. Exclusion criteria included not participating in PQA interventions. The random sampling offered those PCPs meeting inclusion criteria the opportunity for selection. To ensure randomness, those meeting criteria names were blindly selected by a third party and the information provided to Company XYZ actuarial representative for outcome data evaluation extraction. The use of a retrospective outcome evaluation design ensures that the identified sample (10 Nebraska PCPs) have experienced PQA interventions, with the ability to engage in proactive reporting of patient safety and risk management services (Grove, Burns, and Gray, 2013).

Data Collection

Data evaluated from Company XYZ were both qualitative and quantitatively derived from internal analytic software and actuarial review. Due to the proprietary and confidential nature of the data, I was provided de-identified statistical data in Excel spreadsheet form. Nonparametric testing was used to analyze categorical data of central tendencies of averages and percentages for ease of use. Three secondary sources of data from Company XYZ were evaluated for outcomes. These included PQA data, CRQ responses, and actuarial occurrence and claims data. These data sources offered evaluation of the four outcomes areas of interest: (a) staff awareness of common language, (b) errors and reporting, (c) adoption of best practices (PQA), and (d) claims paid and frequency. I expound upon data collection methodology in the four outcome areas of interest below.

Staff Awareness of Common Language

The Customer Reporting Questionnaire (CRQ) is an internal document developed by Company XYZ to understand insureds' responses to what they deem important to their practice in terms of reporting. It contains a total of 19 questions, with two follow up questions. A total of 45 outpatient clinics participated, five from Colorado and 40 from Nebraska. The five Colorado practices were omitted from results and the CRQ became exclusively from Nebraska. The CRQ contains structured yes and no questions. The CRQ utilized open ended yes/no questions that elicited individual responses. The CRQ contained two sections. The first 12 questions related to demographics, to whom they report data, and what is important to them in terms of reporting. Questions 13-19 addressed internal processes regarding medical errors, reporting, language, and how and who reports.

For the purposes of this evaluation, a subset of straight yes and no questions were extracted from Questions 13-19. Through the evaluation outcomes I sought to understand staff awareness that a common language was spoken. Nonparametric testing was used to analyze categorical data of central tendencies of averages and percentages provided via actuarial representative. Data was presented in an Excel spreadsheet in the form of averages and percentages from selected questions and analyzed for results. I noted that the CRQ results may or may not obtain information from the study population. The CRQ results were evaluated for this study due to the richness of responses and correlation to outcomes that I sought to evaluate related to medical errors.

Errors and Reporting

I evaluated two areas of secondary data for outcomes related to errors and reporting. These were the CRQ and actuarial data from Company XYZ's closed database. CRQ yes/no questions were evaluated related to reporting of errors. Informational data was presented via actuary in an Excel spreadsheet in averages and percentages for analysis and interpretation.

Archival data provided by company XYZ was disseminated via an actuarial representative. Due to the confidentiality, security, and proprietary nature of the data, Company XYZ provided de-identified evaluation data via Excel spreadsheet for evaluation. Interpretation and analysis of data provided medical errors or occurrences reported to Company XYZ. Nonparametric testing provided information of averages and percentages, of actuarial statistical data. Data evaluated for this project did not include error/occurrence type- only if it were reported. These types of information provide knowledge that can reinforce the purpose of the study and provide new insight (Groves, Burns, & Gray, 2013).

Adoption of Best Practice—Practice Quality Assessment Data Comparisons

Archival retrospective data from 2010-2015 PQA intervention for the study population were extracted via Company XYZs actuarial representative. Outcomes related to PQA assessments from 2010-2015 were evaluated, specifically LOG criteria. LOG criteria are broken down into system, process, and communication questions that assist in identifying high risk areas that have resulted in error and claims. Company XYZ asks that

an action plans to correct identified areas of concern on the PQA LOG criteria be completed. Statistical data were presented via actuarial representative in an Excel spread sheet. Data were de-identified. Only averages and percentages for year and PCP and if they were engaged in a specialty service were available.

Claims Paid/Frequency

Archival retrospective data from 2010-2015 occurrences reported, claims paid history and frequency for the study population were extracted via Company XYZs actuarial representative. Following the same internal process, evaluation data were presented by an actuarial representative in Excel spread sheet format. Data analysis examined claim frequency or reporting of incidents or occurrence reported to Company XYZ for the defined time. Frequency evaluation related to the number of occurrences, claims, and actuarial projection of potential future reporting. Claims data evaluation was represented by the number of reported occurrences to Company XYZ that went on to become claims paid. Once again, note that no attempt was made to extract type or nature of occurrence or claim paid.

Data Analysis

Archival data was categorized into four areas. Data analysis evaluated PQA interventions, CRQ reports, claims/ frequency, and reporting of occurrences to Company XYZ in the defined period.

Table 2

Archival Data Analysis Plan.

	Common	Quality	Error	Summative

	language/	monitoring	reporting	outcome of interest: Claims paid
Archival data analyzed	Survey data (CRQ)	PQA reports	Errors	Claims paid

Data from the CRQ was analyzed. These data will be used to answer the question of whether staff speak a common language related to medical errors and reflective of Company XYZs outcome data.

Data from the PQA interventions provided by the MPL actuary indicate "criteria meet" for specific categories that constitute LOG criteria. Theses LOG criteria are comprised of the following: (a) patient follow up tracking, (b) referral tracking, (c) test tracking, (d) informed consent, (e) allergy, (f) medication, and (g) documentation of patient communication. These data represent the overall results of the practice in terms of adopting best practice advice from both educational interventions and proactive risk mitigation strategies.

Data from error/occurrence reporting provided by the MPL actuary. These data will support whether the MPL interventions resulted in more refined reporting of errors/occurrences. As well, nonparametric data from claims will be analyzed to address the fourth outcome of interest, overall impact on claims filed and paid. All results and analysis will be further presented in Chapter 4.

Summary

Aspy et al. (2008) indicate that medical errors and subsequent causes can be directly related to both organizational and individual culture. Aspy et al. (2008) goes on

to state that personally held beliefs and attitudes directly affect staff understanding of the importance of medical errors which contributes to underlying barriers of actual reporting. While the culture of an organization may have lofty goals to prevent errors, stakeholders must look to the end user, those who engage in direct patient care such as staff and providers, to understand barriers that impede forward movement (Kettner et al., 2008). If a culture of fear, knowledge deficits, system issues or ill-defined or poorly-understood processes exist, the environment is set for errors. There are abundant research studies that postulate many rationales as to why medical error reporting remains difficult in healthcare (AHRQ, 2014). Data from this study may offer insight into whether multifaceted educational interventions do in fact assist in reducing medical errors, increasing standardized language, and increase reporting.

Section 4: Findings and Recommendations

Summary of Findings

The purpose of the program evaluation was to examine whether multifaceted educational interventions conducted by Company XYZ increased staff and provider awareness of medical errors in the primary care setting, thus increasing reporting. Archival actuarial data from Company XYZ of 10 randomly-selected PCPs in Nebraska were evaluated for summative outcome measures to address the following parameters:

1. Staff awareness of common language.
2. Errors and reporting.
3. Adoption of best practices – PQA data comparisons
4. Company XYZ's claims paid and frequency.

Prior to data extraction, written permission and consent was obtained from Company XYZ's senior management and legal department. An overview of the premise of the program evaluation, archival data extraction, and intent of project were discussed with Company XYZ's CEO, operational director, and actuary. The goal of the program evaluation utilized findings to promote best practices and create new interventions that support and encourage promotion of better understanding and awareness of medical errors, error reporting, and common language to promote quality and safe patient care. Retrospective data analysis of CRQ results, PQA results, claims frequency, and insured occurrences reported to Company XYZ from 2010-2015 was performed to ensure overall accuracy and pattern variability. Utilizing Excel programs, summative actuarial data,

graphs, and figures were created to visually depict results. Statistical measurement utilized evaluated nonparametric testing of categorical data to obtain central tendencies of mean averages.

Discussion of Findings

Ten primary care practices in Nebraska that engaged in PQAs within the 5-year time frame were randomly drawn from Company XYZ's data base. These PCP practices were evaluated to determine whether the 5-year multifaceted patient safety and risk mitigation educational interventions impacted patient safety and reduced liability in the primary care setting. Archival data were analyzed from the following sources: CRQs, PQAs, and claims data. The following parameters were evaluated.

Parameter 1. Adoption of Best Practices—Practice Quality Assessment Data Comparison

The PQA offers practices of all specialties the opportunity to engage in an in-depth review of systems and processes that assist in risk reduction. The use of assessment tools such as the PQA offer the practices an avenue to identify and address risky behaviors, processes, or systems in the outpatient clinical setting. Company XYZ's PQA has demonstrated validity based upon years of actuarial data that correlate trends, patterns, and themes to compare them against known organizations that conduct similar assessments such as AHRQ, ECRI, and PIAA.

Archival evaluation of actuarial data from Company XYZ's PQA data from 2011-2015 demonstrated consistent patterns of meeting best practice criteria, or LOGs. Results

from year 2010 were not used as this was the first year PQAs were completed in Nebraska. Analysis of the 10 PCPs using 2010-2015 data revealed an average of 89 % LOG criteria were met. Figure 1 depicts those meeting LOG criteria. Data from the PQA indicates that slight improvement from 2011 to 2015 occurred, and LOG criteria scores remained above a 50 % threshold. These data suggest that the educational intervention of participating in the PQA may have had an impact on systems and processes. Current research and literature suggest that the relationship between best practices, such as LOG criteria—that is, of having adequate systems and processes in place—are known to decrease the risk of errors (AHRQ, 2015).

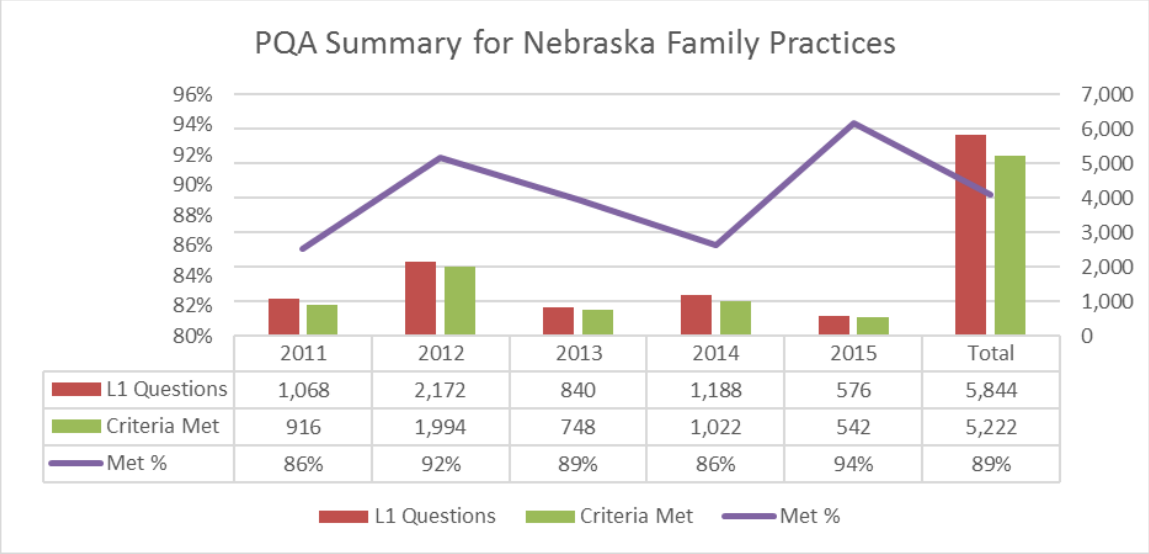

Figure 1. PQA summary for Nebraska family practices.
Note: Results from year 2010 were not used as this was the first year PQAs were completed in Nebraska. 2011-2015 data revealed an average of 89 % LOG criteria were met. LOG criteria scores remained above a 50 % threshold. *Reference: Company XYZ, 2016.*

Parameter 2. Staff Awareness of Common Language

An archival evaluation of Company XYZ's CRQ was conducted to examine responses as they relate to staff awareness of a common language. The CRQ surveyed 40 random outpatient clinics in Nebraska to understand what perceptions were held of medical errors, their processes, and reporting structure.

With regards to the CRQ, I was not privy to whether the 10 practices randomly selected for the program evaluation were imbedded within the total responses to the CRQ. No attempt was made to evaluate this aspect. Utilizing a quantitative summary approach, the following questions were evaluated:

1. Do all staff members understand the meaning/definition of a medical error (i.e., standardized language, the meaning or definition as to what constitutes)?
2. Does management believe a common language is spoken by all staff regarding what a medical error is?

Results for Parameter 2, Question 1. I found that of the 40 practices surveyed on the CRQ, 85 % answered no and 15 % answered yes.

Results for Parameter 2, Question 2. Results from the CRQ indicated that 85 % answered no and 15% answered yes. These results raise concerns, as they support current literature suggesting the need for standardized meaning of what constitutes medical errors to ensure commonality of language nationally and globally (AHRQ, 2015, CDC, 2015, IHI, 2012).

Parameter 3. Errors and Reporting.

Multiple methods were used to answer the following question: Did the multifaceted interventions result in increased reporting? Retrospective evaluation of CRQ data was first analyzed addressing the question.

The first sub-question asked was: Do staff know how to report? Results from the CRQ, as well as anecdotal reporting, indicate staff reported medical errors to management 65% of the time. Based upon the small evaluation population, these results suggest that reporting of medical errors or other events that create misadventures may be poorly understood within the primary care setting.

To further evaluate whether "multifaceted interventions result in increased reporting," findings from actuarial data of the 10 PCP's were examined. Data supported that reporting of medical errors to Company XYZ varied by primary care practices that offered specialty care services such as minor surgery and obstetrics. Figure 2 offers a breakdown PCPs by specialty of occurrences reported during 2010- 2016. Results of the evaluation demonstrated a lack of reporting.

Of greatest concern were family/general practice minor Surgery practices. Results demonstrated that little if any reporting through the years of 2010-2016 was done, with only one occurrence reported in 2016. These data were double checked for accuracy through secondary actuarial data extraction. Evaluation confirmed the results that only one occurrence was reported to Company XYZ in the year of 2016. Data evaluation indicates that rates of reporting did not increase given only one report. This data was

supported by claims frequency for PCP doing minor surgery with zero claims from 2010-2015, and one claim reported in 2016. Evaluated data suggests that the other PCPs were reporting; however, the average was low.

When evaluating if a gap in knowledge exists related to understanding regarding reporting, claims frequency is reflected through what is reported as occurrences. If the PCPs do not report, it is reflected in frequency of potential claim projections. These results suggest that gaps in knowledge exist based on low number of reports compared to the frequency of claims. Data evaluation indicated further study is required for understanding why these practices do not report. These results are supported by literature that suggests PCPs may not fully comprehend the importance of medical errors nor understand the correlation to malpractice claims (Dovey and Wallis, 2011; IHI, 2011).

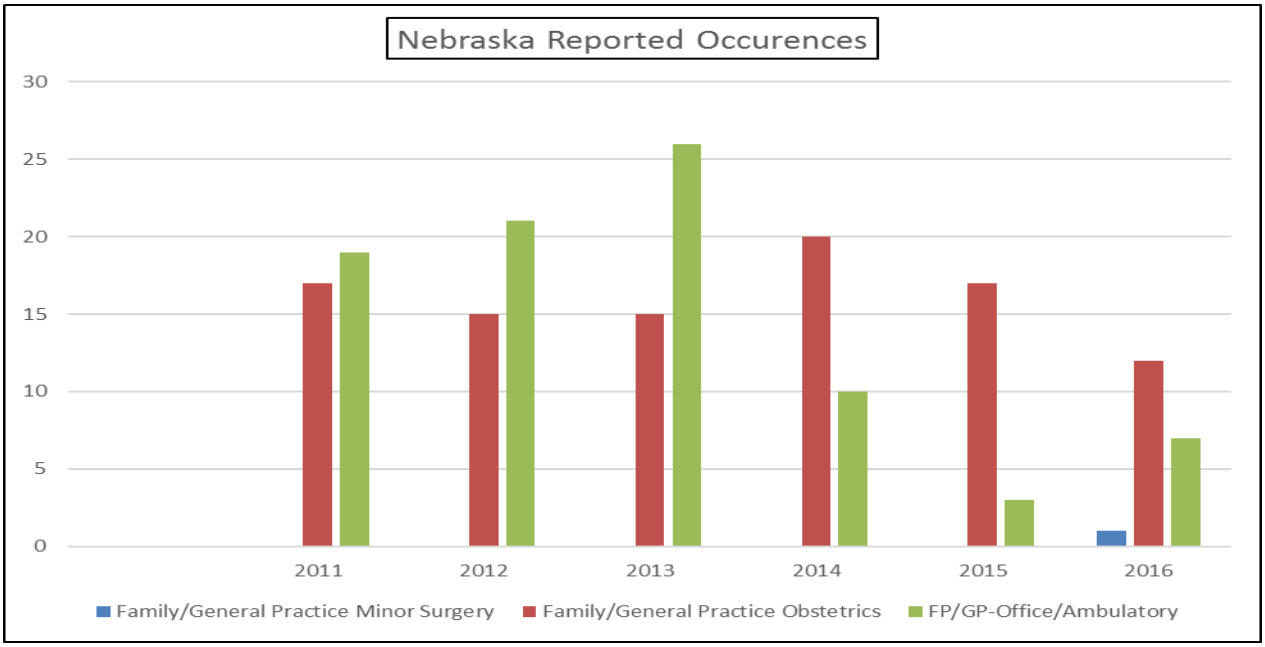

Figure 2. Nebraska reported insured occurrences (medical errors) by family practice. The Y-axis represents number of reported events. *Reference: Company XYZ, 2016.*

Parameter 4. Company XYZ's Claims Paid and Frequency

MPL companies utilize formulas to predict severity and frequency of claims. Severity refers to the cost of the average claim, which include predicting the potential cost of the medical error and risk of potential court action (Anderson, 2007; PIAA, 2016). Frequency refers to potential, or odds that a claim may occur in a defined population of insureds (Anderson, 2007; PIAA, 2016). As an example, a frequency of 0.10 means that a group will have a reported claim 10 % of the time each year (Anderson, 2007; PIAA, 2016). Per the PIAA (2016), the national trend for frequency is between 15-35 %. Evaluation of Company XYZ's actuarial data demonstrated a negative frequency. This indicates that the 10 PCPs evaluated fell well below the national standard.

Figures 3 and 4 offer evaluation of actuarial data from Company XYZ's Claims Paid and Frequency. Overall, a negative frequency was noted for the 10 practices from 2010 to 2015. Data revealed that FP doing general obstetrics (-40%), FP doing C-sections (-9%), and general FP (-17%.) experienced negative frequency. These results indicate that the 10 PCP practices had a negative frequency that a claim was reported during 2010 -2015. These results support the CRQ findings related to understanding of medical errors, the frequency of reporting, to actual claims generated. Figure 3 reflects the negative frequency of the 10 practices, indicating that when actuarially extrapolating data of how often an occurrence was reported, a discrepancy existed between the reporting and actual claims made. While this study does not break down the occurrence

type reported, nor the actual event for claims made, the negative frequency suggests how often occurrence reporting will occur. These results call into question the CRQ results of staff reporting potential or real medical errors 65 % of the time. One must question to whom these errors were reported, and if follow-up reporting to Company XYZ occurred. This question requires further research. This issue is important because MPL companies rely on their insured to report medical errors. This allows for budgetary predictions, so monies can be set aside for preemptive strategies, litigation costs, and payout.

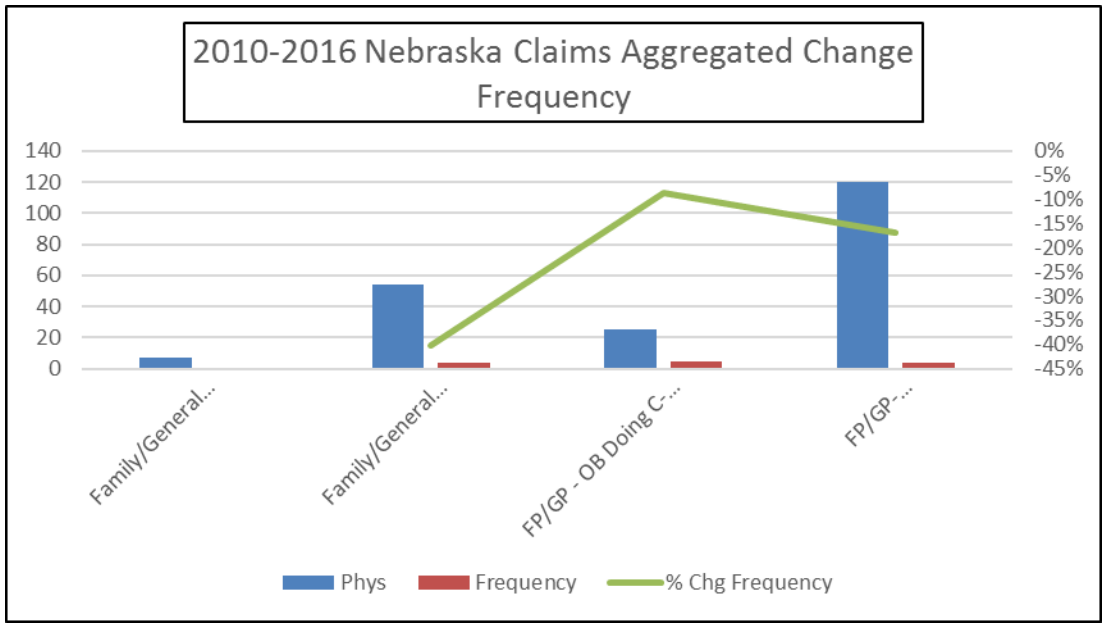

Figure 3. Nebraska claims aggregated change frequency.
Note: Physicians is abbreviated as phys and is represented in blue. Frequency is represented in red. The right Y axis denotes the number of responses of medical errors reported. The left Y axis indicates frequency with the averaged <120 medical errors reported. *Reference: Company XYZ, 2016*

Figure 4 demonstrates the frequency of occurrence reports that went on to become claims and the average dollars paid. From 2010 to 2016 less than 120 medical errors

reported to Company XYZ went on to become paid claims that exceeded payout of $70,000 per incident. When evaluating aggregated data compiled from 2010-2016, paid claims demonstrated that those practicing in Family Practice Ambulatory/Office had the highest risk per dollar in claims paid by Company XYZ. This means that after breaking down the different subgroups of the 10 evaluated primary care practices, those who are generalist or practiced in the ambulatory setting had the highest number of claims and dollars paid to litigate or settle the case.

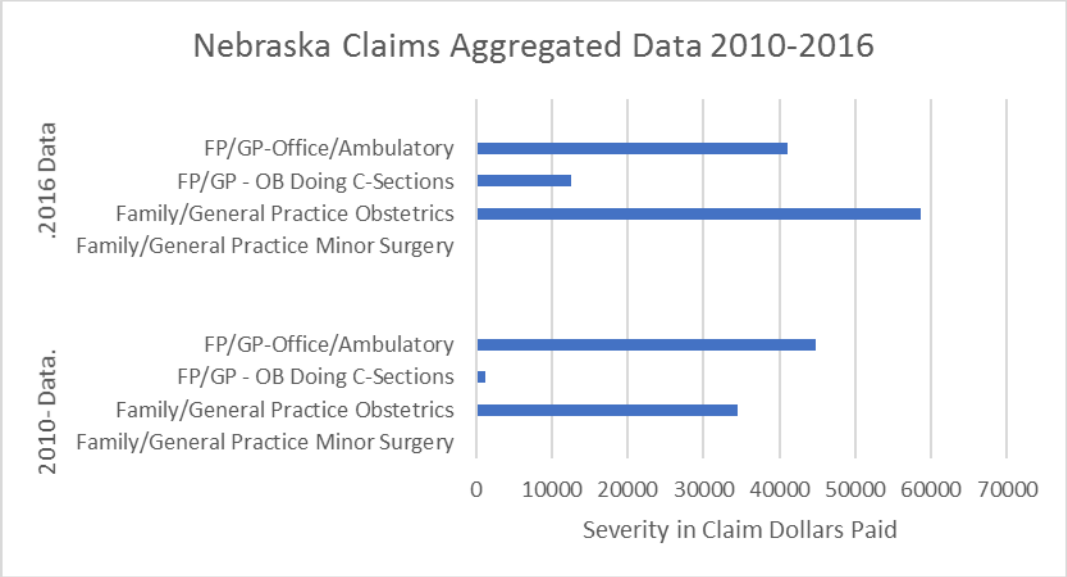

Figure 4. Nebraska claims aggregated data 2010-2016.
Note: The Y-axis reflects FP with noted specialties and dollars paid in claims for 2010(bottom) and 2016 (top). X-axis denotes severity which indicates the number of dollars paid. *Reference: Company XYZ, 2016.*

When evaluating reporting, frequency, and claims paid, no attempt to extract demographical data for physician, NPs, or PAs patient's numbers, patient encounters, nor breakdown of claims into actors involved occurred. Future research is needed to evaluate

determinants that are involved in occurrences reported, and potential relationships or causative factors.

It is important to note that if practices are unaware, do not understand, or do not engage in the reporting process of medical errors, Company XYZ and other MPL carriers are at a disadvantage. Company XYZ has identified an averaged 400-day delay of reporting medical errors in Nebraska (Company XYZ Actuary, personal communication, December 5, 2016). Because of the low number of occurrence reports submitted to Company XYZ, frequency, severity, and limit setting of dollars amounts for future claims may be hard to predict. This is also important in the context of data analytics, predictive data, and epidemiology of data that are reported nationally to organizations such as IHI, CDC, AHRQ, and CMS that track and trend medical errors and their outcomes.

Summary of Evaluation

This program evaluation is a first attempt to assess results of multiyear, multifaceted interventions to raise awareness of best practices needed to recognize and reduce medical errors. This attempt to assess results is to ensure prompt reporting on a routine basis, or as errors occur, to improve patient safety, mitigate organizational risk, societal impact, and reduce serious financial harm. In summarizing the overall assessment of whether educational interventions conducted by Company XYZ were successful in assisting in (a) understanding medical errors, (b) speaking the same language, and (c) reporting errors, it could be surmised the interventions were not successful. Analysis of the CRQ indicates that neither a common language was spoken

nor was there a clear understanding of what constitutes a medical error. This supports occurrence report frequency and claims paid. PQA and CRQ reported data merit discussion and exploration. The results suggest staff are reporting 65 % of the time and meeting LOG criteria on the PQA 89 % of the time. These results suggest a gap exists in knowledge, and interventions must be created to address the deficit and empower PCPs for best practices. A possible rationale for the results of the PQA may be that practice representatives, usually management, participate in the PQA discussion and answer questions. This could indicate a disconnect between management and staff regarding actual day-to-day functions, or a knowledge deficit existing between them. This requires further exploration.

Results presented in this study support emerging research that outpatient care, especially primary care, lack consistent reporting systems that focus on language and meaning to adequately understand medical errors that necessitate reporting (Dovey & Wallis, 2011). This is supported by Wallace et al.'s (2013) systematic review that found primary care in the U.S remains in the top five categories for malpractice claims. This can be related to generalization of medical error definition in primary care setting, lack of educational interventions to ensure understanding and awareness of reporting, or how these factors can manifest in system and process failures that increase risk.

Evaluation of the four specific areas examined suggest there has been limited movement of management and staff towards understanding of medical error meaning/definition, commonality of language spoken, importance of reporting, and the

frequency of reporting. While disappointing, these results are in line with the current research and literature first addressed in the IOM report in 2001 that medical errors remain an issue and are now the 3rd leading cause of death in the U.S (IOM, 2001, Makary, 2016; Rice, 2016).

Project Strengths and Limitations

Interventions that deal with broad topics such as medical error reduction can be difficult to evaluate due to multiple individual and organizational variables that can affect success. Understanding the complexity of human behavior and the perceptions one holds related to errors can be supported through use of selected components of The Four Stages of Evaluation (FSE) framework by Kilbourne et al. (2007) to assess staff and provider's readiness for change. Basic understanding of the Theory of Reasoned Action (TRA) allows the planner of the proposed interventions to quickly assess the target audience. Awareness of potential barriers allows one to be cognizant of possible organizational and individual perceptions that can create barriers to change (McNabney, Willging, Fried, & Durso, 2009). This knowledge can be viewed as strength, as it can offer quick assessment while conducting a live educational intervention. This may also present challenges, thus creating limitations.

One limitation of the summative program evaluation is that it did not have a formative assessment of implementation' or an assessment (evaluation) of how the educational intervention were designed, and whether the intervention met the needs of staff and providers (Kettner et al., 2008; McNabney et al., 2009). Utilizing a retrospective

format does not allow for changes to be made based upon feedback (Hodges & Videto, 2011). A strength is that the researcher does not have bias as to the methodology used for intervention. This creates objectivity.

Upon reflection of the project, one must acknowledge the complexity affecting primary care practices that can create an error rich environment. Research suggests barriers exist that must be explored to successfully introduce interventions that promote an understanding so that change can be introduced that mitigates risk and promotes patient safety. Past research indicates that educational interventions regarding medical errors have mixed outcomes (Dovey & Wallis, 2011). It is recommended that future research be implemented to ensure the above-mentioned limitations are explored. Future research is needed to replicate the study by other MPL carriers. Studies should also address barriers, language, reporting, and staff accountability.

Analysis of Self

Scholar/Practitioner/Developer

Disseminating the findings and implications is an important purpose of formulating a program evaluation project that can be used to facilitate change. As a scholarly practitioner, the thought behind the program evaluation project was one to create awareness for the nursing profession, healthcare, patients, organizations, and society. Walsh (2010) offers that professional nursing development consider incorporating a variety of methodologies to disseminate information at a global perspective for impact and understanding. With medical errors now the third leading

cause of death in the United States, dissemination of scholarly information that is practical, addresses the issue, focuses on the ability to recognize what an error is, enforces speaking the same language, and fosters personal accountability, may aid in prevention (CDC, 2014; Makary, 2016).

Walden University and the professional instructors have fostered the ability to become a scholarly practitioner through positive role modeling, leadership, and institutional excellence. Curriculum and project implementation have allowed for incorporation of evidence-based practices and utilization of AACN (2006) essential principles for the DNP student to demonstrate competent understanding to act as a change agent and promote scholarship. These essential principles support Walden Universities Individual Student Learning Outcomes (ISLO) of scholar/evidence-based practitioners, leaders and change agents, educators and consultants, professional collaborators, effective communicators, healthcare providers, and lifelong learners (AACN, 2006; Walden University, 2011).

The DNP project allowed continued growth, to meet both ISLO and AACN (2006) Essential II, to develop organizational system changes that advance patient safety and lead to improvement in quality of health care delivery. This was manifested through the desire to understand why medical errors continue to occur, and their subsequent impact on society. Essential VI allows for employment of effective collaboration skills both interdisciplinary and intra-professional teams to improve patient and population health outcomes (AACN, 2006). This was demonstrated through collaboration with

peers, instructors, the insured, management, and organizations within the community (AACN, 2006; Walden University, 2011). AACN (2006) Essential VII and VIII, apply sophisticated advanced nursing practice knowledge to support the design, implementation, and evaluation of comprehensive approaches that promote patient and population health outcomes. The undertaking of this study and the overall importance to society demand that this DNP take an active role to understand and disseminate knowledge gleaned to the profession, colleagues, patients, and society as a whole.

Summary

Research is continuing to explore the preventable problem of the prevalence of medical errors, and their capacity to impact patients, organizations, and society. Examining medical errors from a MPL provider perspective may assist in exploration of overall reporting barriers. Strengths of the program evaluation demonstrate the need for evidence-based programs to be developed, which focus on standardized definitions and language so that we understand what constitutes a medical error. Many limitations are noted as this one of a few studies from a MPL carrier that evaluates the need for increased efforts to promote change. As a scholarly practitioner, change will begin with basic understanding of staff's preconceived barriers so interventions can be developed that promote and facilitate change.

Section 5: Scholarly Dissemination of Product

Analysis of Findings

The overall purpose of the DNP project was to evaluate the impact of Company XYZ's use of proactive risk strategies and multifaceted educational interventions on insureds. The goal of the project was to evaluate outcomes of selected data in four areas of interest over a 5-year period in 10 randomly selected PCP practices in Nebraska. I hope that the evaluation outcomes presented in this report are used to create discourse, facilitate recommendations for future interventions, and promote change to better serve the organization, community, and society.

The purpose of this program evaluation was to use archival data to evaluate the following question: Did 5-year multifaceted patient safety and risk mitigation educational interventions in the primary care setting impact patient safety and reduce liability? The first parameter evaluated whether the 10 PCPs that were evaluated adopted best practices based upon PQA assessments, LOG criteria, and subsequent educational interventions to assist practices in implementing systems and processes. LOG questions represent Company XYZ's and other national MPL carriers' top litigators. Results indicated the PCPs did have systems and processes in place based upon results. Further research is needed to ensure that the practice representatives who answered the questions reflected what occurred in the practice. Comparing PQA data and CRQ findings to the actual occurrences reported and frequency of claims, the results beg further investigation.

The second parameter evaluated was related to staff awareness of a common language. The data illustrated no improvement in the intended program evaluation outcomes. It can be assumed from data analysis that PCP staff do not have a good understanding of what constitutes a medical error, nor is a common language in place. Weinger, Slagle, Jain, and Ordonez (2003) and Sandars and Esmail (2003) concluded that many definitions of medical error exist. This ambiguity leads to varied perceptions by individuals, which complicates reporting. The project evaluation findings are consistent with literature addressing the importance of standardized taxonomies, languages, and understanding (AHRQ, 2014; CRICO, 2015; Nash, 2011).

The third parameter evaluated, errors and reporting, found mixed results in the intended program evaluation outcomes. Analysis of data revealed that less than 120 medical errors were reported in a 5-year period from the study sample of 10 PCPs. This does not support expected outcomes and raises concern. Results based on actuarial data average 18 reports per year from 10 practices that in the past have engaged in multifaceted interventions to raise awareness. These results suggest that reporting of medical errors must be reinforced to ensure accountability and understanding of the importance of reporting.

These findings are consistent with literature and research suggesting the necessity of early reporting. National concern is again being raised by the IHI, WHO, CDC, and other organizations addressing the need to reevaluate the enormity of medical errors and their impact on all sectors of society (IHI, 2012). Of interest are the CRQ findings that

suggest staff do report errors 65 % of the time. The significance of these data as compared to other CRQ responses begs future investigation, as it does not support program evaluation outcomes.

Parameter 4 addressed claims paid and error frequency data. Claims paid by Company XYZ increased due to reporting. When medical errors reported, frequency was evaluated, data indicated a negative frequency pattern compared to the national average and to other states in which Company XYZ conducts business. The low number of incidents reported may not accurately reflect the true prevalence of medical errors occurring in the primary care setting. The data suggest that the multifaceted educational interventions were not effective in increasing staff understanding of meaning or definition and reporting of medical errors. I recommend that further interventions be developed that seek to understand the barriers that prevent reporting.

Interpretation of Results/Project Summary

Findings from the DNP program evaluation indicated that project outcomes were successful in answering the selected parameters and interests. Data from the PQAs suggested that PCPs have implemented prevention strategies, as evidenced by LOG criteria evaluation. However, these results do not reflect overall program evaluation findings. Actuarial data from 2016 suggested a declining trend in meeting LOG criteria emerging, which merits further examination. Recommendations are that (a) the LOGs be reevaluated for meaningfulness, (b) research be done on the PCPs' and their

representatives' understanding of the questions, and (c) potential bias created by answering questions based on what is thought to be the correct answer be considered.

Claims data, claims frequency, and occurrence reporting do not support that multifaceted educational interventions affected frequency or dollars paid. Frequency remains low when compared to other states insured by Company XYZ. This creates concern due to potential legal consequences of not reporting based on state and federal laws.

Project Evaluation Questions Answered

The DNP project evaluation outcomes revealed that the notion that five-year multifaceted patient safety and risk mitigation educational interventions in the primary care setting impacting patient safety and reducing liability was not supported by actuarial data and results from the CRQ. Data from claims frequency do not indicate reduction in liability, only that claims frequency remained low, as did claims paid. Occurrence reporting demonstrated that despite multifaceted interventions, the 10 primary care practices in the sample reported medical errors less than 1% of the time from 2010 - 2016.

Limitations

Limitations noted for this project included small sample size and using results from only one MPL carrier. I recommend that future studies be conducted to examine primary care settings in other states and with larger samples. Further studies are needed based on results indicating limited occurrence reporting, claims frequency, and claims

paid to see if a correlation exists after educational interventions are conducted. Interventions should be developed to educate primary care practices regarding medical errors, reporting, and importance of preventability. Because this was a retrospective evaluation only, in-depth questions or rationales were unanswered.

Implications

Impact on Practice

Medical errors in healthcare have the potential to create devastating consequences (NQF, 2010). The financial, emotional, and individual impact can create untold burdens on the organization, patient, and provider. Medical errors occur despite research that addresses the myriad consequences. Little information exists that focuses on the outpatient setting, specifically primary care settings (AHRQ, 2015). The implications of the program evaluation project conducted for the DNP project focus on primary care from a medical liability perspective. MPL companies such as Company XYZ are in a unique position, and they understand the implications of error from a different perspective. Through archival evaluation of educational interventions such as the PQA, CRQ, occurrence reporting, and claims frequency, information can be gleaned of the totality and consequence of whether these interventions had an impact. Results of this program evaluation suggested that the PCP staff understanding of medical errors in the primary care setting was limited. The same data suggested that a gap in knowledge exists in definitions and meanings of what constitutes an error. Further exploration of data will

no doubt provide valuable insights into why multifaceted educational interventions are so important in all healthcare settings.

Van Den Bos et al. (2012) suggest that a focus on outpatient practice settings may provide a first line defense against error. This statement is supported by AHRQ (2015), DHHS (2014), and current CMS (2015) findings, which suggest that error prevention should start at the first point of patient contact, which usually a PCP visit. A call to action should focus on educating staff in all outpatient settings, including PCPs, of the importance of medical errors. To initiate this action, leadership must be aware of existing staff attitudes, perceptions, and barriers regarding reporting. Creating a safe and just culture requires understanding all barriers that prevent reporting. As healthcare continues to evolve, change will be essential.

Impact on Future Research

Medical errors can be addressed from many points of view. AHRQ (2015) indicates that the term "medical error" is encompassing and not directed at one source. Error could be defined as failure to follow up on a diagnostic test, misfiling a medication, surgery on an incorrect body part, or failure to document. Unfortunately, many definitions exist of what constitutes an error, thus leading to confusion. In exploring the methodology of deriving a common language to simplify meaning and context, Kertesz (2011) indicated inconsistencies in the outpatient setting. The definitions applied by organizations such as the CMS, Joint Commission, or AHRQ are hospital centric. The epidemiology of errors can follow patterns or trends of why medical errors occur based

upon human, system, or process failures (AHRQ, 2014; CRICO, 2016). Future research is needed to replicate existing studies to understand the magnitude of the issue of errors in the primary care setting. Future studies can be replicated to understand causative factors.

Impact on Social Change

Perna (2012) offers that the economic impact of medical errors is poorly understood due to reporting requirements, awareness of error meaning, and accurate data collection. While research offers statistical data on errors relates to the inpatient setting, limited research in the outpatient setting creates unknown burdens to healthcare, due to potential financial implications (AHRQ, 2015). Van Den Bos et al. (2011) offer that prior research on administrative data may have grossly underestimated the overall incidence of medical errors in the United States. Andel et al. (2012) supported this by offering that direct costs associated with medical errors are estimated to exceed $98 billion annually, while indirect costs such as lost productivity, other incurred expenses, and lost human potential and contributions exceed $1 trillion annually.

Ethically, healthcare fragmentation has focused on aspects of medical errors which often do not address the root or causative agent. An example is the study by Fredrick & McMahan (2015), which found despite strategies focused on medical errors over the last 10 years, the FDA Adverse Reporting System (FAERS) noted in 2011 that 573,111 serious preventable incidents of harm occurred, resulting in 98,518 deaths. Thirty-eight percent of the deaths were attributed to medication errors.

Despite efforts to minimize errors, such as employee education and implementation of prevention strategies such as barcoding, only 50 % of the hospitals in the United States have successfully implemented effective systems to reduce errors (Fredrick & McMahan, 2015). Gaps in knowledge and research exist in the frequency of medication errors in the primary care setting in the U.S. AHRQ (2015) research indicates that organizations that address errors must ethically step forward to find commonality related to medical errors. Appreciating the cause and effect relationship between medical errors and their financial implications can offer insight into how multifaceted educational interventions can be utilized to improve communication, training, language, definition, and prevention. To ensure the quality of program outcomes, meaningful interventions must be planned that focus on preventing medical errors.

Medical errors are preventable. Ethically, it is everyone's responsibility to speak up, take an active role in prevention, and become advocate for the patient, organization and self. Interestingly, the outcomes thus far have incorporated past and present curricula to understand that the issue of errors has far reaching societal and financial ramifications. A future study will involve the second and third victim effects experienced by those involved in the error, their co-workers, and family. While it is tragic to see the outcome of an error on the patient, we must look at the providers/staff involved as well.

Conclusion

Nurses, especially DNPs, are in a unique role to assume leadership in the clinical setting to assist in creating educational interventions to recognize, prevent, and report

medical errors. Understanding the basic premise that medical errors are preventable allows for nurses to create effective tools and processes to support the organization. Awareness that culture, staff and provider perceptions can create barriers, can assist the nurse in developing strategies to act as change agents by creating a just culture.

Grant Proposal

It is recommended that information gleaned from this program evaluation be disseminated to the AHRQ, IHI, CDC, WHO, National Patient Safety Foundation, and other patient safety organizations. Information from this study will be presented to Company XYZ and other MPL carriers to address the issue of medical errors, and what can be done, from an organizational perspective. Grants can be solicited to seek monetary assistance for presentation at professional organizations and to fund future research. The completion of the program evaluation will ensure that this author create educational interventions or other communicative avenues to promote best practices so healthcare providers, staff, and support staff are informed of their role in prevention of medical errors. Ensuring that nursing programs incorporate patient safety into their curricula is paramount to the role assumed as a change agent and scholarly practitioner. An example of a manuscript for publication addressing this issue can be found in the Appendix.

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Appendix

Manuscript for Publication

At the culmination of the DNP project, the findings of this program evaluation will be presented to stakeholders at Company XYZ. It is hoped to present outcomes to interested parties at the organizational, state, and national level. I hope to prepare a manuscript for publication to national journals that deal with MPL concerns, Patient Safety, Risk, Quality, and or healthcare prevention strategies such as the IOM, IHI, AHRQ, RJWF, to name a few. It is hoped that these results may contribute to existing literature thus prompting further research. Below is a sample for publication.

Project Title:

Program Evaluation of Patient Safety and Risk Mitigation Educational Interventions for Medical Error in Primary Care Settings.

Background:

Medical errors are considered the third leading cause of death in the United States (Markay, 2016). Research has explored causative factors related to errors predominately in the hospital setting. Limited research exists in the U.S. of the problem in the primary care setting. Per the Agency for Healthcare Quality and Research (AHQR; 2014), and Phillips, Dovey, Graham, Elder, and Hickner (2006), the primary care setting has demonstrated that the sheer volume of patients seen, combined with the complexity associated with practicing medicine, creates an environment that is error prone, where patient harm does occur. The severity of the issue is further validated by Drake-White et

al.'s (2015) meta-synthesis of qualitative studies of medical errors and patient safety in primary care. Drake-White et al. found that in addition to sheer volume of patients seen, system issues, communication, and use of the electronic medical record (EMR) increase medical errors, resulting in compromised patient safety.

Understanding the magnitude of medical errors in primary care practices is of importance to all of healthcare. While the project focuses on the issue from a Medical Professional Liability (MPL) lens, the information gleaned from the program evaluation can provide valuable insight through development of interventions, education, and further research. Limited research has been performed to evaluate the effectiveness of MPL provider's educational interventions related to medical error prevention, recognition, reporting, or the effect of incidence of medical errors on malpractice claims, and increasing primary care providers and staff awareness.

Purpose

The purpose of the program evaluation is to evaluate summative outcomes of multifaceted patient safety educational interventions conducted in selected primary care settings. The project evaluation question asked, "Did 5-year multifaceted patient safety and risk mitigation educational interventions in the primary care setting impact patient safety and reduce liability"?

Nature of the Project

Andel, Davidow, Hollander, and Moreno (2012) offered that the impact of medical errors in direct costs are may exceed $98 billion annually, when quality-adjusted

life years are applied. Indirect costs, such as lost productivity, incurred expenses, lost human potential, and contributions may well exceed $1 trillion annually (Andel et al., 2012). Because medical errors are preventable, the role of nurses in the primary care setting is pivotal to error identification, reduction, and prevention. Despite the project trajectory, the issue, if explored from a nursing perspective, would support the underlying premise. Does educating staff and providers in primary care regarding error definition, commonality of spoken language, and accountability, reduce risk. Nurses can ask these same questions, begin examining the issue, and create simple educational interventions to support.

Simple strategies nurse leaders can employee include examining the settings culture. Is it an environment where individuals are free to speak up and report or express concern? If not, why? This is the foundation of medical errors — communication within the culture (AHRQ, 2015). Once culture is identified, and changed if needed, the next step is to examine whether all staff understand what constitutes an error, or near miss. If not, what language is spoken? The nurse, armed with these simple, yet complex questions can begin to build education around changing culture. These questions parallel the questions that the MPL provider has examined. The MPL provider has found that a common language is not spoken, everyone has a different meaning of medical error, and cultural perceptions in each setting created an environment ripe for misadventures.

Theoretical Approach

Ajzen and Fishbein's (1980) Theory of Reasoned Action (TRA) was selected as a theory to guide those introducing change to potential barrier or resistance. The TRA is simple to understand allowing for quick assessment in identifying individual provider and nurse attitudes, behaviors, and norms that could be perceived as barriers to understanding and taking ownership of their role of medical error prevention (Goldenberg & Laschinger, 1991; Pronovost et al., 2009; White & Dudley-Brown, 2012). The TRA has demonstrated validly through long-term use by the CDC use to assist in evaluation processes. The TRA does not require formalization, but relies on understanding of attitudes, behaviors, intention to adopt change.

Research Design/Setting/Data Collection

Approval from Walden Institutional Review Board prior to commencement of this study. Walden IRB approval number for this study is (12-01-16-0187925).

The project is a retrospective program evaluation of 10 randomly selected primary care practices in Nebraska. Secondary data collected from Company XYZ's Nebraska Customer Response Questionnaire (CRQ) were evaluated for medical error understanding, reporting, and commonality of language spoken. Practice Quality Assessments (PQAs) conducted from 2010 to 2015 were actuarially examined for retrospective data. In addition, actuarial retrospective data analysis examined claim frequency, reporting of incidents and occurrence to Company XYZ in the stated time.

The program evaluation sought to answer the following questions.

1. Did the use of PQAs conducted by Company XYZ influence adoption of best practices in selected primary care practices in Nebraska?
2. Did staff awareness and common language of what medical errors/adverse outcomes were and how to report them occur based upon Company XYZ's CRQ evaluation of retrospective data?
3. Was an increase of occurrence reporting of medical errors to Company XYZ seen in analysis of retrospective data?
4. What did claims data show in terms of frequency change of claims?

Presentation of Results

Question 1 results indicate that the educational interventions and PQAs from 2011-2015 met Level One Guideline (LOG) criteria 89 % of the time, in the 10 practices evaluated. Question 2 related to staff awareness and a common language of what defined medical errors/adverse outcomes, and reporting based upon CRQ results. Results indicated that, of the 40 outpatient clinics evaluated, staff reported medical errors 65% of the time. Further results demonstrated that 85% of the time staff failed to speak a common language or understanding the meaning or definition of a medical error

Question 3 regarding analysis of error and reporting found less than 120 occurrences were reported in a 5-year period. This raises concern. This average to roughly 18 reports per year from 10 practices that have engaged in multifaceted interventions to raise awareness in the past. These results suggest that reporting of medical errors must be reinforced to ensure awareness, understanding, and accountability

of importance of reporting. These findings are consistent with literature that suggests the necessity of early reporting. National concern is once again being raised by the IHI, WHO, CDC, and other safety organizations addressing the need to reevaluate the enormity of medical errors and their impact on all sectors of society (IHI, 2012).

Question 4 regarding claims and frequency indicated that aggregate data compiled for the years of 2010-2016 revealed that Family Practice Offices had the highest risk per dollar and claims paid. Results indicated that severity per $100,000 amounted to $45,000, with limits paid held at $73,000. This means that after breaking down the different types of the 10 selected primary care practices, those that were considered generalist had the highest claims and dollars paid. Family Practice doing Obstetrics had the second highest claim and dollars, with severity per $100,000 around $35,000, with limits paid at $41.000.

Question 4 also addressed "What did claims data show in terms of frequency change of claims"? Change of frequency remained below average. This is directly proportional to occurrences being reported. Overall the change frequency of the 10 practices remained negative, thus indicating the frequency of proportional errors and reserves set aside. Results from 2010 to 2016 ranged demonstrated that FP doing general obstetrics -40%, FP doing C-sections -9%, and general FP -17%. Despite the biggest change in frequency noted in primary cares doing general obstetrics, the results indicate lack of reporting.

Interpretation of Results/Project Summary

Based upon finding from the program evaluation and retrospective actuarial data, one can offer that this project was successful as it demonstrated the following:

- PQAs – Primary care practice (PCP) representatives answered interview questions asked by the MPL provider's representative in a manner that suggested that PCPs have implemented prevention strategies as evidenced by LOG criteria. These results do not reflect overall program evaluation findings. Actuarial data suggest a declining trend occurring, which merits further examination. Recommendations are that the LOGs be reevaluated for meaningfulness, research be done on the PCP understanding of the questions, and potential bias of answering questions based on what they think it the correct answer.
- Claims data, claims frequency, and occurrence reporting do not support the idea that multifaceted educational interventions affected frequency and dollars paid. Frequency remains proportionately negative when compared to other states insured by Company XYZ. This creates concern due to potential legal consequences of not reporting based upon state and federal laws.

Project Evaluation Question Answered

- The idea that 5-year multifaceted patient safety and risk mitigation educational interventions in the primary care setting impact patient safety and reduce liability is not supported by actuarial data and results from the CRQ.

- Data from claims frequency does not indicate reduction in liability, only that claims frequency remained low, as did claims paid.
- Occurrence reporting demonstrated that despite multifaceted interventions, primary care practices reported medical errors less than 1.5 % of the time from 2010- 2016.

Implications

Several limitations were noted due to small sample size and using data from only one MPL carrier. It is recommended that future studies be conducted to examine primary care settings in other states and with larger samples. Further studies are needed based on limited occurrence reporting, claims frequency, and claims paid, to determine whether a correlation exists after educational interventions are conducted. Interventions should continue to be developed to educate PCPs regarding medical errors, reporting, and importance of preventability. Because this is an ongoing study, some questions were unable to be answered.

Conclusion

Nurses, especially DNPs, are in a unique role to assume leadership in the clinical setting to assist in creating educational interventions to recognize, prevent, and report medical errors. Understanding the basic premise that medical errors are preventable allows for nurses to create effective tools and processes to support the organization. Awareness that culture, staff and provider perceptions can create barrier can assist nurses in developing strategies to act as change agents by creating a just culture.