2017

A Nursing-Driven Pathway to Lung Cancer Screening; A Push for Prevention

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This is to certify that the doctoral study by

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has been found to be complete and satisfactory in all respects,
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Abstract

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Project Submitted in Partial Fulfillment

of the Requirements for the Degree of

Doctor of Nursing Practice

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Abstract

Lung cancer affects many individuals each year and accounts for many deaths around the globe. Lung cancer screening is a preventative health measure that has the ability to detect lung cancer earlier. The purpose of this project was to focus on the education of nursing staff within a community health system, with subsequent implementation of an electronic health record clinical decision support system, to create a direct referral pathway to lung cancer screening, delivered through patient education. The concept of prevention was the framework for this project design, which was further organized around the plan-do-study-act model, while taking into consideration the health belief model and theory of interpersonal relations. Using systemized dashboard reports within the electronic health record software, specific variables were targeted for data collection and analyzed for the purpose of this project. Final data demonstrated an increase of triple the programmatic volume of the previous year, directly following the implementation of the above initiative. Further comparative statistics bespeak to the significant needs of the community regarding tobacco dependence and lung cancer screening. High-risk individuals who are current or former smokers will benefit from this initiative by receiving education about lung cancer screening and tobacco dependence treatment while within the care of the community based health system. A nursing-driven pathway to preventative care could also serve other cancer screening programs effectively, as well as be applied to a variety of chronic disease comorbidities to make a significant positive social change.

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Dedication

This scholarly project is dedicated to all of those who have lost their lives to lung cancer and for all of those who continue to forge a fight against the disease each and every day. May their spirit, and those of their loved ones, remain in the hearts and souls of every person who vouges to continue the fight in their honor. We won't give up.

"We shall draw from the heart of suffering itself the means of inspiration and survival"

-Winston Churchill

Acknowledgments

I would like to thank my husband Rob, who has known me only as a student and who has accepted that I will always be one. Your unwavering love and support has gotten me through my education thus far, and I am confident that love and support will continue to endure.

Thank you to my family and friends, especially my mother who has always been my biggest fan, for understanding that my absence was for the benefit of my advanced education, successful profession, and most importantly to attain the knowledge needed to provide the best possible care that I could ever deliver to my patients.

To my preceptor, Dr. Richard Chang, who has opened my eyes wider than I knew imaginable. Thank you for sharing your immense intelligence and continual guidance as a mentor and leader. I strive to be more like you in every way.

Finally, I offer gratitude to my late father who was immensely proud of my choice of nursing as a career, and who I reflect upon always when caring for patients and their families. Your life has been my greatest lesson. I love and miss you always.

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Section 1: Nature of the Project

Introduction

Lung cancer is the leading cause of cancer-related mortality among men and women, with one in four cancer deaths attributed to lung cancer (American Cancer Society, 2017). This disease takes more lives annually then the other four most frequently diagnosed cancers: breast, colorectal, pancreatic, and prostate cancers combined, further displayed in Figure 1.

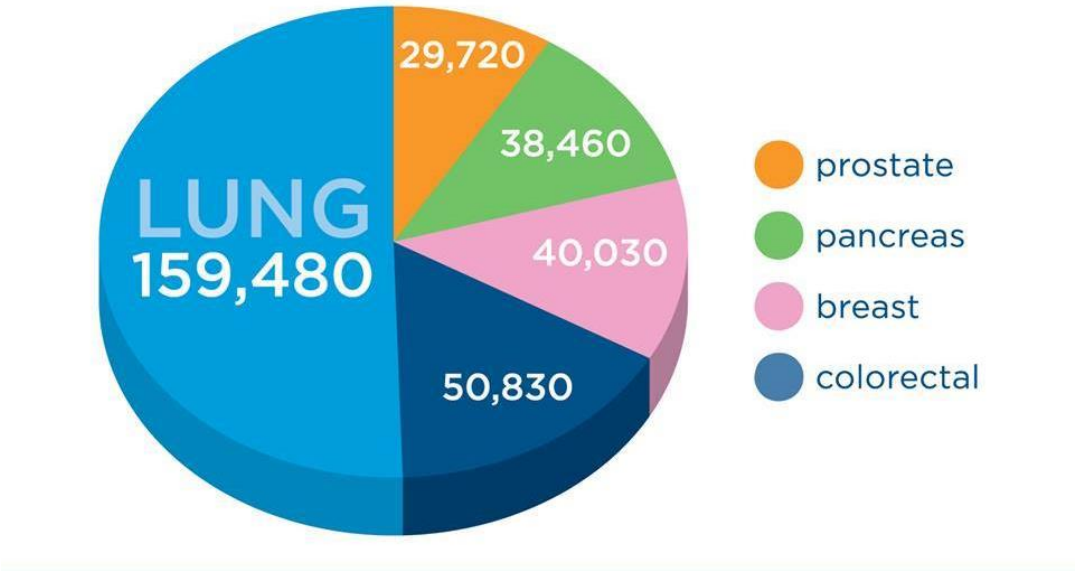

Figure 1. From "Lung Cancer Statistics" by Lungevity Foundation, 2013. https://www.lungevity.org/for-supporters-advocates/lung-cancer-statistics. Copyright 2013 by Lungevity Foundation.

The American Cancer Society (2017) estimated 222,500 newly diagnosed cases of lung cancer and approximately 155,870 deaths from lung cancer in the United States in 2017 alone. Understanding the seriousness of this disease is the first step in fighting it. Lung cancer screening is the latest measure within preventative medicine to demonstrate

promise in detecting cancers early, although most are not aware of its existence. Screening can be made common knowledge by building an educational platform starting with the nursing workforce. In this project, I focused on developing a clinical decision support system to be used by staffed nurses, thereby generating a direct referral to eligible patients to the Lung Cancer Screening Program within a community health system in Philadelphia, PA. Philadelphia is home to the highest rate of adult smokers among the 10 largest U.S. cities at 23% (Centers for Disease Control and Prevention, 2013) as shown in Figure 2. In this project, I created positive social change within the community, resulting in greater understanding and awareness of lung cancer and the benefits of screening.

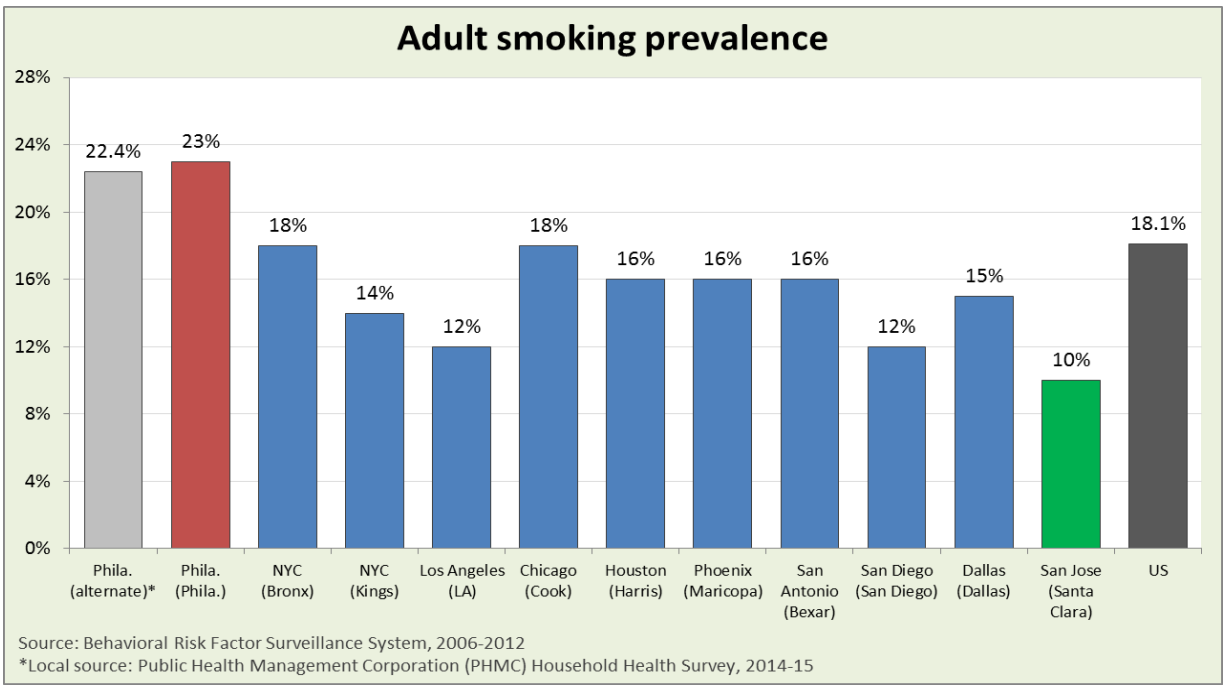

Figure 2. From "Philadelphia Smoking Statistics" by Philadelphia Department of Health 2016. http://www.phila.gov/health/commissioner/DataResearch.html. Copyright 2015 by PHMC.

Problem Statement

Lung cancer strikes all populations regardless of age, race, gender, ethnicity, or location. This disease has the likely potential to affect each family. Smoking, a main cause of small cell and nonsmall cell lung cancers, contributes to 80% and 90% of lung cancer deaths in women and men, respectively (American Lung Association, 2016). Not everyone understands the dangers of smoking and the associated development of lung cancer. Education is required to help individuals comprehend their health and wellbeing, leading to autonomy and confidence in caring for themselves and others.

Lung cancer screening (LCS) is a preventative health measure that has the ability to detect lung cancer earlier when more treatment options are available and when more lives can be saved. Screening for lung cancer is a recently approved service by the Centers for Medicare and Medicaid Services (CMS) and most private insurers after November 2015, following a national study of various modalities resulting in the recommended use of low-dose computed tomographic (LDCT) scanning as the best instrument for detecting lung cancer in asymptomatic, high risk individuals (National Cancer Institute, 2014). Because this is a new standard in preventative health, a gap existed among the health care community, most of whom are unaware or uninformed about current guidelines, and the importance of a timely referral of appropriate patients for lung cancer screening. In this project, I focused on education of the nursing staff regarding lung cancer screening and subsequent initiatives to engage and refer members of the community to participate in this preventative health measure in an effort to decrease overall mortality from the disease in the community setting. Using information

technologies, a pathway was created for a multidisciplinary approach process to take place.

Philadelphia is home to one of the largest adult smoking populations across the country (Centers for Disease Control and Prevention, 2013). Northeast Philadelphia, home to the study site, has one of the largest smoking populations noted within the city limits, as demonstrated in Figure 3 below. This area requires increased awareness and education about the dangers of smoking, the likelihood of lung cancer and the benefits of prevention.

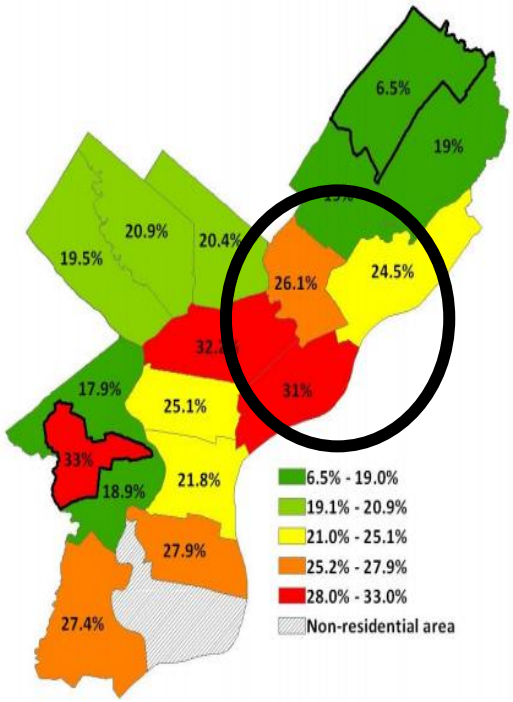

Figure 3. From "Philadelphia Smoking Statistics by Neighborhood" by Philadelphia Department of Health 2016. http://www.phila.gov/health/commissioner/DataResearch.html. Copyright 2015 by PHMC.

This project holds significance for the field of nursing practice, as it was designed for the nursing staff to use to educate and implement a clinically-driven initiative. Nurses received brief education and training about the concepts of lung cancer screening, as well

as common questions and concerns in regard to the process. Developing competency in the identification of high risk individuals who are eligible for lung cancer screening and guiding them through the decision-making process are essential obligations of health professionals (Lehto, 2014). Nurses have the most exposure to the patients in comparison to other members of the multidisciplinary care team; therefore, this project was developed to take advantage of that contact. Simultaneously, a dedicated clinical decision support (CDS) was created within the current electronic health record (EHR) by the information technology (IT) department, which prompts nurses to complete eligibility criteria that is built into established admission documentation for each patient. This 2-fold project crossed developmental and implementational phases of a programmatic growth project, which has contributed to community and business facets of the health system.

Purpose of Project

The purpose of this multifaceted project was to promote the importance of lung cancer screening for all high risk individuals. Evidence-based recommendations are centered on the National Lung Screening Trial study findings that revealed that participants who received low-dose helical CT (LDCT) scans had a 20% lower risk of dying from lung cancer in comparison to those who underwent screening with standard chest x-ray (National Cancer Institute, 2014). National Cancer Institute (2014) supported screening and dictated which individuals are deemed high risk based on age and smoking history. Lung cancer screening with LDCT has been shown to decrease overall mortality. Education and referral of appropriate patients was the component that was lacking in this

community center and across the country; in this project, I worked to bridge the gap between knowledge and action in this community setting. Figure 4 displays the estimated number of individuals considered high-risk for lung cancer in comparison to the number of individuals screened by an average program annually. This supports the point that preventative care through lung cancer screening has the potential to significantly decrease the number of individuals affected by lung cancer as it currently exists.

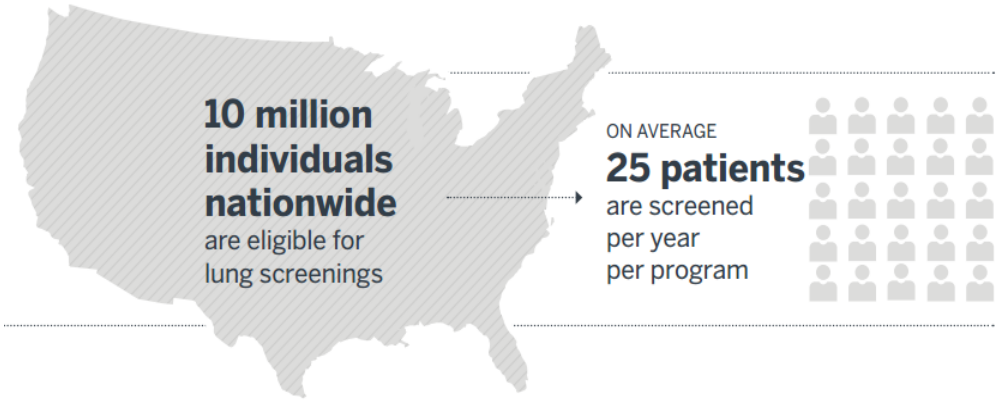

Figure 4. From "Lung Cancer Screening Programs: How to Get the Word Out and the Patients In" by The Advisory Board 2014. https://www.advisory.com/research/imaging-performance-partnership/resources/2014/posters/lung-cancer-screening-programs. Copyright 2014 by The Advisory Board.

As with many health facilities and institutions, the nursing staff at the study site comprises the majority of staffed positions throughout the organization. Nurses also spend most their time caring for the patient directly, thereby having the most time to discuss patients' current health status and areas for improvement. Based upon this premise, nurses are a population within the health care workforce who can approach the

topic of tobacco dependence, as this subject requires documentation within a patient's EHR to meet the standards set forth by the Centers for Medicare and Medicaid Services. Meaningful use is using certified EHR technology to improve quality, engage patients and families, and improve care coordination as well as population and public health (HealthIT.gov, 2015). It is during these interactions that lung cancer screening can begin to be addressed, education be provided, and referrals made to the Lung Cancer Screening Program within the health system.

The projected outcomes included more disease-specific nursing education and associated competencies in EHR data entry for every patient, the development and implementation of a CDS system within the EHR created through a multidisciplinary team approach, and IT team support to create an electronically generated referral in conjunction with screening-specific information, which is now printed and given to the patient before being discharged from the health facility.

Nature of the Doctoral Project

The study site began the process of implementing a comprehensive lung cancer screening program; however, physician referral and overall volume over its first year was not as significant as expected. Therefore, this program was reviewed at a senior administrative level and tasked to an individual who has interest in the success of this program, as well as the awareness and adherence brought to the surrounding local communities. The clinical director of the program and chief of thoracic surgery for the institution had taken the lead on this project and continues to cultivate a program that has a foundation in evidence and research.

Increased referrals to the lung cancer screening program equated to a multitude of positive responses including increased community awareness and adherence to the screening process, as well as programmatic growth with increased overall volume that resulted in downstream revenue through diagnostic testing performed within the organization. Further support of the lung cancer screening program is a responsibility of those employed by the institution to those community members served by the institution, who rely on their community health system to provide high quality preventative health services.

In further sponsorship of this initiative, the significance of lung cancer statistics was recognized, as well as the importance of lung cancer screening. Substantiating data from a variety of online databases and other literature were used and referenced throughout this scholarly project. Because this was a developmental and implementational-based project, quantitative data were reported in the final sections of this project delivery. Collection of these data was created electronically through dashboard reporting with the help of the IT department, further managed by the thoracic oncology nurse navigator. I compared the data to statistics from the previous year to identify programmatic variables and subsequent growth. These measurements showed the success of a nursing-driven referral pathway to lung cancer screening and further bridged the gap between high risk patient identification and the action of lung cancer screening.

Significance

Because the screening program was new, a multidisciplinary team had been assembled based on the long-term objectives and goals that were set forth by the program director, who also assumed the role of project manager. The group included stakeholders from various levels and departments within the organization including administration, medicine, surgery, nursing, IT, quality, staff education, performance improvement, finance, and marketing. All members of the team were involved and/or had the opportunity to offer input during the development and implementation phases of this scholarly project, making this a comprehensive, multidisciplinary approach to improving the program exponentially.

The results of this doctoral project were proven to increase nursing knowledge further strengthening the institution as well as the nursing profession as a whole. This knowledge was then bestowed to members of the community before an appropriate referral to the lung cancer screening program was entered into the patient chart, ultimately increasing awareness within the communities in which the health system serves. Subsequent increased volume within the LCS program has generated significant downstream revenue. Most importantly, the ambition to detect and treat early-stage lung cancers with the potential to decrease mortality secondary to the disease has been the greatest contribution this project has offered.

The associated process could also be used in other areas and specialties in the future. Keeping within the thoracic oncology realm, this same process could be created to refer patients to the tobacco dependence program in an effort to promote cessation and

ultimately the number of lung cancers diagnosed each year. Lung cancer screening has guidelines of eligibility; however, any smoker of any age could be referred to the dedicated Tobacco Dependence Clinic for one-on-one counseling and medical management for their addiction.

Summary

This model of nursing-driven referrals based on best practice guidelines in preventative medicine could change the future of comorbid disease processes. Nurses are care providers who know their patients well and who spend significant time with them in the inpatient and outpatient arenas and beyond. The opportunity to make a difference in the life of the patient is an opportunity to make a difference on a far greater scale. Being abreast of current guidelines and referring patients for appropriate screening, management, and care is the first step in changing the prevalence of all diseases. This type of cultural change goes beyond the nursing scope and reaches the communities that may otherwise never be reached. A positive impact in communities, neighborhoods, and society as a whole can be as simple as referring a patient for appropriate screening.

Teamwork was essential to the success of this scholarly project, pulling from every stakeholder and supporting department to bring lung cancer screening to center stage. It was with this involvement that goals were reached and success was measured. Education was the identified missing piece to the puzzle for this initiative, this program, and within this institution. This model of nursing-driven education and referral to appropriate care is the beginning of what could become the future of medicine. As health care continues to evolve, it is vital to realize the nurses' role within it. This project has

allowed nurses to use their expertise to make a change of significant importance, ultimately changing the prevalence of the top cancer killer in their community. This model could be used across this country and around the world.

Section 2: Background and Context

Introduction

With lung cancer ranked as the top cancer killer in the United States and around the world, a push for prevention through lung cancer screening must become a fundamental component to routine and regular nursing care. Discussing tobacco dependence and/or history with each patient is a necessary step to identifying high risk individuals. A clinical decision support system is a tool to implement in order to make this process possible. In this DNP project, I proposed a 2-part initiative to include nursing education and the creation of an EHR documentation tool to be completed on every patient admitted to the health system in order to build awareness and make a positive change in the community with appropriate referrals for preventative health via lung cancer screening. The foundation of this project included models and theories of change, while also identifying relevance in the expansion and strengthening of the nursing profession within the organization.

Concepts, Models, and Theories

Research is often based on a concept, model or theory, or a combination of these elements, for which a project infrastructure is created and a plan devised. For the purposes of this doctoral project, I used all of the above components in order to create a foundation that was strong enough to hold the body of this initiative.

Based on the positive evidence of the National Lung Screening Trial, it became clear that prevention was the answer to changing lung cancer prevalence and mortality. Nurses are familiar with primary, secondary, and tertiary prevention concepts; therefore,

this project further expanded on those concepts, elevating preventative health and associated patient education to the next level. Nurses are tasked with improving the health of patients through evidence-based recommendations while encouraging individuals to receive preventative services such as screening (Benedictine University, 2017).

After defining the concept of prevention and identifying the nursing workforce to implement this project, the question of design to implement change was pondered. The Institute of Health Improvement produced the plan-do-study-act (PDSA) model of change, which provides a sequential workflow to address the progression of change, shown in Figure 5 below.

Figure 5. From "How to Improve" by Institute for Health Improvement 2017. http://www.ihi.org/resources/Pages/HowtoImprove/default.aspx. Copyright 2017 by Institute for Health Improvement.

The PDSA cycle is shorthand for testing a change by developing a plan to test the change (plan), carrying out the test (do), observing and learning from the consequences (study), and determining what modifications should be made to the test (act; Institute of

Health Improvement, 2017). This model was used throughout the project process flow to ensure objectives were met and long-term goals achieved.

The health belief model (HBM) is a framework that aligns with the concept of disease prevention. A psychological model developed by Hochbaum, Rosenstock, and Kegels in the 1950s was in response to the failure of free tuberculosis health screening. The model focused on a systemic method to explain and predict preventative health behavior, identifying the aspects of threat perception and behavioral evaluation (Cao, Chen, & Wang, 2014). Figure 6 provides a visual representation of that model.

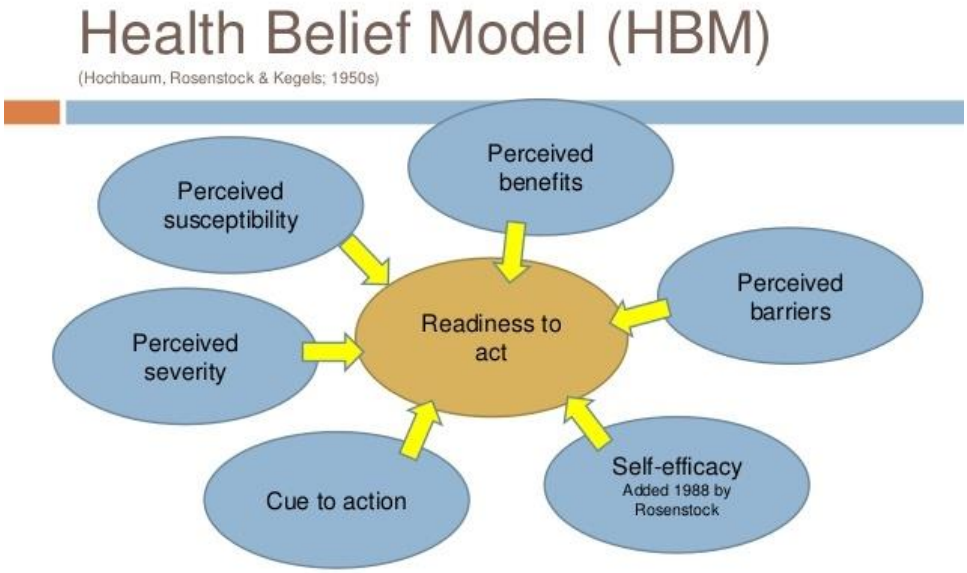

Figure 6. From "Health Belief Model" by Chai-Eng Tan 2014. https://www.slideshare.net/ChaiEngTan/health-behaviour-and-health-education-for-family-medicine-postgraduates-40155488. Copyright 1988 by Hochbaum, Rosenstock & Kegels.

These concepts can also be found in individuals suffering from tobacco dependence who fear cessation and/or screening. For this project, information about the patient was gathered by conducting health assessments and through other interactions to determine individuals at risk so that recommendations could be made. The HBM outlines the process of direct nursing-driven referrals for lung cancer screening by conveying consequences of tobacco dependence; highlighting the benefits of screening; identifying barriers; and assisting the patient in understanding, realizing, and supporting behavioral change (Boston University School of Public Health, 2016)

The theory of interpersonal relations, developed by Peplau, focuses on applying the principles of human relations to identifying felt difficulties of the patient and addressing those concerns (Wills & McEwen, 2002). Also referred to as psychodynamic nursing, understanding a person's own behavior was a feature that Peplau centered work around. This theory served as the overall theme throughout the project, as interpersonal communication and relationships are the basis of the care that nurses deliver each day. Further enhancing the relationship between nurse and patient allows elaboration and trust to be more easily palpated and, therefore, has served the premise of this project well.

Relevance to Nursing Practice

Nurses are the clinical workforce that drove this project through the implementation phase; therefore, they were the key stakeholders in the performance of this new nursing clinical workflow. The HBM, by far the most commonly used theory in health education and health promotion (Glanz, Rimer, & Lewis, 2002), is a model applied to nursing, especially focusing on patient compliance and preventative health care

practices (National Cancer Institute, 2003). However, the act of educating patients is not possible or easily performed, particularly because of increased nurse to patient ratios, advanced levels of care acuity, lack of appropriate staffing, or other problematic issues that vary based on location and situation. For this project and for all patient education, the role of a nurse as an educator was significant for the transfer of appropriate and understandable information that reduces information deficit about further care, promotes emotional stability, and prevents the formation of cognitive dissonance (Beta, 2014). This broader issue in nursing practice and workflow was considered throughout the development of this project, to establish realistic and attainable tasks for nurses in all situations and scenarios. The topic of smoking history is first assessed upon admission; however, if the admission nurse is unable to complete the assessment at that time, nurses to follow will be reminded to complete that assessment once logged in to the patient's electronic chart.

There are a variety of challenges that nurses face when delivering adequate and effective patient education. Although many patients received education and perceived information about their treatment as important, some patients have low levels of knowledge and lack a clear understanding of their health, how it is defined, and what relevant self-care behavior should be performed (Aghakhani, Nia, Ranjbar, Rahbar, & Beheshti, 2012). It was for these reasons that the theory of interpersonal relations was so important to this project, stressing the need to take time to build relationships with patients being cared for as a part of their health care and treatments being delivered. It is important to target barriers to learning, such as functional and cognitive limitations,

misconceptions, low motivation, and self-esteem (Aghakhani et al., 2012), so that information can be distributed to every patient.

Some researchers have dedicated their work to investigating measures to improve the patient edification process. Adams (2010) identified three areas that would increase the understanding and effectiveness of education provided: literacy, attitudes and beliefs, and evaluation. Attention was paid to the evaluation of patient education through the reach, effectiveness, adoption, implementation, and maintenance (RE-AIM) framework. The RE-AIM framework recommends addressing the different elements of a program: (a) reach, or who is willing to participate; (b) effectiveness, the impact of the program; (c) adoption, the settings and staff who take part in the program; (d) implementation, how skillfully the program is delivered; and (e) maintenance, to what extent individual participants and the organizations involved sustain their involvement (Adams, 2010).

In this doctoral project, I combined the need for patient education with the furtherance of a clinical decision support system that prompted the nurse to discuss substance use behaviors with every patient, to meet meaningful use metrics, and to establish identification of high risk individuals who may be eligible for lung cancer screening. This corroboration lessened the burden for nurses while opening the communication pathways to ensure completion.

Local Background and Context

Philadelphia is rich in history, culture, and smoking. The smoking population is the largest in comparison to this country's 10 largest cities and 80-90% of lung cancers are attributed to smoking (American Cancer Society, 2016). The study site performs a

community health needs assessment (CHNA) every 3 years to ensure that the health system is meeting the demands of the communities it serves. The last CHNA was recently completed in 2015, which used primary and secondary data collection. Primary data were obtained through interviews with leaders of community-based organizations who represented the needs of the community, local public health officials, and community residents. Secondary data were obtained from the Public Health Management Corporation's (PHMC) Southeastern Pennsylvania Household Health Survey; Pennsylvania Department of Health, Division of Health Informatics; Healthy Communities Institute (HCI); National Cancer Institute (NCI); and the American Community Survey (ACS; Aria Health, 2016). According to the results of this assessment, there was a need for continued efforts in regards to smoking and lung cancer, among other disease processes and comorbidities. Lung cancer deaths in Philadelphia are more than 25% higher than the U.S. rate, and the study site's service area reported that 47% of adults have a history of smoking, and many still smoke (Aria Health, 2016). Figure 7 below provides data inclusive of cancer incidence within the city as well as a breakdown of lung cancer incidence and death rate in the catchment area of the study site.

Cancer Incidence and Mortality Rates (per 100,000)					
	Philadelphia	Bucks County	Pennsylvania	United States	Healthy People 2020 Goal
All Cancers					
Incidence	541.6	504.3	494.8	459.8	
Death Rate	218.4	169.4	182.0	173.8	161.4
Breast Cancer (female)					
Incidence	128.9	131.0	126.8	122.7	
Death Rate	29.2	24.2	23.5	22.2	20.7
Cervical Cancer (female)					
Incidence	12.5	6.6	7.9	7.8	
Death Rate	3.3	1.8	2.1	2.3	2.2
Colorectal Cancer					
Incidence	52.5	42.2	46.9	43.3	
Death Rate	21.1	14.5	17.2	15.9	14.5
Lung Cancer					
Incidence	83.9	65.5	68.3	64.9	
Death Rate	60.7	45.2	45.9	48.4	45.5
Prostate Cancer (male)					
Incidence	190.5	157.9	145.9	142.3	
Death Rate	33.7	19.4	22.0	22.3	21.8

Figure 7. From "Aria Health Community Health Needs Assessment" by Aria Health 2015. https://www.ariahealth.org/assets/base/2015/doc/AriaHealthCHNA2015.pdf. Copyright 2015 by Aria Health.

Education and referrals for lung cancer screening were imperative to the health of the communities. The study site is one of three locations within the community health system, serving the largest smoking population of the three, despite city-wide smoking bans and increased taxes on cigarettes. A low-to middle-class area, the study site served a diverse patient population with varying demographics and transfers patients within the system for special needs that may arise. The community hospital's founding mission is to provide convenient, high quality medical care to the immediate neighbors, so that all would have access to care. The study site has provided care for more than 114 years, to a population of more than 1 million in Northeast Philadelphia and Bucks County (Aria Health, 2016). This mission and the culture of the health system are supportive and accommodating to its community members, and the study site strives to offer as many comprehensive care programs as possible in a community setting. The organization is committed to improving the health of its surrounding communities, extending beyond the

hospital to promote healthy lifestyles, provide preventive care services, and engage people in communities where they live (Aria Health, 2016). This support is the same support that has been given to the Lung Cancer Screening Program and further defines the importance of sharing the message of prevention.

Role of the DNP Student

I am employed as a certified registered nurse practitioner within the health system in which I am also completing my DNP practicum. As an employee for 11 years, I have seen the quality care that is provided throughout the health system, which has motivated me to continue my education in the hopes of becoming involved administratively in the future, allowing me to give back to the system that has provided me opportunities for growth and development. Working in the thoracic surgery specialty, I have worked with my preceptor in the past, but now focus on the outpatient care of the thoracic patient under other guidance. When discussing my educational objectives, I questioned if there was help that was needed in the LCS program, as smoking cessation is a passion of mine and an element of many care plans for the perioperative thoracic patient, to which I was invited to become involved.

I spent four practicum terms working with my preceptor who is the clinical director of the Lung Cancer Screening Program, primarily observing a variety of programmatic developmental activities, which further clarified and reinforced the work I have simultaneously completed. When discussing opportunities for growth within the program, I mentioned the use of the nursing workforce, as I am familiar with the relationships shared and the patients they care for on a daily basis. Also, the

implementation of a clinical decision support system would make that initiative simpler for the nurses and promote a 100% compliance rate if made a “hard stop” within the system. This scholarly project was born with the support of my preceptor who has been understanding of my motivation to be involved and helped to see this initiative through to completion. Among many other programmatic initiatives that are being completed, this project was one component that I worked on directly. I was also involved in the development of patient and nursing education with associated departments to ensure an all-inclusive alteration to the current nursing workflow. Lastly, I was involved in programmatic committee meetings to report on these endeavors and worked with the performance improvement and quality departments to ensure success.

I have spent my days caring for individuals and families affected by lung cancer. The University of Michigan (2013) demonstrated that lung cancer screening is the most effective form of screening in comparison to the other two most frequent types of cancer screening. Lung cancer screening with LDCT detected more malignancies in the same population size in a shorter time span, in comparison to mammography performed for breast cancer detection over 10 years and colonoscopy/fecal occult testing performed for colorectal cancer detection over five years (Tammemagi et al., 2013) as demonstrated in Figure 8 below. Early detection of lung cancer is possible and the best modality to do so is via LDCT.

	NUMBER OF PEOPLE SCREENED	YEARS OF ANNUAL SCREENS	NUMBER OF CANCER DEATHS PREVENTED
LOW DOSE CT LUNG SCREENING (LUNG)	1000	3	3.1
MAMMOGRAPHY (BREAST)	-	-	-
AGE 50-59	1000	10	0.8
AGE 60-69	1000	10	2.6
FLEXIBLE SIGMOIDOSCOPY WITH FECAL OCCULT BLOOD TEST (COLORECTAL)	1000	5	2.8

Figure 8. From "How does lung cancer CT screening compare to other kinds of cancer screening?" by University of Michigan, 2013. http://www.shouldiscreen.com/compare-with-other-screening. Copyright 2013 by University of Michigan.

With the enthralling evidence and the obvious need within the community, it was safe to say that I was highly motivated to complete this project. I was, and continue to be, enthused to bring this scholarly work to life and look forward to making a difference. As predicted, this metric alone showed an increase in awareness as well as a significant influx in programmatic volume. I did not have any biases to the creation and implementation of this project, other than believing that nurses are the appropriate workforce to bring this project to fruition, as I am one myself. Having worked as a nurse within this system, familiarity of the clientele and with the culture of the organization is known as well as the fact that nurses have the power and the ability to take a stand against lung cancer by promoting prevention through education.

Role of the Project Team

As mentioned above, this project included and required involvement of a multidisciplinary team that was already in place. Quality improvement and programmatic initiatives require a collaborative approach to succeed, and the need to build a cohesive and effective multidisciplinary team is critical for positive outcomes (Sierchio, 2003). For this project, the IT and education departments quickly became key stakeholders throughout the developmental phase while the nursing department held the role of key stakeholders within the implementation phase. Strategies to build a culture of teamwork include incorporating total quality management principles into every level of the organization, seeking participation from every discipline and level of the organization, and recognizing employees for their efforts (Sierchio, 2003).

Summary

This scholarly project was structured on a foundation of nursing theory and proven models of change to support a nursing-driven electronic-based referral pathway to lung cancer screening; a metric of preventative health that has proven to decrease mortality of the disease by up to 20%. This promising evidence served as the motivating factor to bring this project into reality. The projected outcome was an increase in community awareness, an increase in programmatic volume and subsequent downstream revenue for the institution, and finally and most importantly, increased long-term survival of individuals diagnosed with lung cancer if found in an early stage. With nurses driving the implementation of this project, the profession has not only been strengthened but has become a more active participant in preventative health and a direct contributor to the

lives saved through this preventative modality. With continued delivery of prevention through lung cancer screening, as managed by a nursing-driven referral pathway, long-term survival of those diagnosed through LDCT can be measured and reported.

Section 3: Collection and Analysis of Evidence

Introduction

At least 8.6 million people in the United States qualify as high risk for lung cancer development based on their age and tobacco histories; however, it is projected that number is much higher to include at least 10 million or more (Ma, Ward, Smith, & Jemal, 2013). If half of these high risk individuals were screened, over 13,000 lung cancer deaths could be prevented (The National Lung Screening Trial Team, 2011). In the city of Philadelphia, 47% of adults have a smoking history (Aria Health, 2016). Therefore, according to the statistics, if all 47% of that population were screened, which would be over 700,000 individuals, it is projected that over 2,100 lung cancer deaths could be prevented in this city alone.

Practice-Focused Question

Philadelphia is home to the highest smoking population of the top 10 largest U.S. cities, with a large majority of those individuals residing in the Northeast Philadelphia area and within the capture of the study site's health system. Most cases of lung cancer are attributed to tobacco use (American Lung Association, 2016). Lack of knowledge or understanding of lung cancer screening, proven to decrease mortality from the disease by 20%, widens a gap between prevention and survival (National Cancer Institute, 2014). The purpose of this project was to bridge that gap through education driven by nurses who were taught how to properly identify high risk individuals with the use of a complementary EHR CDS to appropriately refer patients to the lung cancer screening

program. From a business perspective, increased screening also proliferates program volume and downstream revenue while providing a needed service to the communities.

Sources of Evidence

The National Lung Screening Trial was performed by the National Cancer Institute in coordination with the American College of Radiology Imaging Network. The U.S. study included 53,454 asymptomatic current or former smokers between the ages of 55-74 with at least a 30 pack year history. Pack years were calculated by multiplying the average number of packs of cigarettes smoked per day by the number of years a person had smoked. Participants were randomly assigned to receive three annual screens with either low-dose helical CT or a standard chest X-ray (National Cancer Institute, 2014). The outcome was significant, demonstrating a 20% decrease in mortality of lung cancer in those who were screened with low-dose computed tomographic scanning in comparison to standard chest x-ray (National Cancer Institute, 2014). This study was the main source of evidence that this project was based upon.

The CHNA, performed by the project site in 2015, revealed that smoking remains a persistent problem within the communities; therefore, ongoing efforts should be supported by the health system to educate and care for smokers in the attempt to prevent the development of lung cancer and lung disease. Preventative services, through a dedicated comprehensive lung cancer screening program, can meet the needs of the community on multiple levels. First, smoking cessation counseling and treatment is included in a shared decision-making visit required by insurers for reimbursement, providing a one-on-one opportunity to assist smokers in cessation efforts. Secondly, the

low-dose CT scan delivers radiographic data that will assess the screened individual for signs of lung cancer. This scan also has the ability to detect other abnormalities within the chest, for which further evaluation and diagnostic testing may be needed.

Archival and Operational Data

Previous data were managed by the nurse navigator through manual entry within a Microsoft Excel database, which was inclusive of data for each patient screened through the health system. The radiological system that classifies scans performed was referenced when transferring data into the program's spreadsheet. These data are used to report programmatic clinical values and were a driving force to the identification for needed expansion and further support of the Lung Cancer Screening Program from the administrative level. These data served as baseline information to which they were compared to current data collected and used for the purposes of this project, following the implementation of the EHR CDS system.

This quantitative, focused, and fixed design allowed for programmatic growth to be reviewed in a steadfast manner, for which visual graphics were used for display. With the addition of a CDS system built directly into the current EHR, itemized reports became available, easing the burden of previous all-manual data management. CDS systems link patient data with an electronic knowledge base in order to improve decision making and have been recognized for improving processes (Beeler, Bates, & Hug, 2014).

New metrics analyzed included total number screened in April 2016 versus April 2017, gender of patients referred, smoking status of patients referred, and revenue created following implementation of this project. In the future, values within this community

program could be compared to local, regional, and national statistics, and they could be used for future research opportunities and endeavors.

For the purposes of this project, access to the operational data required permission from the organization, with approval to review and report the data for these educational purposes. I received approval to collect and analyze by the Walden Institutional Review Board (IRB). Given the organization's agreement to host a doctoral student, the understanding that blinded data would be used for project purposes was a nonissue. A copy of this project was shared with the organization upon completion.

Analysis and Synthesis

In mirroring the previous system, data collected secondary to implementation of this project were entered into a Microsoft Excel database. These data primarily tracked all CT scans performed; however, they do not track the nursing-driven referrals made through the EHR CDS pathway. The data were tracked through the current software (AllScripts Sunrise Clinical Manager) to generate reports of referrals made. Along with the nurse navigator, the performance improvement (PI) team oversees these variables and generates reports on a monthly basis now that implementation phases are complete.

A balance between referrals made and screenings performed is expected to vary. The nurse navigator's role in capturing these outliers is going to be a matter of checks and balances. A report of all referrals, accessed by dedicated informatics nurses of the IT department, is then e-mailed to the navigator monthly, who then confirms that referred patients are scheduled for screening. If the referred patient is not scheduled, a follow-up call is then placed to the patient so that further education and benefits of screening can be

discussed and any questions answered. It is the right of the patient to refuse this preventative measure. If that is the case, a letter is created and mailed to the patient as well as the primary care provider, and then documented in the program database. Objective, numerical data have been measured for descriptive statistical analysis and compared to the program's data from the previous year, 2016.

Summary

Screening for individuals at high risk has the potential to improve lung cancer survival rates by finding the disease at an earlier, more treatable stage (American Lung Association, 2016). The implementation of a nursing-driven referral pathway to lung cancer screening through a CDS system has increased the capturing of high risk individuals and encouraged them to participate in a preventative care measure that could save their lives. Nursing and patient education are the cornerstones to this project, further supported by nursing theory and proven models of change. The outcomes of this project will continue to positively affect the residents of Northeast Philadelphia, while having the ability to become standard of care in this area, in this country, and around the world.

Section 4: Findings and Recommendations

Introduction

Philadelphia has the highest smoking rate among the 10 largest cities in the United States at 23% of the adult population (Centers for Disease Control, 2013) despite a recent tax increase on cigarettes across the city. Tobacco use is attributed to 80-90% of lung cancers diagnosed each year (American Cancer Society, 2017). Northeast Philadelphia, home to the project site, has one of the largest populations of smokers in the city and was the target audience of this project. Lung cancer screening with low-dose computed tomographic scanning has been proven to decrease the overall mortality of lung cancer by about 20% (National Cancer Institute, 2014). However, it was only recognized as a reimbursable preventative care service by the Centers for Medicare and Medicaid Services (CMS) and other private insurers since 2015; there is a gap in knowledge within the medical and nursing professions as well as within the community. Therefore, the focus of this scholarly work was to create a nursing-driven referral pathway to lung cancer screening that would identify, educate, and appropriately refer high risk individuals for lung cancer screening. The use of an EHR CDS system was implemented to bring this vision into reality. This project supports community and health care-focused education, while also driving programmatic volume and associated downstream revenue.

The National Lung Screening Trial (NLST) compared two ways of detecting lung cancer: low-dose helical computed tomography (CT) - often referred to as spiral CT - and standard chest x-ray (National Cancer Institute, 2014). This was the largest study

performed spanning years of research, with an ultimate goal of determining if there was an effective modality to screen for the deadliest form of malignancy. The results were positive, identifying that LDCT was proven to decrease the mortality of lung cancer by upwards of 20% through early detection (National Cancer Institute, 2014). Many other researchers have corroborated the findings and are supportive of LDCT to screen for lung cancer. A comprehensive literature search was performed using a variety of research databases that included CINAHL, ProQuest, MEDLINE, and PubMed via the Walden University Library as well as independent searches and literature reviews. I used comparative quantitative data, which had to be obtained by electronic reporting through the EHR system. These reports, targeting data fields associated with smoking status, are a modality to retrieve data that did not exist before this project.

Findings and Implications

After working with a multidisciplinary team, a CDS system was created and added to the nursing admission assessment that is completed upon patient admission to the facility. Information of smoking status and history, along with patient demographic information (age), was built to automatically prompt the nurse to educate the patient about his or her candidacy for lung cancer screening and mark a selection to generate a referral upon discharge from the facility that includes the contact information for the Lung Cancer Screening Clinic. This change in nursing workflow further supports the preventative care component of screening for a malignancy that rarely produces symptoms until the disease is far advanced.

After implementation, monthly reports are reviewed by the nurse navigator who then reaches out to patients in follow-up to schedule their preventative care screening visit, if they have not already called on their own accord. Monthly program reports are tabulated and recorded, which are compared to the previous year's data and are helpful in measuring programmatic growth. Because this is a newer program, and only in existence for a bit over a year, data were limited to a 1-year comparison. However, after reviewing the data collected in comparison to the figures of 2016, it became evident how significant of an impact that the new nursing-driven referral pathway brought to the community and to the screening program.

Figure 9 below displays the referral base to the lung cancer screening program in April 2016, and Figure 10 demonstrates the significant difference after this scholarly project was implemented in April 2017. Programmatic volume tripled in comparison to the previous year.

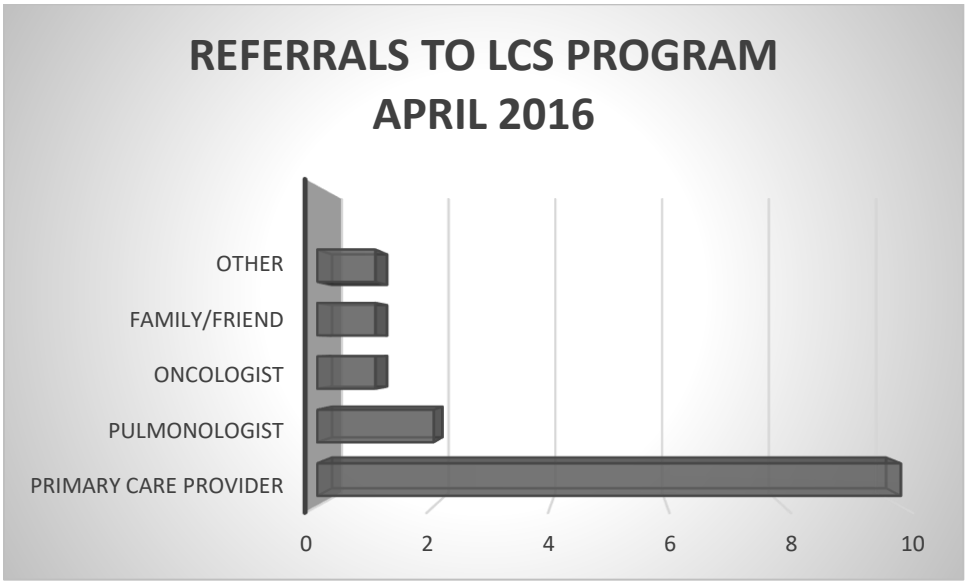

Figure 9. Referrals to the Lung Cancer Screening Program, April 2016.

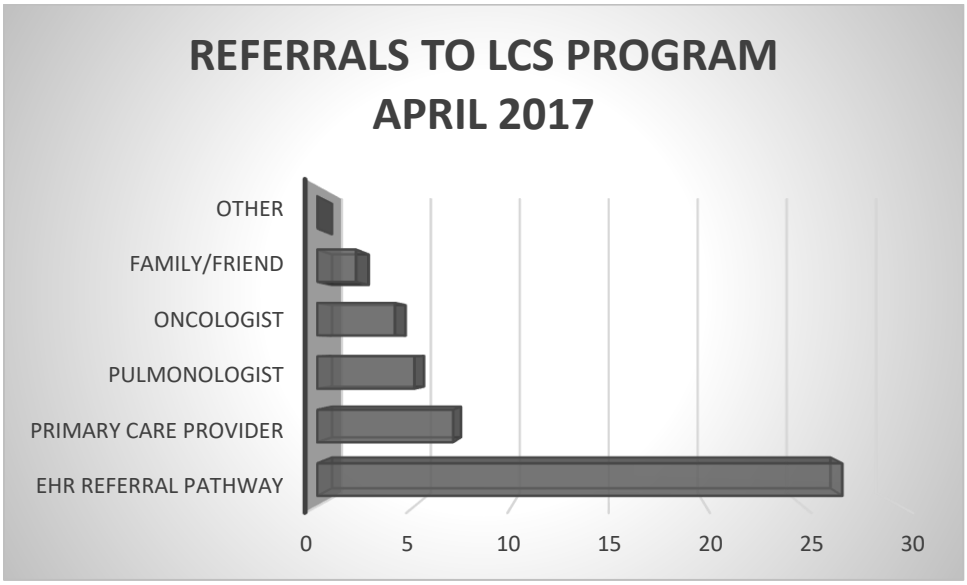

Figure 10. Referrals to the Lung Cancer Screening Program, April 2017.

Figure 11 below was constructed with data managed in 2016 and compared to new electronic data obtained via EHR reporting for 2017, and it focuses on program volume and gender designation. Representative of the screening program activity in 2016 with bar columns on the left, there was a total of 15 patients screened, seven of which were male and eight of which were female. The bar columns on the right demonstrate activity during the month of April 2017 after the nursing-driven referral pathway was initiated. There was growth in patient volume, with a total of 45 patients screened, 26 of which were male and 19 of which were female. Within the first month of implementation, the program experienced a volume tripled from that of the previous year. Volume is expected to continue to increase as nurses become more knowledgeable about this pathway.

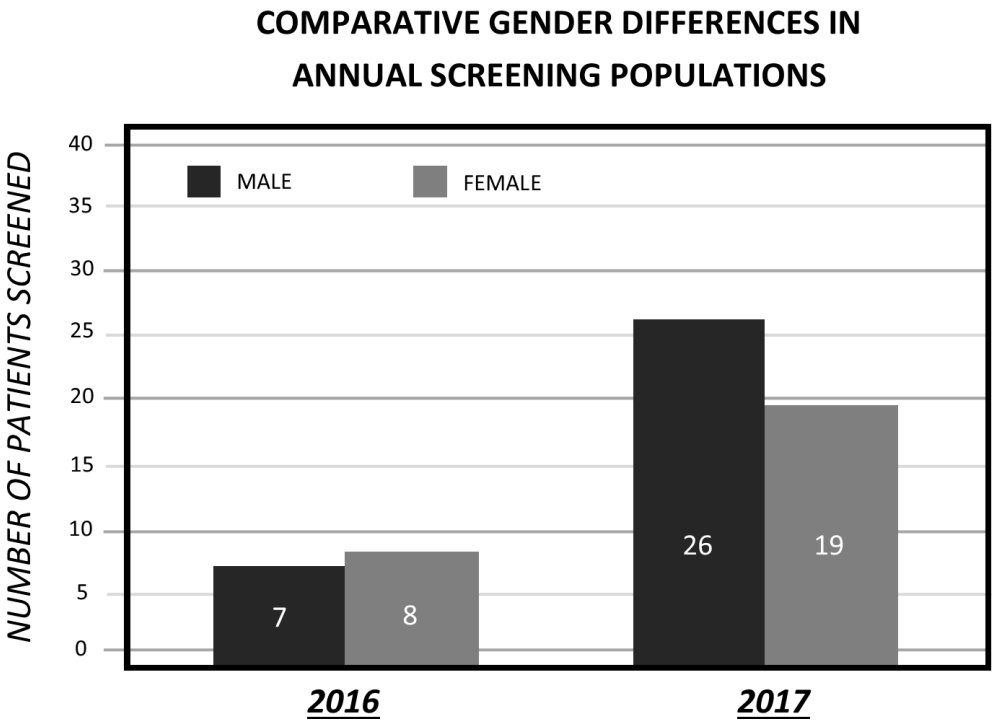

Figure 11. Comparative Gender Differences in Annual Screening Populations.

Other comparative data retrieved focuses on the age of those screened. In 2016, there were 15 patients screened who were mostly referred from primary care providers or pulmonologists. According to the whisker plot below in Figure 12, the median age of the 15 patients screened was 60, as these patients were otherwise seeing a provider in the outpatients setting. The lower quartile, or average years of age below the median, was 58. The upper quartile, or average years of age above the median, was 62.

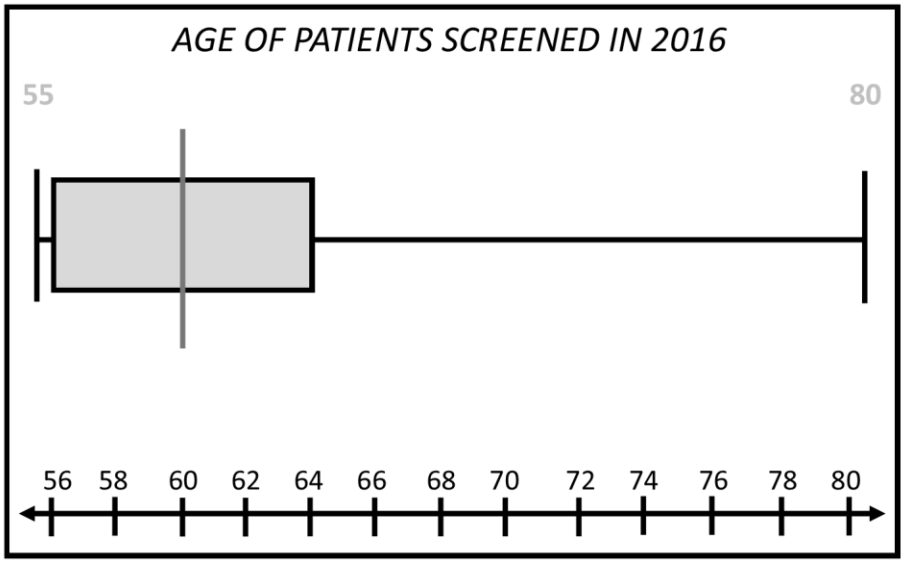

Figure 12. Age of Patients Screened in 2016.

In comparison to those screened in the previous year, the statistics for 2017 were dissimilar and visually displayed in Figure 13 below. Of the 45 patients who underwent lung cancer screening in April 2017, the majority of referrals to the program were from the inpatient nursing-drive referral pathway and were a direct result of the implementation of this scholarly project. The median age of patients screened was 69-years-old. This difference corroborates the pathway in place, as the inpatient acute care population tends to encompass those who are unwell and more commonly involves older adults. The lower quartile average was about 67 years of age, while the upper quartile was about 71 years of age. This information provides a glimpse into the communities that the organization serves and can assist in future outreach event planning to continue awareness and advocacy of the high risk population.

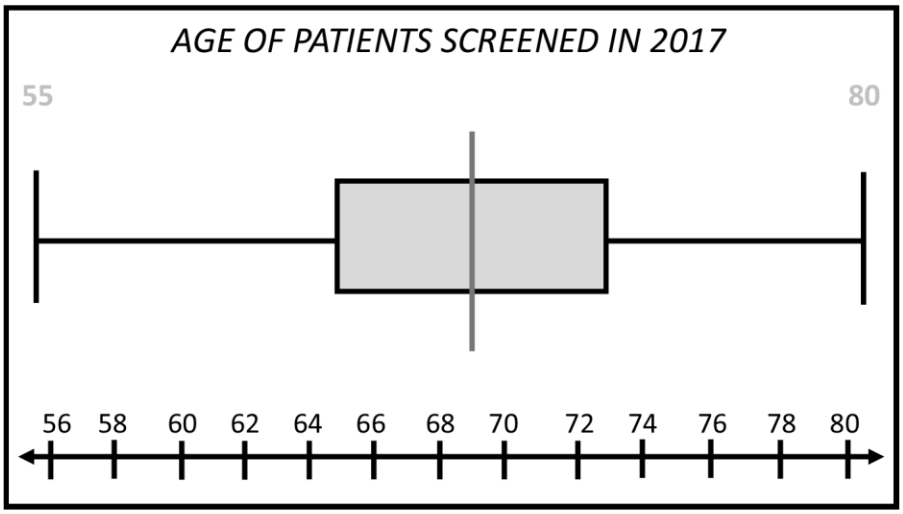

Figure 13. Age of Patients Screened in 2017.

Figure 14 represented the current smoking status of those individuals who were identified as high risk for lung cancer development as based on current guidelines. The CHNA performed by the organization in 2015 calculated that 47% of the populations served had a history of smoking, although it did not depict the population that still smoked. The first chart symbolized the 15 patients screened in 2016: 66% were current smokers while 34% were former smokers within the last 15 years. This statistic is higher than projected in the community needs assessment; however, it was a smaller population of 15 individuals.

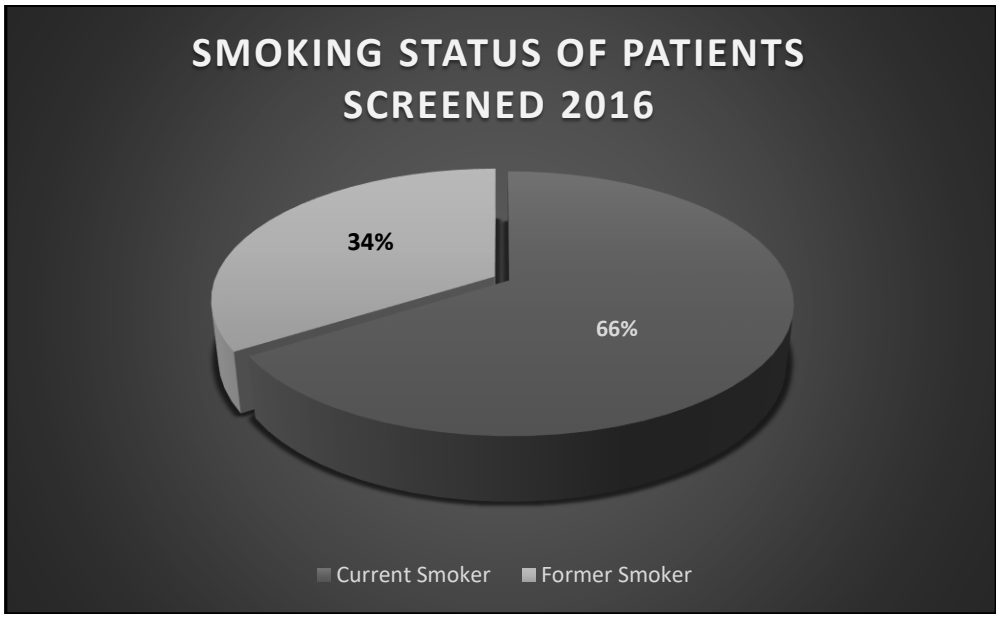

Figure 14. Smoking status of Patients Screened in 2016.

Figure 15 represented the data collected from April 2017, after a nursing-driven pathway was implemented with the assistance of a CDS system. Of the 45 patients screened after the first month of use, 72% of the population was current smokers while just 28% were former smokers. Despite an increased cigarette tax and smoke-free policy within the city of Philadelphia, residents in this area continued to smoke, without evidence of decline in the future. Community outreach to educate and advocate for lung cancer screening has never been more crucial for citizens of Northeast Philadelphia.

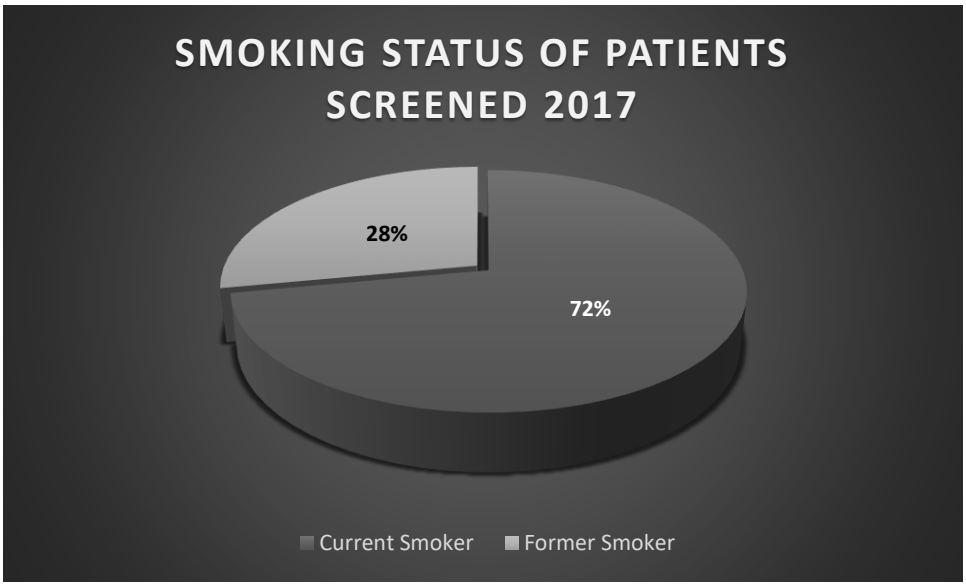

Figure 15. Smoking Status of Patients Screening in 2017.

As a brand-new initiative, it is likely that as nursing education and competency strengthens, an increase in referrals will be seen. In coordination with the nursing education department, an annual online lesson/quiz-type competency will be added to the established organizational continued educational requirements of every employed nurse across the organization. Reinforcement of this education will also be added to annual hands-on nursing skill sessions with a presentation board that has been created by the nursing education department during the work of this project.

The project touched multiple beneficiaries, which will continue to expand as the program further matures. First, on an individual level, there are two direct inheritors of this project: the nursing workforce and the patient. A large portion of this project focused on education about lung cancer screening for the nursing community. The EHR CDS

system was put into place as a reminder for nurses to facilitate the screening conversation with the patient. Nurses are now better equipped with understanding of eligibility criteria for lung cancer screening and will continue to sharpen those skills with continued education and competency testing.

The patients are the primary beneficiary of this project as they are directly referred for lung cancer screening, which may be a lifesaving preventative care measure. Since recent implementation of this new nursing-driven pathway, two out of 45 patients screened were discovered to have suspicious findings. One patient continued to undergo further testing, while the other patient had a biopsy-proven clinical early stage disease and was scheduled for resection. The importance of lung cancer screening for all eligible patients is further recognized in the discovery of an early stage malignancy that could have otherwise been fatal, as the patient was asymptomatic. Lung cancer is significantly underfunded in comparison to many other types of malignancies, in regards to advocacy and research. Lung cancer screening as a preventative care metric is an important message to spread to all, but particularly in the communities within Northeast Philadelphia, one of the largest smoking populations within the city.

In this project, I focused on the inpatient population being admitted to the project site facility. In the future, this pathway will be expanded to the emergency room and outpatient environments in an effort to capture eligible patients in all arenas. From an organizational standpoint, the success of the lung cancer screening program, supported by a nursing-driven referral pathway, also means success in providing quality preventative care for the communities. Furthermore, the downstream revenue from this program is

beneficial to the organization from a financial and business perspective. Figure 16 below demonstrates organizational reimbursement received during April 2016 in comparison to April 2017. By implementing this nursing-driven pathway, the hospital received an increase of $3826.50 this year. Financial gain is projected to increase with improving nursing competency as well as additional pathways in other arenas of care.

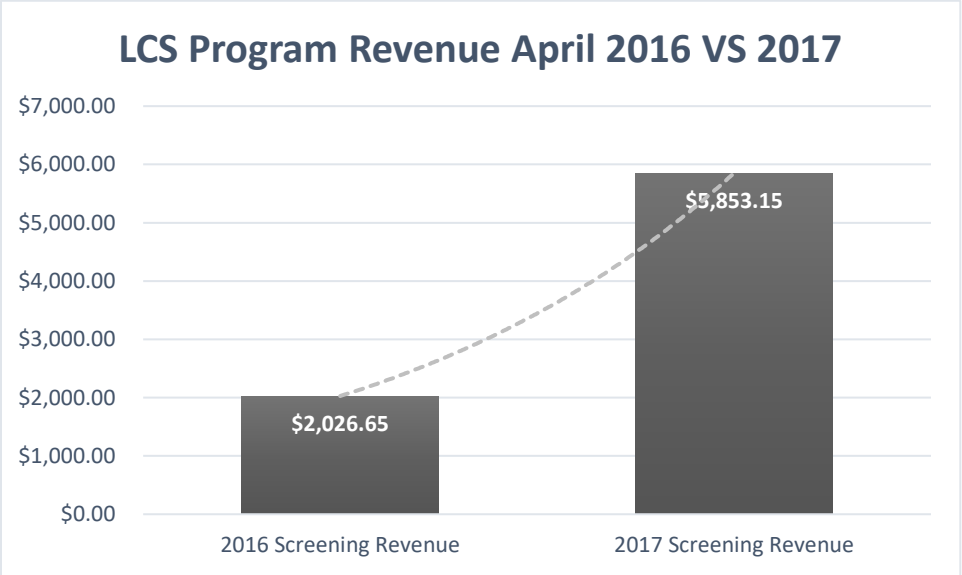

Figure 16. Lung Cancer Screening Program Revenue April 2016 verses 2017.

A 2012 study found lung cancer screening to be one of the most cost-effective screening tests available at about $11,000 per life-year saved, compared with $18,000 for colon cancer screening, $31,000 for breast cancer screening, and $50,000 for cervical cancer screening (Pyenson, Sander, Jiang, Kahn and Mulshine, 2012).

Lung cancer is the most common cause of death from cancer worldwide, estimated to be responsible for nearly one in five; 1.59 million deaths, 19.4% of the total (World Health Organization, 2012). This type of pathway, driven by the nursing workforce, could be easily implemented across this country and around the world in an effort to detect earlier stage lung malignancies, when more treatments are available and more lives could be saved. Most patients diagnosed with lung cancer today already have advanced disease (40% are stage IV, 30% are stage III), and the current five-year survival rate is only 16% (Howlander et al, 1995-2008). An element of lung cancer screening includes a shared decision making discussion and tobacco counseling for current smokers. If all eligible patients went forward with lung cancer screening, that means that each smoker would receive tobacco dependence counseling and be offered treatment. Smoking, a main cause of small cell and nonsmall cell lung cancers, contributes to 80% and 90% of lung cancer deaths in women and men, respectively (American Lung Association, 2016). Lung cancer screening has the ability to change the statistics of lung cancer as we know it, positively impacting our society by decreasing the smoking population and subsequent second hand smoke-exposed population, saving the lives of some 1.6 million individuals around the globe; social change at its very best.

Recommendations

The creation and implementation of a nursing driven referral pathway to lung cancer screening has partially closed the gap of identifying and referring all high-risk individuals for lung cancer screening within a community health system in Northeast Philadelphia. Because eligibility criteria are more specific, say in comparison to other

preventative cancer screenings (breast cancer screening to start at age 40, colon cancer screening to start at age 50, etc.), it is imperative to educate and drive referrals for screening in an effort to decrease the smoking population while detecting otherwise asymptomatic lung malignancies. By educating the nursing sector, the project simultaneously initiated a new nursing workflow to prompt the education of patients regarding the importance of screening with subsequent appropriate patient referral.

This same pathway is recommended to also be executed in the outpatient and ambulatory settings outside of the acute care system. The IT department will continue to work on creating a CDS system for these other settings, and once these pathways are created and implemented, the conduit to lung cancer screening across the continuum of a community health care organization will be comprehensive and complete. Nursing and staff education will also need to be extended to caregivers in other settings, specific to the practice and or specialty, and will continue to be managed by the staff and nursing education department as well as other appointed staff for specific arenas. Evaluation of this pathway will be identical to this project, in that electronic reports will be generated via the EHR system by the lung cancer screening nurse navigator, who will then follow-up with the patients to schedule their screening. As referrals increase and volume grows, further employment within the program will likely be required. In coordination with that volume, notable downstream revenue will also be identified.

Contribution of the Doctoral Project Team

This project would not have been possible without the partnership of the Lung Cancer Screening Program Committee (LCSPC); a multidisciplinary group of individuals spanning administrative, clinical, and auxiliary roles, appointed to work collaboratively to establish, develop, and implement a new preventative care service line. For this particular programmatic project, teamwork with key stakeholders included collaboration with the information technology team and the nursing and staff education teams, who facilitated implementation of this new nursing-driven pathway. As this project matured, it was then presented to the LCSPC for approval. Recommendations would be offered and changes made as needed before the final product was created and subsequently approved. Once approved, education and implementation of the pathway occurred in the course of two weeks. Although it was a rapid implementation timeline, preparation by the above alliances made the transition happen smoothly. Now that the project has been launched and results severely positive, this project will be taken to other arenas of care to include the emergency room, ambulatory care centers, outpatient offices, primary care offices, and specialty offices across the organization. Further expansion of this project will continue to be managed by the above committee and cooperating departments.

Strengths and Limitations

The strengths of this project include a strong and motivated multidisciplinary and collaborative group of stakeholders, open communication access to project contributors, and rapid turnaround of project creation and implementation once approval was gained.

Limitations of this project include that the pathway was created for the inpatient facility only and therefore further pathways will need to be established in the future. Certainly, a great start nonetheless.

In the future, it is recommended that the organization create additional pathways to capture all patients being seen in all areas of care, until lung cancer screening becomes a preventative care service that is recognized, understood and followed by healthcare workers and members of the community alike. This model can be used for other forms of preventative care cancer screenings and similar disease process education, such as diabetes and heart failure.

Section 5: Dissemination Plan

The dissemination of the findings of this project were first obtained and reviewed by the lung cancer screening nurse navigator. Data and comparative statistics, as displayed above, were presented to the Lung Cancer Screening Program Committee for review and discussion. Ongoing collective and comparative data will be consolidated and reported to senior administration by the chair of the committee, during a formal quarterly administrative meeting. Lastly, in follow-up to the nursing staff and project contributors, and in an effort to demonstrate the impact that has resulted from the effort put forward, broad data will be disseminated to the employees of the organization in a quarterly publication with hospital updates for the health system. It is important to distribute this data, given how positive the results were, so that the nurses who are completing this process can visually see the difference they are making in their communities.

This nursing-driven pathway, created and developed by a doctoral-prepared nurse, in conjunction with a multidisciplinary team of nurse educators and informatics nurses, has warranted presentation to the nursing profession. Local and national nursing-based conference and seminars, as well as dissemination through a variety of nursing organizations and publications, would not only continue the mission of lung cancer screening awareness, but also lend further support and endorsement of the nursing profession.

Analysis of Self

When enrolling in the doctor of nursing practice program, I was intimidated by the challenges that I would face in pursuit of a terminal degree in nursing, and yet excited and motivated to push myself to the limit and expand my knowledge and repertoire beyond the boundaries that I knew possible. As my role in this project comes to an end, I reflect back on the responsibilities, tasks, and functions that I had the privilege of being involved with and am grateful for an incredible preceptor and mentor, as well as an amazing practicum experience for the past year.

My Role as a Nurse Practitioner

Working with thoracic surgery patients, mostly those with diagnoses of lung cancer, I did not have a need to discuss or recommend lung cancer screening. However, on my last day of my doctoral practicum, I was approached by my preceptor and clinical director of the program with an offer to become involved in the lung cancer screening program permanently. My role as a nurse practitioner is now further intensified to focus on preventative care, as I have accepted this offer and will be involved in ongoing growth and expansion of the program. My role as a doctoral student has provided me with an opportunity to continue this work and implement further pathways to lung cancer screening. This position will allow me to take the next step in my professional journey, as I become involved in programmatic development and further understand the innerworkings of advanced nursing practice.

My Role as a Scholar

As a doctoral-prepared nurse, in coordination with the new position within the project site, I will continue to forge further pathways to screening and to gather, review, and publish data associated with the outcomes and variables of this program. Although I reviewed a plethora of data for this project, the number of variables for ongoing research and publication are endless. I look forward to the possibilities and future endeavors that lie before me, particularly within the research realm. With a professional goal of being a frequently published advanced practice nurse, I am energized to be able to work within this program to further build my portfolio, with a long-term goal of becoming a national leader on the topic.

My Role as a Project Manager

In managing this project, I was faced with many responsibilities and had to ensure that the goals set forth to complete this project were punctual to the project timeline. Thankfully, I was able to collaborate with a team of dedicated individuals who could bring my vision to life. Although time consuming and challenging at times, my experience in developing and implementing this project was exciting and a pleasure to be a part of. This experience has prepared me to take on a new role within the program while also opening my eyes to higher level collaboration and program development, as well as awareness of the expectations of holding elevated positions within an organization.

I am elated to be writing the last section of this DNP scholarly paper. However, this end is only the beginning of my next journey. I feel privileged to be able to continue

the work that I have started for this project and look forward to the many opportunities that I will be privy to in the future. To say that I have become passionate about this mission would not serve my enthusiasm justice. I am dedicated to continuing to raise awareness and support of preventative care through lung cancer screening.

Summary

Lung cancer takes more lives annually than any other form of cancer. Philadelphia, particularly the northeastern region and home to the project site, has one of the largest smoking populations within the city. Lung cancer screening has been proven to decrease mortality from the disease by 20%, with the use of low-dose computed tomographic scanning (National Cancer Institute, 2014). This modality is an inexpensive yet efficient attempt to detect, diagnose, and treat an otherwise deadly disease. Lung cancer screening is the opportunity to make a difference in the existence of this disease and save the lives of those who are often lost by this fatal process.

Nurses serve as the catalyst between this knowledge and the action of screening itself. But that has all changed in a community hospital and health system that has recognized the significance of lung cancer screening and dedicated a team of stakeholders who were willing and able to make a difference. A nursing-driven pathway and new nursing workflow addresses the smoking status and history of each patient admitted to the organization in an effort to identify those who are considered high risk for lung cancer development. Each patient receives verbal and printed information on the purpose of lung cancer screening and why he or she meets eligibility for the preventative care service. A dedicated nurse navigator then reaches out to those individuals, after pulling

reports of identified patients, for further explanation and scheduling. The loop hole that previously existed has now been tightened to capture patients who may otherwise go on without the knowledge of the availability and potential lifesaving outcomes of lung cancer screening. This project is just the beginning, with goals set forth to target and reach all areas within this health system. There is potential for this type of referral pathway to be implemented in every hospital, health system, and organization in this city, state, country, and around the world. This model, driven by nurses, is an example of the all-encompassing nature of the responsibility of the nursing workforce in an effort to save lives each and every day. This project is proof that preventative care can and does save lives. Nurses demonstrate power in numbers as well as knowledge, and they can be the change that has been sought for decades in preventing and curing lung cancer.

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