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Improving the rates of smoking history documentation in the electronic medical record.

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Improving the Rates of Smoking History Documentation in the Electronic Medical Record

by

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Dedication

I would like to dedicate this manuscript in memory of my grandmother, Betty Jane McCleese. Betty was a cancer survivor, and her journey helped ignite my ongoing curiosity and passion for learning about how cancer affects us, what we can do to prevent it, and how we can improve the lives of those living with cancer.

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Abstract

Lung cancer is the leading cause of cancer related deaths in the United States, and Kentucky leads the nation in lung cancer deaths. Lung cancer care also contributes billions of dollars a year to the cost of health care in this country. The U.S. Preventive Services Task Force (USPSTF) recommends low-dose computed tomography (LDCT) for lung cancer screening with a grade B recommendation, which is a covered service under the Centers for Medicare and Medicaid Services (CMS) guidelines. In order to qualify, patients must have an appropriately documented smoking history. A primary care office was identified within a major healthcare system in Northern Kentucky that has an existing lung cancer screening program. It was found that patient smoking history information was not being properly documented in the electronic medical record (EMR). A quality improvement program was implemented. The program included a lunchtime educational presentation regarding lung cancer screening requirements and appropriate smoking history documentation in the EMR. Analysis revealed that staff members had a high rate of satisfaction with the program overall but were not as satisfied with implementing the educational program during their lunch break. The impact on smoking history documentation rates was unable to be interpreted due to an unforeseen change in the process for entering referrals into the EMR, which occurred 14 days after implementation of this educational intervention.

Key words: educational intervention, electronic health record, electronic medical record, lung cancer screening, primary care, smoking history documentation

Improving the Rates of Smoking History documentation in the Electronic Medical Record

Cancer is the second leading cause of death in the U.S. behind heart disease (U.S. Cancer Statistics Working Group, 2020). Lung cancer is the third most common cancer in the United States and is the leading cause of all cancer related deaths, with 27% of all cancer deaths being lung cancer related (Humphrey et al., 2013). In 2017, the most recent year for which data are available, there were 221,121 new cases of lung cancer and 145,849 people died from lung cancers in the United States (USCSWG, 2020). Kentucky leads the nation in overall cancer rates, with 510.2 per 100,000 people, and rate of overall cancer related deaths, with 186.0 per 100,000 people (USCSWG, 2020). Kentucky also leads the nation in rates of new lung cancers with 87.0 new lung cancer cases per 100,000 people, and rates of lung cancer deaths with 56.7 lung cancer related deaths per 100,000 people. Overall cancer care in the United States was estimated to cost $147.5 billion in 2015, with $13.4 billion coming from lung cancer cases (American Lung Association, 2019). In 2005, it was estimated that lung cancer cost an additional $36.1 billion dollars due to lost productivity.

Smoking is the leading cause of preventable death and disability in the United States (Centers for Disease Control, 2019). Smoking is a risk factor for almost every type of cancer, and especially lung cancer. Nationwide, it is estimated that 85% of lung cancer cases are attributable to smoking and that lung cancer accounts for 33% of overall mortality among heavy smokers (Humphrey et al., 2013). In 2017, Kentucky had the second highest adult smoking rate among all the states with 24.6% (CDC, 2019). Compared to never smokers, female smokers are 13 times more likely to develop lung cancer and male smokers are 23 times more likely to develop lung cancer (ALA, 2019). Undoubtedly, Kentucky's high smoking rate has been a major contributing factor to the high rates of lung cancer among the residents.

Background

Identifying evidence-based health promotion and screening measures can improve the overall health and longevity of Kentuckians. While education programs to prevent smoking and smoking cessation interventions are an important and vital piece of the solution, lung cancer screening also plays a significant role. Because there are many Kentuckians who are current or former long-time smokers, they are at an increased risk for developing lung cancer. Evidence shows that lung cancer screening leads to early detection and can reduce mortality from lung cancer by 14-20% in high-risk populations (ALA, 2019).

In 2013, a systematic review of existing literature was conducted to update the recommendation by the U.S Preventive Services Task Force (USPSTF) regarding the use of low-dose computed tomography (LDCT) for lung cancer screening. Researchers concluded that there is strong evidence that LDCT screening can reduce lung cancer deaths and all-cause mortality rates (Humphrey et al., 2013). The USPSTF (2013) currently recommends annual LDCT as a screening tool for lung cancer. The patient population that is appropriate for this screening is adults aged 55 to 80 years, who have at least a 30-pack year smoking history, are current smokers or have quit within the last 15 years, and are good surgical candidates (USPSTF, 2013). This screening schedule should be discontinued once the patient has reached a 15-year abstinence from smoking or develops a condition that is life limiting and would exclude the patient for surgical intervention should a lung cancer be detected.

The Centers for Medicare and Medicaid Services (CMS) covers annual LDCT lung cancer screenings as a preventive service under Part B coverage (CMS, 2017). Written orders for these screenings must be documented in the patient's medical record, and must contain

qualifying criteria, including actual pack year smoking history, current smoking status, and number of years since quitting if the patient is a former smoker.

Clinical Problem

Though the USPSTF's recommendation for LDCT for lung cancer screening was published in 2013, rates of eligible patients who are receiving lung cancer screening haven't increased as much as researchers expected (Graff, 2017). It was one of the goals outlined in the Kentucky State Health Improvement Plan (2018) to increase the number and quality of lung cancer screenings of high-risk Kentucky adults. A local healthcare system with an existing lung cancer screening program was identified. St. Elizabeth Healthcare (2019) in Northern Kentucky currently has a nationally recognized multidisciplinary lung cancer screening program and performs approximately 400 LDCT lung cancer screenings for high-risk patients every month. The program uses CMS criteria as a guideline for eligibility. One of the goals of this program is to offer an affordable retail option for LDCT lung cancer screening for qualifying patients who may be uninsured or underinsured (M. Lockwood, personal communication, June 14, 2019).

The nurse navigator for the St. Elizabeth lung cancer screening program was contacted and a needs assessment was conducted to determine if any quality improvement opportunities existed in regard to the current program. The needs assessment consisted of an informal brainstorming session between the project leader and the nurse navigator; followed by a more formal meeting between the project leader, nurse navigator, and physician champion.

During the needs assessment, a problem affecting the quality of the current lung cancer screening program was identified. Physician offices within this local healthcare system were failing to capture a qualifying smoking history for all patients who were being referred for lung cancer screening. This was identified as an issue not only because a qualifying smoking history

is required to be documented by insurance payors, but it likely indicates that smoking histories were not being documented for other patients as well. Smoking history documented in the electronic medical record (EMR) alerts providers that a patient is at increased risk of chronic respiratory and cardiovascular illness as well as cancer. An additional meeting took place between the project leader, nurse navigator, quality team member, and care coordination team member during which possible causes and solutions to this problem were discussed.

Literature Review

Using the Cumulative Index to Nursing and Allied Health Literature (CINAHL) database, a keyword search was conducted using the terms “primary care” and “lung cancer screening”. This resulted in 59 entries, and the search was then limited by specifying only results from the past five years, only peer-reviewed academic journals, and only studies from the United States. These additional parameters yielded 24 results. A second keyword search of the CINAHL database was conducted using the terms “smoking history” and “EMR or electronic medical records or EHR or electronic health records” using the same search limiters. This search yielded 7 additional results. The content of these 31 articles was assessed and articles were selected for inclusion in the literature review if they were deemed to contribute to the understanding of the clinical problem in a meaningful way.

Seventeen articles were chosen from the CINAHL database. One additional article was identified in the “recommended articles” section of Elsevier’s Science Direct online database. The final manuscript selected for review was the seminal study identified in many of the selected articles, the National Lung Screening Trial, which also formed the basis for the USPSTF recommendations for LDCT lung cancer screening. Of the fourteen articles that were discarded, seven were expert opinions or editorials, two had significant concerns for generalizability of

findings due to sample size and patient population. Others included a systematic review regarding chronic disease management, implementation of improved EMR training for providers, an overview and study design of a study that was chosen, a review of a study that was chosen, and another was a duplicate of a chosen study that had been published in another journal.

An assessment of each article was completed using a systematic approach to determine strength and level of evidence, reliability and validity of tools and measures, potential for bias, and quality of the evidence provided by examining strengths and weaknesses within each manuscript. Strength of evidence ratings were given based on a rating system for the hierarchy of evidence provided by Melnyk and Fineout-Overholt (2015). Of the selected articles, five were qualitative studies, five were survey-based descriptive studies, three were retrospective cohort studies, one was a randomized control trial, one was a pilot feasibility study, one was a clinical demonstration project, one was a mixed methods study involving qualitative interviews with a survey component, and one was a before and after cohort study.

Critical Appraisal

The results of the National Lung Screening Trial published in 2011 (Aberle et al.) provided a basis for the current guidelines recommended by the USPSTF regarding lung cancer screening. This trial was referenced in several of the studies selected for this review. In this trial, 53,454 persons deemed to be at high risk for lung cancer were randomized into either annual LDCT screening or screening with single view posteroanterior chest radiography. It was found that the use of LDCT reduced the mortality rate from lung cancer when compared to plain radiography by 20%. The all-cause mortality rate was also decreased in the LDCT group versus the plain radiography group by 6.7%. The USPSTF (2013) assigned a Grade B recommendation for LDCT due to a high certainty that there is a moderate net benefit and suggests that providers

should offer screening to high-risk populations. This Grade B recommendation was designated after careful consideration of the potential harms of screening, such as a high false positive rate, potential for over-diagnosis, and potential for development of radiation induced cancers from repeated exposure to LDCT (Aberle et al. 2011).

Integration into Clinical Practice

Kinsinger et al. (2017) argued that although the USPSTF recommendation was in favor of implementing LDCT for lung cancer screening, the clinical trial process may not be easily transferable to clinical practice. A clinical demonstration project involving 4,246 eligible patients was implemented at eight academic Veterans Health Administration (VHA) hospitals to determine feasibility and implications of implementing a lung cancer screening program in a large, multi-site health care system. It was found that in order to follow the recommended guidelines, a significant clinical effort needed to be made. This would include new tools for high-risk patient identification, an update to the currently utilized EMR system, and significant staff engagement, training, and coordination. It was projected that nearly 900,000 out of 6.7 million patients currently enrolled in the VHA system would be eligible for screening, and based on experience from this project, it was estimated that only about 58% of eligible patients would agree to be screened. This finding was echoed in another study that showed a 60% adherence rate for lung cancer screening among patients who were referred for LDCT by a provider at an academic medical center (Duong et al., 2017). It is worth noting that the demographics of veterans involved in the VHA project were much different from that of the population involved in the NLST (Kinsinger et al., 2017). Patients at the VHA tended to be older (52.5% were 65 or older compared to 26.6% of NLST participants), a higher proportion were male (96.3% compared to 59% in the NLST) and included more current smokers (56.6% compared to 48.2%).

These differences may or may not alter the benefit shown in the NLST. The authors indicated that the benefit of screening is not yet certain, but implementation would require a complex and challenging undertaking.

Gesthalter et al. (2017) also concluded that a lung cancer screening program implementation required sophisticated coordination and effective interdisciplinary collaboration. Several barriers to implementation were identified including workload management to properly identify suspicious pulmonary findings and obtaining buy-in from primary care providers. Nurse coordinators were deployed to manage workload, support and maintain screening registries, coordinate multidisciplinary conferences, and roll out implementation in stages. Buy-in was increased among primary care providers by using clear assignment of role expectations, education sessions, and outcome feedback and audits.

Provider Beliefs

Providers' attitudes and perceptions of lung cancer screening programs can impact implementation practices. Several barriers regarding providers' beliefs in the context of lung cancer screening have been identified. Qui et al. (2016) found that providers reported challenges attracting patients for screening programs and low staff participation. This study also suggested that many providers are not convinced that lung cancer screening is valid, a recurring theme among studies examining provider beliefs and attitudes regarding lung cancer screening. Eberth et al. (2018) found that although 75% (n = 293) of the providers surveyed admitted benefits of screening outweigh risks, only about 50% believed that sufficient evidence existed to demonstrate a mortality reduction with screening. Other barriers the researchers identified included prior authorization requirements, coverage denials, and lack of insurance coverage. Nearly 30% (n = 248) of providers surveyed by Raz et al. (2016) specified that the benefit of

lung cancer screening was not clear. Concerns about insurance coverage and potential harms of lung cancer screening were also identified as barriers.

Another frequent barrier cited among primary care providers was lack of knowledge concerning lung cancer screening. In one study, primary care providers who were concerned about their own lack of knowledge and consequently were not recommending screening to patients. However, they responded that they would recommend screening if they had more information (Simmons et al., 2017). Rajupet et al. (2017) compared attitudes regarding lung cancer screening between primary care providers and specialists. The authors concluded that primary care providers were not as confident in their ability to identify appropriate patients for screening or decide a course of action for positive screening results, but that primary care providers were just as likely as specialists to recommend LDCT screening for high-risk patients. This sentiment was reiterated in a qualitative study involving primary care providers caring for patients with pulmonary nodules; authors reported providers did not believe they had adequate knowledge to counsel patients regarding lung nodules, but that such information is desired (Golden et al., 2015).

Benefit of Screening

A study in 2018 by Su et al. acknowledged that the benefit of mortality reduction due to lung cancer screening was not clear in several prospective trials. The research team aimed to use a retrospective chart review process to explore the impact of lung cancer screening led diagnosis on mortality rates of patients diagnosed with lung cancer from 2013 to 2016 in an urban, underserved community. After examining the data from 855 patients diagnosed during that timeframe, 175 of them were found to meet criteria for lung cancer screening, but only 19% of those that met criteria actually had completed screening prior to being diagnosed. For those

patients who had undergone screening, lung cancer was detected earlier, and mortality was significantly improved by the end of the follow up period when compared to patients who had not been screened. The authors concluded that this is likely due to the fact that patients who were screened were often diagnosed at an earlier stage, therefore having cancers that are more amenable to curable treatments, such as surgery.

Use of a Decision Aid

Two of the studies selected explored the use of a decision aid for patient education regarding lung cancer screening programs. CMS allows for LDCT for lung cancer screening as a reimbursable service if there has been a shared decision-making and counseling visit with the patient's primary care provider prior to the screening (McDonnell et al., 2018). Shared decision making "is a collaborative communication strategy that allows patients and their PCPs to make health-care decisions together, taking into account the best clinical evidence available as well as the patient's values and preferences" (McDonnell et al., 2018, p. 797). Evidence has shown that the use of decision aids increases patient knowledge, reduces conflict regarding decision making, and integrates patient beliefs and preferences. McDonnell et al. (2018) found the use of a lung cancer screening decision aid, written using plain language at the fifth grade reading level and designed specifically to incorporate patient values, assisted patients with decision making and increased patient satisfaction during clinic visits. Reuland et al. (2018) established that a decision aid increased patient knowledge regarding both benefits and harms of screening, and that there was an inverse relationship between patient knowledge scores and screening preference. For every point increased in a patient's knowledge score after viewing the decision aid, there was a reduction of 27% in odds of preference for screening. The decision aid used in this study was

found to improve patient understanding regarding both over diagnosis and false positive results, as well as assist in reducing patients' biased beliefs about benefits and harms of screening.

Patient Beliefs

Several studies have examined patient's attitudes, beliefs, and knowledge regarding lung cancer screening, themes that were also explored while examining decision aid efficacy. Zeliadt et al. (2015) conducted interviews to determine long-term smokers' attitudes concerning smoking cessation in the context of lung cancer screening and found that almost half of participants relayed that screening lowered their motivations to quit smoking. Several misperceptions were identified, including the opinion that everyone who is screened for lung cancer will benefit, believing screening has a protective effect against lung cancer, and reinforcing beliefs about being among a group of fortunate people who will not develop a smoking related disease if they have a negative screening result. A study by Carter-Harris et al. (2015) also examined the knowledge and beliefs of long-term smokers but used the framework of the Health Belief Model to observe perceived benefits and perceived barriers to screening. Smokers perceived early detection of lung cancer, providing peace of mind, and, in contrast to the findings of Zeliadt et al., a motivation to quit smoking as a benefit of lung cancer screening. Perceived barriers included inconvenience such as time constraints and schedule conflicts, distrust of the healthcare system, and stigma related to smoking. Simmons, et al. (2017) also found the main perceived benefit of screening to be early detection, and also identified fear of results and financial cost as additional barriers. Duong et al. (2017) examined patient attitudes and adherence toward screening and determined that adherent patients were likely to trust their providers, believed that early detection of lung cancer is useful, and believed that CT technology is accurate.

Smoking History Documentation

Several studies have identified that smoking documentation in the EMR is lacking. In one retrospective analysis of data from a lung cancer screening program serving a five-hospital system, researchers compared pack year smoking history found in the EMR to data obtained from the shared decision making visit for patients referred for lung cancer screening and found a 96.2% discordance rate (Modin et al, 2017). It was determined that if the EMR had been the sole means to identify eligible patients, 53.6% of patients would have failed to meet eligibility criteria due to this inaccurate information. In another retrospective analysis at a large academic medical center, although 98% of patient encounters had documentation regarding smoking status, 32% of those encounters had discrepancies (Polubriaginof et al., 2017). Of those 32% with discrepancies, 54.5% were deemed implausible, such as a patient who was first documented as having a smoking history later being documented as a never smoker. Also, only 2.9% of the patients had consistent documentation identifying them as smokers, which was much lower than the national average of 15%. These implausible discrepancies led the authors to believe that the smokers are not being appropriately identified. The authors advocated for clinically actionable smoking status categories for data collection and tools that would allow the patient to input their own smoking history information as possible ways to improve the quality of smoking history status in the EMR.

Tarabichi et al. (2018) found that providers were less likely to refer patients for lung cancer screening when there had been a downward revision in pack year history in the EMR, despite the original documentation showing that the patient previously had a qualifying pack year history. This missed opportunity for accurate documentation was thought to harm patients by not properly identifying patients who might qualify for screening. The study authors

suggested providers should exercise caution when documenting smoking history to ensure it is completed properly. Barber et al. (2015) tried to remedy the problem of incomplete smoking history documentation by implementing a standardized intake tool into the normal clinical workflow as part of the vital signs assessment. This resulted in an increase in patients with completed smoking history documentation of 55%.

Conclusions from Literature Review

Research has shown that lung cancer screening programs can reduce mortality in high-risk populations. Integrating the recommended lung cancer screening guidelines into a clinical practice setting is a complex and challenging endeavor, and strategic planning is necessary to ensure successful implementation. Accurate smoking history documentation is essential to properly identify patients who qualify for LDCT lung cancer screening, but documentation is lacking. Clinically actionable categories in the EMR such as “current smoker” and “former smoker” as well as clinical workflow that integrates smoking status into the vital signs assessment can help medical office staff to identify patients who may qualify for referral for LDCT lung cancer screening. The evidence and conclusions from this review of the literature were used to guide an educational program as part of a quality improvement initiative that aimed to improve the quality of clinical documentation of patient smoking history in the EMR.

Theoretical Framework

Implementation of a planned change can be complex and challenging (Mitchell, 2013). Identifying and utilizing a change theory as a framework for planned change can help to increase the chance of successful implementation. Lippitt’s change theory (Lippitt et al.,1958) was used to guide planning and implementation of this project. This change theory consists of seven phases and is similar to the nursing process, as it involves assessment, planning, implementation,

and evaluation (Mitchell, 2013). These seven phases are: (a) diagnosing the problem, (b) assessing the motivation and capacity for change, (c) assessment of the change agent's motivation and resources, (d) selecting progressive change objectives, (e) choosing the appropriate role of the change agent, (f) maintaining the change, and finally (g) terminating the helping relationship.

The first three phases of Lippitt's theory involve assessment (Mitchell, 2013). The first phase, diagnosing the problem, was completed when the project leader conducted the needs assessment with the nurse navigator and identified key stakeholders. The second phase is assessing the motivation and capacity for change, which is when possible solutions are identified and implementation methods, possible barriers, and facilitators are considered (Simms, 2006). This was completed with the meeting between the project leader, nurse navigator, and physician champion. Facilitators that were identified were that the goals of this quality improvement project align with the goals of St. Elizabeth Physicians to make Northern Kentucky one of the healthiest communities in the country by improving the quality of the lung cancer screening program, and that buy in was obtained from both the lung cancer screening program nurse navigator and the physician champion. Barriers were time constraints of the staff to be able to attend an educational program, and that the program would not be a requirement for staff members therefore potentially limiting attendance. Phase three is assessment of the change agent's motivation and resources. Change agents may be internal or external, and the change process can involve both (Simms, 2006). The project leader was an external agent for this process. The nurse navigator and primary care office manager were internal agents. Assessment of motivations and resources occurred during a meeting between the project leader, lung cancer screening program nurse navigator, and primary care office manager.

Phases four and five are concerned with planning (Mitchell, 2013). Phase four is selecting progressive change objectives, and phase five is choosing the appropriate role of the change agent (Simms, 2006). During these phases, timetables and deadlines were set, the final plan was developed, and the change process was clearly defined. These phases were accomplished during the proposal development and approval process.

Phase six is maintaining the change, and this phase corresponds to the implementation of the project. There is a focus on communication during this phase (Simms, 2006). This communication was realized during the project leader's ongoing interactions with the nurse navigator concerning policy changes following the education session. It was planned that feedback regarding documentation rates would be given to the staff members to demonstrate progress and provide encouragement, however, this was no longer appropriate following a process change regarding the EMR. This unplanned change took place 14 days after the educational program was completed. Phase seven is terminating the helping relationship, and this phase is the piece that corresponds with the evaluation stage of the nursing process (Mitchell, 2013).

Setting and Organizational Assessment

The setting for this project was the St. Elizabeth Physicians primary care office in Crittenden, Kentucky. Crittenden is a small town with a population of 3,815 as of the 2010 census and is located in Grant County (U.S. Census Bureau, Population Division, 2019). Grant County, Kentucky is home to an estimated 25,121 people as of July 1, 2018 (U. S. Census Bureau, n.d.), with the majority of people identifying themselves as Caucasian at 96.9%. It is estimated that among residents under the age of 65, 13% have a disability, and 6.1% do not have health insurance. The primary care office is a part of the St. Elizabeth Physicians healthcare

system that serves the Greater Cincinnati area including Northern Kentucky, Southwest Ohio, and Southeast Indiana. The Crittenden primary care office employs seven providers, including two nurse practitioners and five physicians, and currently serves 14,442 patients (A. Fortner, personal communication, October 17, 2019). Approval for this project was obtained from the practice manager at the St. Elizabeth Crittenden primary care office. Additionally, appropriate approval from the Institutional Review Board (IRB) at University of Louisville was obtained. There were no ethical concerns identified for this quality improvement project.

Purpose

The purpose of this quality improvement project was to improve the rates of smoking history documentation in the EMR for patients who are referred for LDCT lung cancer screening. Proper documentation in the EMR is imperative in order to not only appropriately identify patients who qualify for screening, but also to ensure CMS and other payor requirements are met. Accurately identifying patients as high risk for lung cancer and identifying appropriate screening measures will help to provide efficient care and decrease healthcare costs in the long term. Patients with lung cancers that are identified at an earlier stage can be treated with less expensive modalities, such as surgery (Su et al., 2018), and costs from lost productivity are reduced (ALA, 2019).

One of the specific aims of this quality improvement program was to implement a continuing education program intended for nursing and medical assistant staff. This educational program was designed to increase capture rates for patient smoking history. Increasing the smoking history capture rates will help to provide timely care by identifying patients at high-risk for lung cancer and placing referrals for lung cancer screening as appropriate. A second aim of this project was to identify barriers and facilitators to this quality improvement process. This will

help to determine feasibility for future implementation of similar quality improvement programs throughout the St. Elizabeth Physicians healthcare system.

Intervention

Nursing staff and medical assistants currently follow a clinical workflow to input patient smoking history in the EMR during intake at primary care visit appointments, as a part of the vital signs assessment. Newly hired staff members are given a 15-minute computer-based learning module explaining the importance of capturing smoking history for patients, as well as instructions on how to do so appropriately in Epic, the EMR system that is currently utilized by St. Elizabeth Physicians. Veteran staff members had not completed this new training module since it was created in October 2018. A modified version of this training module was given to medical assistants and nursing staff as part of a lunchtime educational session at the Crittenden primary care office in an effort to determine if this would be an effective way to improve the quality of smoking history documentation in the EMR. Lunch was provided to the entire office staff, regardless of whether they chose to participate in the program.

Each participant was given a demographic questionnaire (Appendix A) to complete prior to the start of the educational session. The educational program consisted of a PowerPoint presentation (Appendix B), which was previously developed by the St. Elizabeth care coordination and quality teams. This educational session was delivered in the lunchroom of the Crittenden primary care office and projected on a tabletop computer monitor. Participants were given printed copies of the PowerPoint slides prior to the start of the educational program. Because the participants lunches were staggered over a 90-minute period, the PowerPoint presentation was given three times at 30-minute intervals to ensure everyone who wanted to participate had the opportunity to do so. Each presentation lasted approximately 12 minutes, and

the participants were given the opportunity to ask questions or make comments after the presentation. At the conclusion of the educational program, participants were asked to complete a written survey (Appendix C) regarding satisfaction with the program. This satisfaction survey was given to staff members immediately following the education session. Once completed, the participants placed their demographic questionnaire and completed surveys into a designated collection folder, which was then sealed. A cookie platter along with a thank you note was sent to the office two weeks following the implementation of the program. This project was approved by the IRB at University of Louisville prior to implementation.

Participants

This quality improvement project was administered to the St. Elizabeth Physicians Crittenden primary care office staff members, and included nine medical assistants, one licensed practical nurse, one registered nurse, one phlebotomist, and the practice manager. Originally, inclusion criteria were limited to only those staff members who regularly provided care to patients over the age of 55; any staff members who provided care exclusively to pediatric patients were to be excluded. Due to an unforeseen change in the process for ordering LDCT lung cancer screening scans, the project leader chose to include satisfaction survey data for all participants who completed a survey, even those who are normally not in a position to enter documentation about smoking history in the EMR. This was done in order to have a better understanding of St. Elizabeth employees' opinions regarding satisfaction with a lunchtime educational session.

Participants were recruited to the educational session with an invitational flyer (Appendix D) sent via email by the practice manager during the week prior to the educational session; this alerted them to the date and time of the program. Consent was not explicitly obtained, as this was

a voluntary program, and participation in the program implied consent. Since this was a voluntary program, and not required by the facility, not all staff members participated. The goal was to have a representative sample by gaining the participation of medical assistants who work with each of the seven providers.

Data Collection

Prior to implementation of the educational program, the nurse navigator generated a report using the Epic EMR system to identify patients at the Crittenden, KY primary care office who were referred for lung cancer screening. Identification of patients was based on the use of Current Procedural Terminology (CPT) billing code G0296, indicating that a patient had attended a shared decision-making visit with a provider regarding lung cancer screening. The nurse navigator then reviewed each referred patient and, using a data collection tool designed by the project leader (Appendix E), documented the total number of patients referred, the number of patients with a complete and qualifying smoking history, and the number of patients with an incomplete or non-qualifying smoking history. The baseline rates of complete and qualifying documentation were taken from data at the end of the month previous to the implementation of the education intervention. This same data was collected at 30-, 60-, and 90-day intervals post implementation of the educational program to evaluate the effectiveness of the program.

All data reports were generated on a password protected computer by the nurse navigator for St. Elizabeth's lung cancer screening program. Only aggregate data was sent to the project leader via secure email, and no patient identifiers were listed on any of the reports. The emails that were sent to the project leader were stored on a password protected laptop computer. The demographic and satisfaction survey data were stored in a locked filing cabinet in the home office of the project leader. The project leader did not review the any of the demographic or

satisfaction survey data until the end of the data collection period to preserve confidentiality. There were no ethical concerns identified for this quality improvement project.

Measurement

Participant satisfaction regarding the educational program was assessed using an anonymous survey with a 5-point Likert-type scale. Preston and Colman (2000) determined this type of rating system has a test-retest reliability of 0.91 and a Cronbach's alpha of 0.82 for a 5-point scale. The survey consisted of five questions and asked about participant satisfaction regarding five areas: (a) length of the educational program, (b) content, (c) having the program during lunchtime, (d) quality of the educational materials, and (e) overall satisfaction. The survey included an opportunity where the participants could provide additional comments or concerns. Demographic data collected included participant age, sex, race, and level of education. Information regarding how long each participant had been in their current position with St. Elizabeth and which providers they worked with was also collected. The data collection tool was used to track and document the total number of patients referred for lung cancer screening and the number of patients whose smoking history was identified as complete and qualifying versus incomplete or not qualifying previous to the educational intervention.

Results

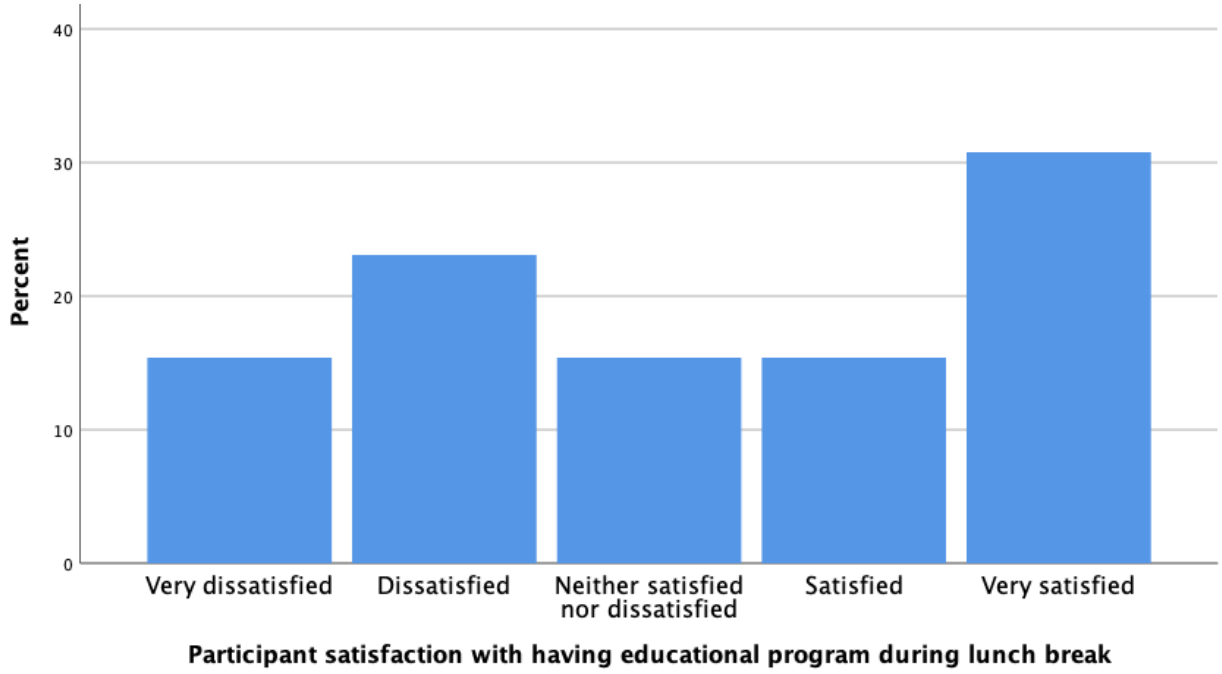
IBM SPSS Statistics version 26 was used to conduct statistical analysis on the demographic and satisfaction survey data. There were 13 participants who returned demographic and satisfaction survey data. All of the participants who chose to complete the survey were Caucasian women. The respondents ranged in age from 28 to 70 years old, with the average age being 40. The majority of respondents were medical assistants (69.2%), although there was one licensed practical nurse (7.7 %) and one registered nurse (7.7%). The participants' years of

experience in their current position ranged from two years to 29 years, with an average of 10 years of experience. The most frequently reported education level of the respondents was an associate degree (46.2%), followed by some college (23.1%), vocational school (15.4%), and finally high school (7.7%).

Almost all of the respondents (92.3%) selected either "satisfied" or "very satisfied" for each of the following categories: (a) length of educational program, (b) content of educational program, (c) quality of educational materials, and (d) overall satisfaction. The respondents were divided when it came to level of satisfaction with having the educational program during their lunch break; 46.2% selected either "satisfied" or "very satisfied", 38.5% selected "dissatisfied" or "very dissatisfied", and 15.4% selected "neither satisfied nor dissatisfied" (see Figure 1). None of the respondents noted any additional comments or concerns.

Figure 1

Participant Satisfaction with Having Educational Session During Lunch Break



In the 30 days prior to the implementation of this educational program, there were 357 patients referred for lung cancer screening, but only 184 of these patients had a complete and qualifying smoking history, at a rate of 51.5%. At 30-days post educational intervention, there were 389 patients referred for lung cancer screening, and 318 patients with complete and qualifying smoking histories, at a rate of 81.7%. However, there was an unplanned change in the process for entering referrals for LDCT lung cancer screenings into the EMR that took place 14 days after the educational intervention was implemented. Unknowingly to the project lead, the computer system was modified in such a way that it is now only possible to refer a patient for a lung cancer screening scan if the patient has a complete and qualifying smoking history entered into the EMR. The rates of patients with complete and qualifying smoking histories for 60- and 90-days post educational intervention were 100% (see Table 1). It is unknown whether this improvement was due to the unforeseen EMR change, or if the educational program had some impact on the rates of documentation.

Table 1

Smoking History Documentation for Patients Referred for LDCT Lung Cancer Screening

Timeframe	Patients with a complete and qualifying smoking history	Patients with an incomplete or non-qualifying smoking history	Total
Baseline	184	173	357
30 days post educational intervention	318	71	389
60 days post educational intervention	212	0	212
90 days post educational intervention	13	0	13

Discussion

Interpretation

Overall, the participants were satisfied with the length and content of the educational program as well as the quality of the materials used. The participants were not as satisfied with having the educational intervention during their lunch break. Although the survey provided an opportunity to address any concerns, none of the participants chose to specify why they may have been dissatisfied with the timing of the program, or suggest a different time. The satisfaction with the timing of the educational program may be increased if the program were to be implemented during a scheduled staff meeting rather than during their lunch break. This type of educational program could be effective for future continuing education modules at St. Elizabeth primary care offices, given that the overall satisfaction with the program was high.

The rate of patients with a complete and qualifying smoking history improved considerably from 51.5% at baseline, to 81.7% at 30 days post intervention, to 100% at both 60- and 90-days post intervention. Since there was a significant unanticipated process change at 14 days post educational intervention, it is unclear how much of an effect the educational program had on the rates of smoking history documentation, and how much was due to this confounding variable. It is clear that the implemented process change had a substantial effect on smoking history documentation rates however, as the rates have improved to 100% since the change was implemented.

Limitations

This quality improvement project had several limitations. The educational program was voluntary; thus, satisfaction rates were only measured for participants who voluntarily attended the educational session. The satisfaction surveys were also optional to those who attended, and

there were some attendees who chose not to complete the survey. These conditions allow for the potential for selection bias, so the results of this satisfaction survey may not reflect the true results of the population. The main limitation of this quality improvement project was the EMR process change that occurred 14 days after the implementation of the educational program. While the results from this process change had the intended consequence of improving the rates of complete and qualifying smoking history documentation among patients referred for LDCT lung cancer screening, it is difficult to determine if the educational program had any impact at all on these rates. However, it could be inferred that the quality improvement program implementation attracted attention to the problem and served as a facilitator to the process change in the EMR.

Conclusions

This quality improvement project was designed to implement a continuing education program intended for nursing and medical assistant staff. Currently, only newly hired staff members are required to complete a computer-based learning module that specifically focuses on the importance of capturing smoking history for patients, as well as instructions on how to do so appropriately in the EMR. This project found that primary care staff members had a high rate of satisfaction overall but were not as satisfied with having the education program during their lunch break. The main goal of this quality improvement project was to determine if this educational program could improve smoking history documentation rates in the EMR for patients who are referred for LDCT lung cancer screening. Due to an unanticipated process change regarding the way lung cancer screening referrals are entered into the EMR, this was unable to be measured. Going forward, the organization may benefit by assessing smoking history documentation rates for all patients, not just those referred for lung cancer screening, to determine if a staff continuing education module could have a significant impact on rates of

smoking history documentation. If it is determined that an educational program for staff members is effective in improving rates of smoking history documentation, a modified version may be added to the annual computer-based learning modules for primary care office staff members.

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Appendix A

Demographic Information Questionnaire

Age: _____ Gender: _____

Race/Ethnicity: _____

Job title: _____

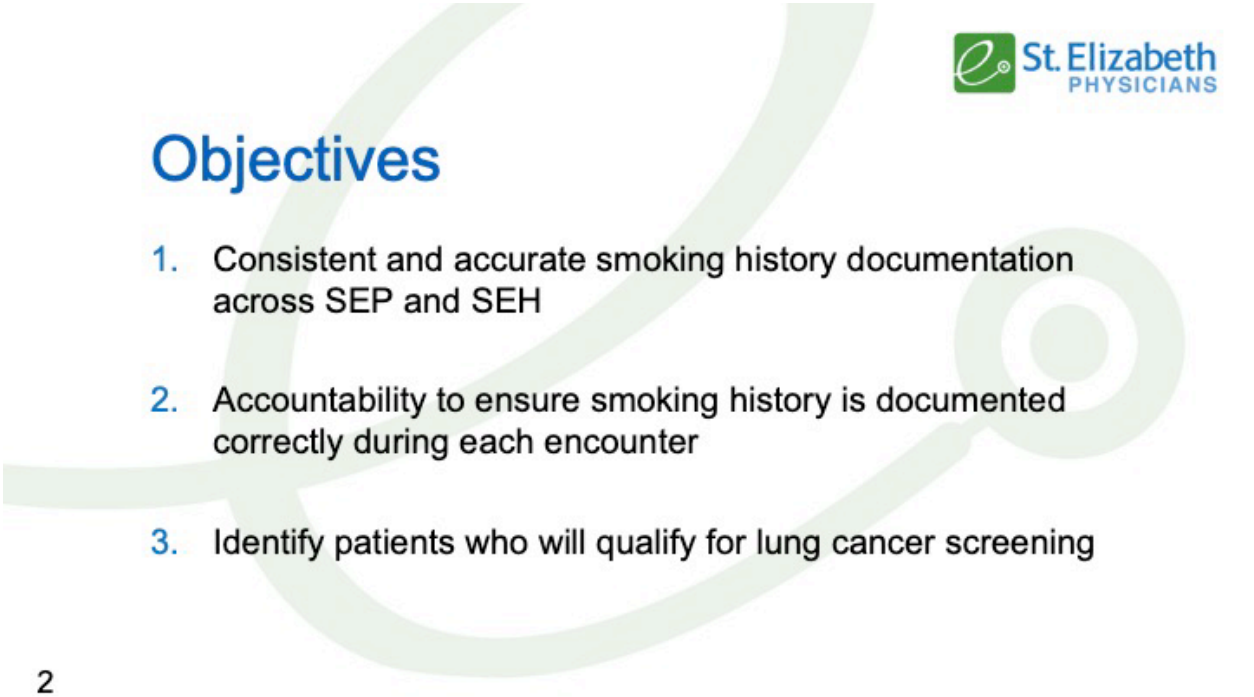
Education level: _____

Time in current position at St. Elizabeth: _____

Which provider(s) do you work with: _____

Appendix B

Educational PowerPoint Presentation Slides



St. Elizabeth PHYSICIANS

Collaborating for Success!

- SEP and SEH are collaborating to make Northern Kentucky one of the healthiest communities in the country.
- Thoracic Oncology will be a key component of the new Cancer Center.
- St. Elizabeth is focusing on using LDCT (low-dose CT) lung cancer screening for the recognition of early stage lung cancer.

3

St. Elizabeth PHYSICIANS

Criterion for LDCT Scan

- Age: 55-77 years old
- Smoking history: ≥ 30 pack year
- Smoking Status: Current smoker or quit within the last 15 years
- Symptoms: **No** current symptoms suggestive of lung cancer
  - Hemoptysis
  - 15 pound unexpected weight loss in one year

4

Barriers

St. Elizabeth PHYSICIANS

1. Ordering a LDCT scan requires a face-to-face encounter with a provider.
2. Smoking history data is inaccurate.
3. Epic does not automatically calculate years smoked. Only calculates pack years*.
4. Mandatory shared decision making component for initial screening and dropping the G0296 code for reimbursement.

****pack year*** = amount a person has smoked over a period of time. Multiply packs of cigarettes smoked per day by number of years smoked.

5

Updating Smoking History Is Important:

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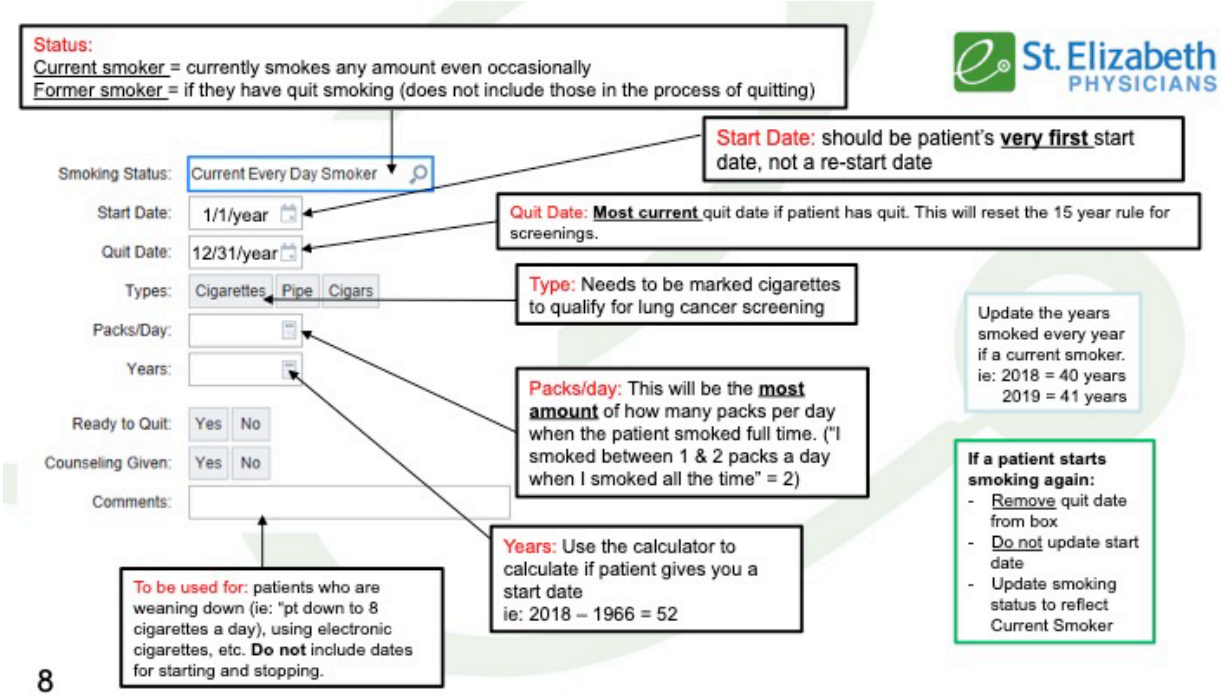
- Tobacco Cessation
- Coronary Artery Disease Risk
- LDCT Qualification
- Asthma
- Fertility
- Dental Health
- Diabetes
- Immune function

6 https://www.cdc.gov/tobacco/data_statistics/fact_sheets/health_effects/effects_cig_smoking/index.htm#respiratory


St. Elizabeth PHYSICIANS
Documenting Smoking Status & History


Status:
Current smoker = currently smokes any amount even occasionally
Former smoker = if they have quit smoking (does not include those in the process of quitting)
St. Elizabeth PHYSICIANS
Smoking Status: Current Every Day Smoker
Start Date: 1/1/year
Quit Date: 12/31/year
Types: Cigarettes Pipe Cigars
Packs/Day:
Years:
Ready to Quit: Yes No
Counseling Given: Yes No
Comments:
Start Date: should be patient's very first start date, not a re-start date
Quit Date: Most current quit date if patient has quit. This will reset the 15 year rule for screenings.
Type: Needs to be marked cigarettes to qualify for lung cancer screening
Update the years smoked every year if a current smoker.
ie: 2018 = 40 years
2019 = 41 years
Packs/day: This will be the most amount of how many packs per day when the patient smoked full time. ("I smoked between 1 & 2 packs a day when I smoked all the time" = 2)
If a patient starts smoking again:
- Remove quit date from box
- Do not update start date
- Update smoking status to reflect Current Smoker
Years: Use the calculator to calculate if patient gives you a start date
ie: 2018 – 1966 = 52
To be used for: patients who are weaning down (ie: "pt down to 8 cigarettes a day), using electronic cigarettes, etc. Do not include dates for starting and stopping.
8

What if:

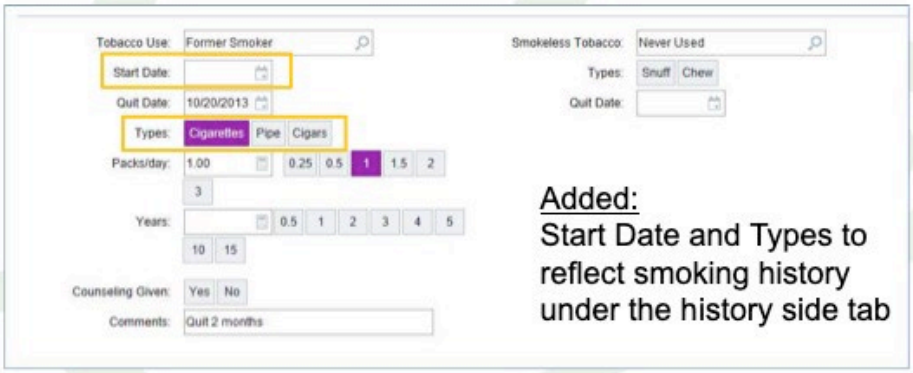
St. Elizabeth PHYSICIANS

- A patient quits smoking cigarettes but continues to vape: **Mark FORMER SMOKER – Add QUIT DATE – enter VAPE in comments.** ***The start and quit dates are ONLY for cigarettes.***
- A patient smokes marijuana but not cigarettes: **If they smoked cigarettes before, Mark FORMER SMOKER – Add START & QUIT DATE – enter marijuana in comments and in drug use area.**
- A patient used to smoke cigarettes but now smokes cigars or visa versa: **Make sure the cigarettes box is highlighted (to fall into criteria) and document cigars in comments.**

9

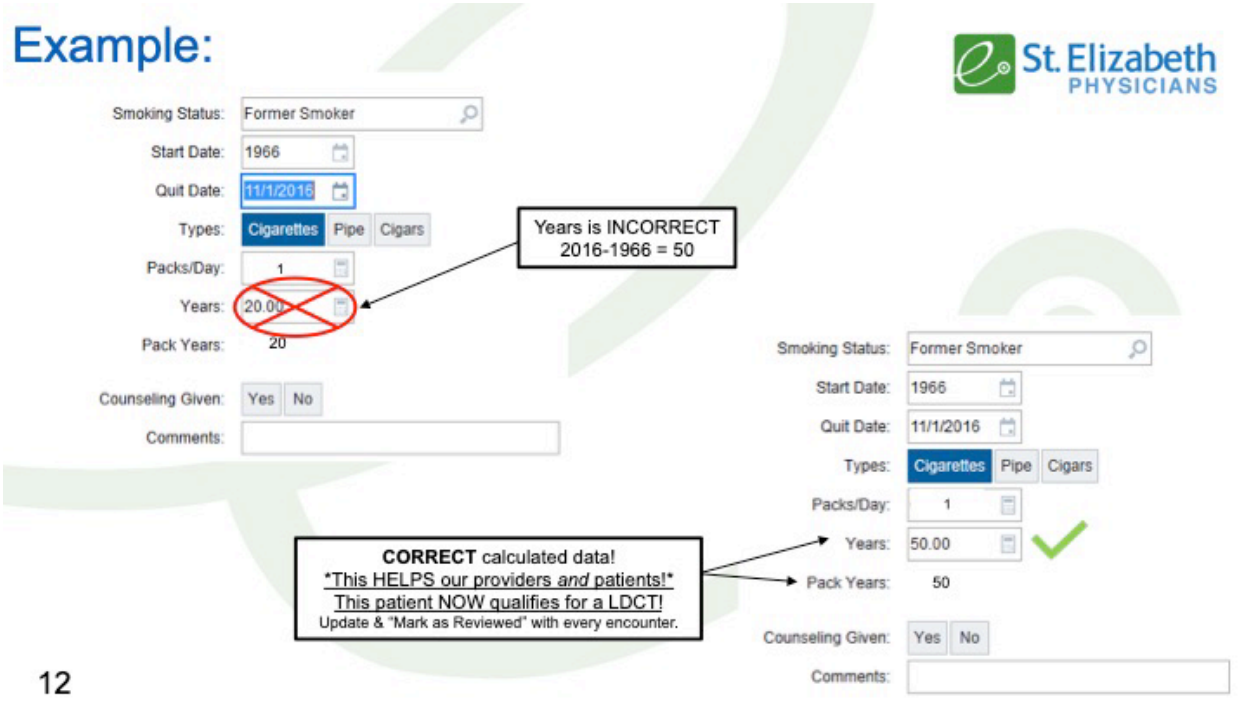
St. Elizabeth PHYSICIANS

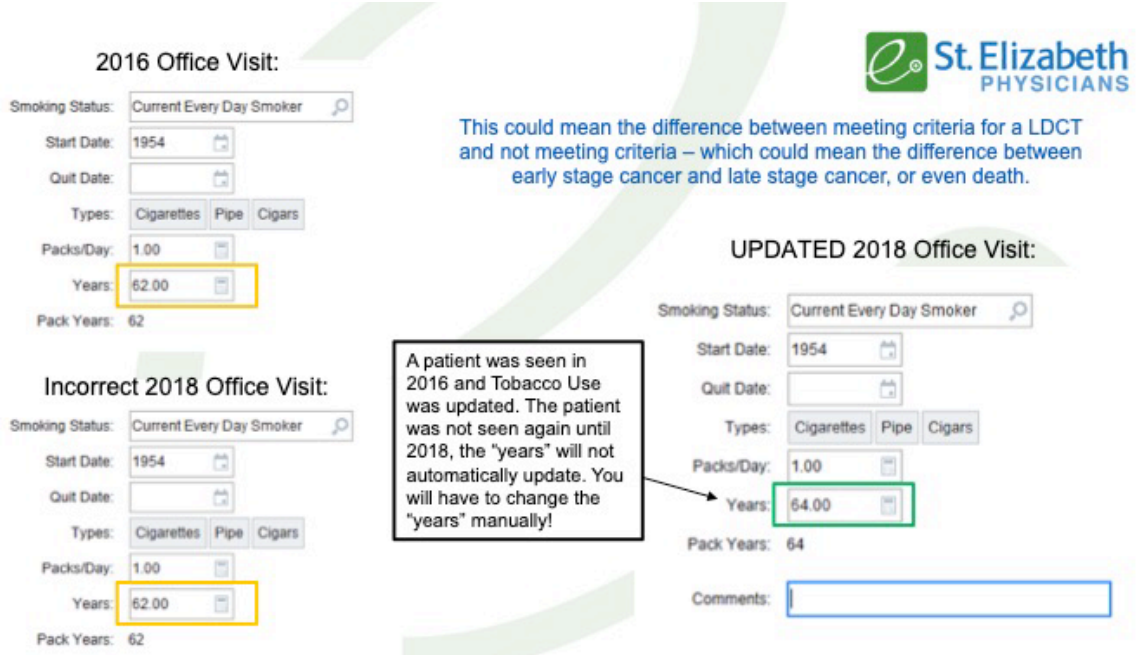
New Smoking Section – Rooming Tab



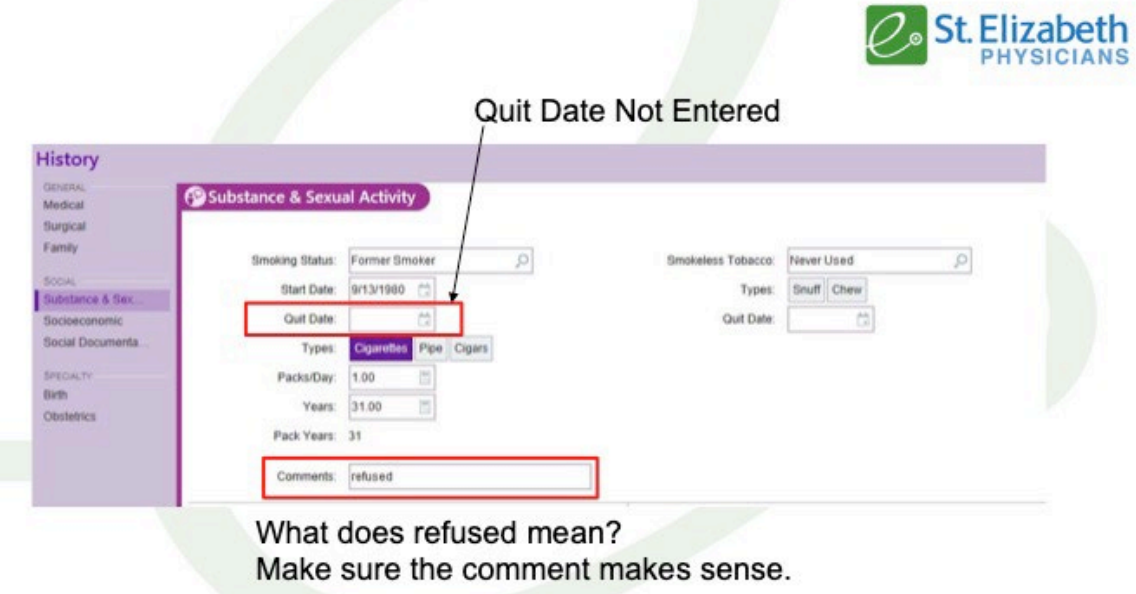
10


St. Elizabeth PHYSICIANS
Examples of Documented History

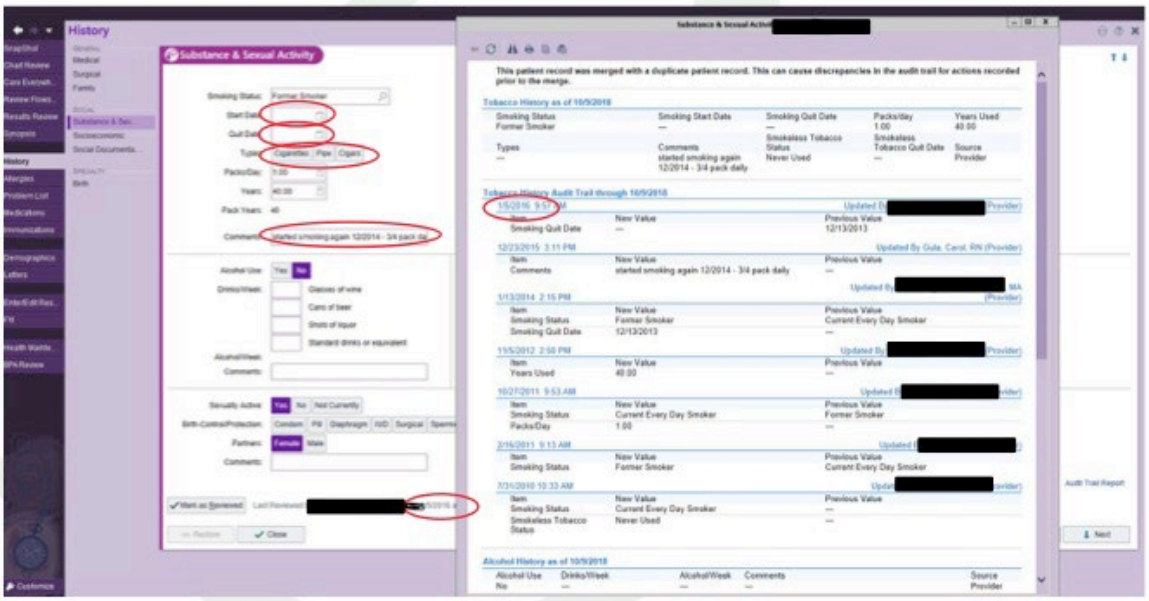

Example:
St. Elizabeth PHYSICIANS
Smoking Status: Former Smoker
Start Date: 1966
Quit Date: 11/1/2016
Types: Cigarettes Pipe Cigars
Packs/Day: 1
Years: 20.00
Pack Years: 20
Counseling Given: Yes No
Comments:
Years is INCORRECT
2016-1966 = 50
CORRECT calculated data!
This HELPS our providers and patients!
This patient NOW qualifies for a LDCT!
Update & "Mark as Reviewed" with every encounter.
Smoking Status: Former Smoker
Start Date: 1966
Quit Date: 11/1/2016
Types: Cigarettes Pipe Cigars
Packs/Day: 1
Years: 50.00
Pack Years: 50
Counseling Given: Yes No
Comments:
12


St. Elizabeth PHYSICIANS
2016 Office Visit:
Smoking Status: Current Every Day Smoker
Start Date: 1954
Quit Date:
Types: Cigarettes Pipe Cigars
Packs/Day: 1.00
Years: 62.00
Pack Years: 62
Incorrect 2018 Office Visit:
Smoking Status: Current Every Day Smoker
Start Date: 1954
Quit Date:
Types: Cigarettes Pipe Cigars
Packs/Day: 1.00
Years: 62.00
Pack Years: 62
This could mean the difference between meeting criteria for a LDCT and not meeting criteria – which could mean the difference between early stage cancer and late stage cancer, or even death.
A patient was seen in 2016 and Tobacco Use was updated. The patient was not seen again until 2018, the "years" will not automatically update. You will have to change the "years" manually!
UPDATED 2018 Office Visit:
Smoking Status: Current Every Day Smoker
Start Date: 1954
Quit Date:
Types: Cigarettes Pipe Cigars
Packs/Day: 1.00
Years: 64.00
Pack Years: 64
Comments:

13

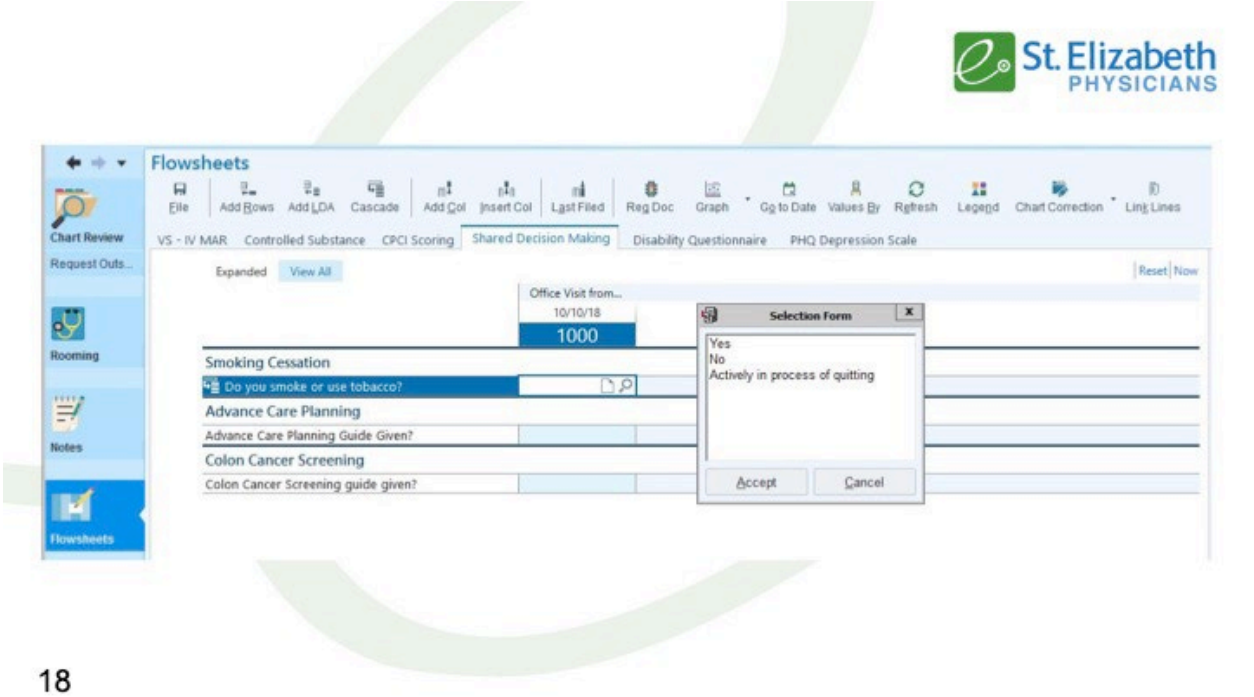

St. Elizabeth PHYSICIANS
Quit Date Not Entered
History
Substance & Sexual Activity
Smoking Status: Former Smoker
Start Date: 9/13/1980
Quit Date:
Types: Cigarettes Pipe Cigars
Packs/Day: 1.00
Years: 31.00
Pack Years: 31
Comments: refused
Smokeless Tobacco: Never Used
Types: Snuff Chew
Quit Date:
What does refused mean?
Make sure the comment makes sense.

14

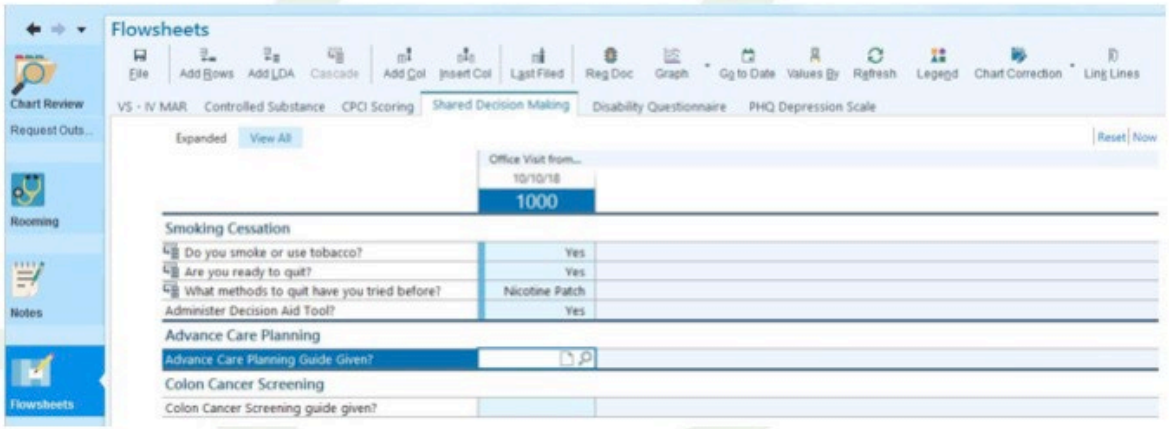


16 This history is hard to follow. It has not been updated or reviewed since 2016. A chart like this takes about 45 minutes to fix. There are currently over 600 charts to fix for former smokers.


St. Elizabeth PHYSICIANS
Shared Decision Making (SDM) Flowsheet


St. Elizabeth PHYSICIANS
Flowsheets
Chart Review
Request Outs...
Rooming
Notes
Flowsheets
File
Add Rows
Add LDA
Cascade
Add Col
Insert Col
Last Filed
Reg Doc
Graph
Go to Date
Values By
Refresh
Legend
Chart Correction
Link Lines
VS - IV MAR
Controlled Substance
CPCI Scoring
Shared Decision Making
Disability Questionnaire
PHQ Depression Scale
Expanded
View All
Reset
Now
Office Visit from...
10/10/18
1000
Smoking Cessation
Do you smoke or use tobacco?
Advance Care Planning
Advance Care Planning Guide Given?
Colon Cancer Screening
Colon Cancer Screening guide given?
Selection Form
Yes
No
Actively in process of quitting
Accept
Cancel

18



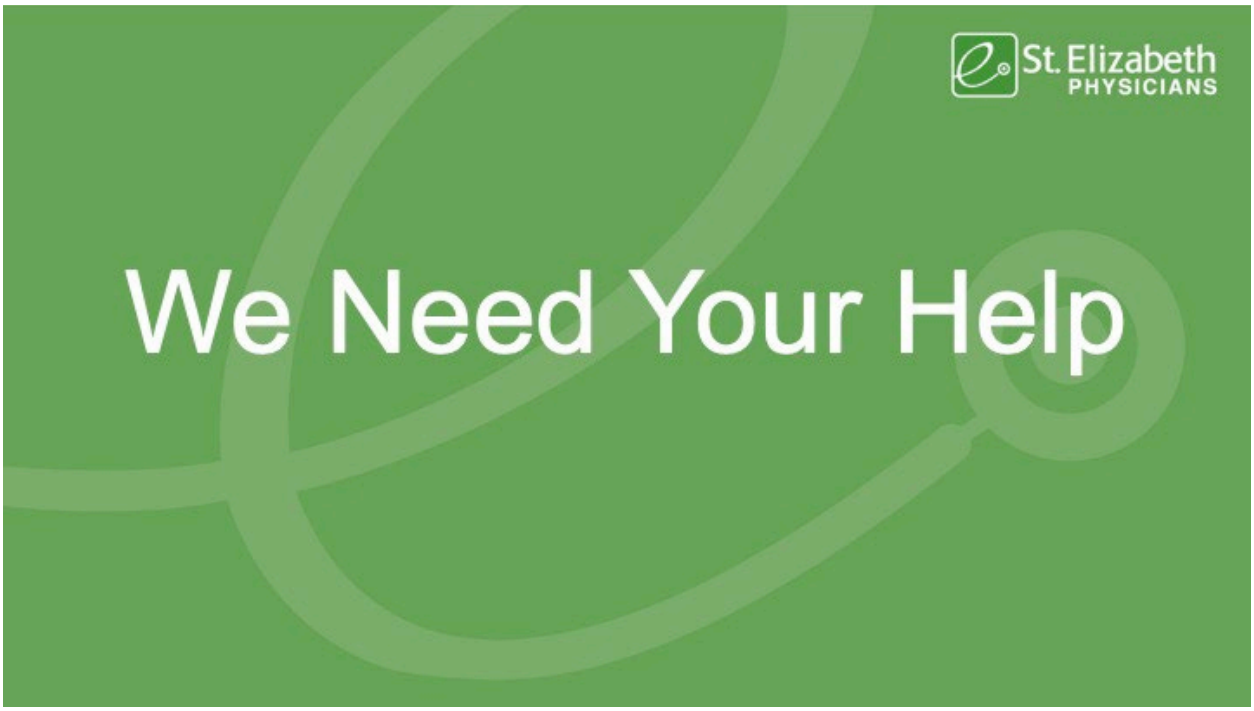
Make sure to put tobacco cessation in the chief complaint after completing this!

19

SDM Process

- Establish patient is a smoker
  - If a non-smoker you will still complete the first question in the flowsheet
- Open flowsheet for Shared Decision Making
- Check corresponding boxes
  - Remember to select all the types of quitting methods
- Give patient pamphlet
- Update chief complaint with:
  - Tobacco Cessation – SDM (ID 424)

20



St. Elizabeth PHYSICIANS

Is this Good Documentation?

Will this documentation hold up in court?

Will this documentation help us with reimbursement from insurance companies?

22

Why is this Important?

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In **2015**, the latest year for which incidence data are available, **218,527 new cases of Lung and Bronchus cancer were reported,** and **153,718 people died of Lung and Bronchus cancer in the United States.** For every 100,000 people, **58 new Lung and Bronchus cancer cases were reported** and **41 died of cancer.** (CDC)

Cancer is the second leading cause of death in the United States, exceeded only by heart disease. **One of every four deaths in the United States is due to cancer.**

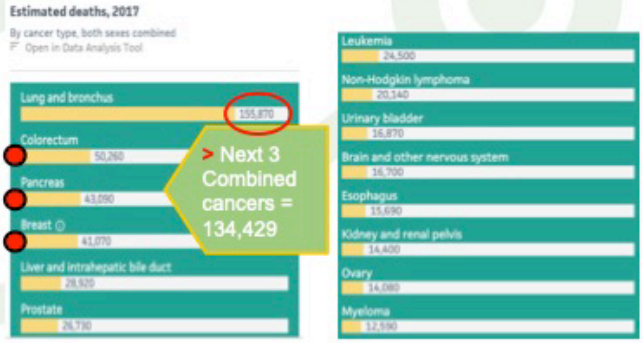
~Lung Cancer five-year survival rate (18.6%) is much lower than many other leading cancer sites, including colon (64.5%), breast (89.6%), and prostate (98.2%).

~Overall five-year survival rate for lung cancer is 55% for cases detected when the disease is still localized, within the lungs.

~However, only 16% of lung cancers are diagnosed at an early stage.

~For distant tumors/metastases to other organs, the five-year survival rate is only 4%.

~More than half the people diagnosed with lung cancer die within the first year.



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How Can You Help?

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- ✓ Update Smoking History with ***every*** encounter
- ✓ Check the start date to current year or start date to quit date math every time
- ✓ Check “Mark as Reviewed” to time-stamp your work
- ✓ Encourage your peers to do the same
- ✓ Fill in all the boxes
- ✓ Ask questions if you are unsure

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Who to Contact with Questions?

Allison Mayfield
Allison.Mayfield@stelizabeth.com
Mandy Young
Mandy.Young@stelizabeth.com
Kellie Graham
Kellie.Graham@stelizabeth.com

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Thank You!

Appendix C

Education Program Satisfaction Survey

Thank you for taking the time to complete this brief educational program regarding the importance of obtaining an accurate smoking history from your patients. By completing this survey, you imply your consent to participate. You are under no obligation to complete any part of this survey, and you may elect not to answer any of the questions. You will not receive any compensation for any part of your participation in this educational program, including the completion of this survey. The results from this survey will be used in aggregate form only and may be used to help develop future educational programs regarding improved documentation in the electronic medical record.

Please do not write your name or any other identifying information on this form.

	Very Dissatisfied	**Dissatisfied**	**Neither Satisfied nor Dissatisfied**	**Satisfied**	**Very Satisfied**
1. How satisfied were you with the time it took to complete this educational program?					
2. How satisfied were you with the content of this educational program?					
3. How satisfied were you with having the educational program during your lunch break?					
4. How satisfied were you with the quality of the educational materials for this program?					
5. What was your overall satisfaction with this educational program?					

Please feel free to add any additional comments or concerns you have regarding this educational program:

Appendix D

Educational Session Flyer

Appendix E

Smoking History Documentation Collection Tool

	Month prior to intervention	30 days post intervention	60 days post intervention	90 days post intervention
Total number of patients referred for lung cancer screening				
Number of patients with a complete and qualifying smoking history				
Number of patients with an incomplete or non-qualifying smoking history				