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Patient and primary care provider attitudes and adherence towards lung cancer screening at an academic medical center

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ABSTRACT

Low dose CT (LDCT) for lung cancer screening is an evidence-based, guideline recommended, and Medicare approved test but uptake requires further study. We therefore conducted patient and provider surveys to elucidate factors associated with utilization. Patients referred for LDCT at an academic medical center were questioned about their attitudes, knowledge, and beliefs on lung cancer screening. Adherent patients were defined as those who met screening eligibility criteria and completed a LDCT. Referring primary care providers within this same medical system were surveyed in parallel about their practice patterns, attitudes, knowledge and beliefs about screening. Eighty patients responded (36%), 48 of whom were adherent. Among responders, non-Hispanic patients ($p = 0.04$) were more adherent. Adherent respondents believed that CT technology is accurate and early detection is useful, and they trusted their providers. A majority of non-adherent patients (79%) self-reported an intention to obtain a LDCT in the future. Of 36 of 87 (41%) responding providers, only 31% knew the correct lung cancer screening eligibility criteria, which led to a 37% inappropriate referral rate from 2013 to 2015. Yet, 75% had initiated lung cancer screening discussions, 64% thought screening was at least moderately effective, and 82% were interested in learning more of the 33 providers responding to these questions. Overall, patients were motivated and providers engaged to screen for lung cancer by LDCT. Non-adherent patient "procrastinators" were motivated to undergo screening in the future. Additional follow through on non-adherence may enhance screening uptake, and raising awareness for screening eligibility through provider education may reduce inappropriate referrals.

1. Introduction

Lung cancer remains the leading cause of cancer death in the U.S. for both men and women with a staggering 200,000 new cases and 150,000 deaths expected in 2016 alone (Torre et al., 2015; Siegel et al., 2015). Screening for lung cancer by imaging has been an active area of investigation for decades with equivocal results (Fontana et al., 1984; Henschke et al., 1999; International Early Lung Cancer Action Program I et al., 2006) until the National Lung Screening Trial (NLST) in 2011 provided a definitive answer (National Lung Screening Trial Research T et al., 2011). The NLST was a large, multi-center, randomized trial that reported a 20% reduction in the risk of lung cancer-specific mortality for three annual low dose CT (LDCT) screens among active or prior heavy smokers aged 55 to 74 years old. Based on this result, LDCT lung cancer screening for patients at high risk of lung cancer is now an evidence-based recommendation by the United States Preventive Services Task Force (USPSTF), and a covered test by the Centers for Medicare and Medicaid Services (CMS).

The public has positively viewed evidence-based cancer screening enthusiastically for years, (Schwartz et al., 2004) and national colon, breast and cervical cancer screening rates are currently 58%, 73% and 81% respectively (http://www.cdc.gov/mmwr/preview/mmwrhtml/mm6417a4.htm?s_cid=mm6417a4_w). Despite national guideline

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recommendations for lung cancer screening with LDCT, the adoption of this evidenced-based screening at the national policy level, endorsements by multiple professional societies, and studies demonstrating cost-effectiveness (Black et al., 2014), uptake in many academic centers – which is governed by physician practices and patient volition – still remains low in the initial years following the publication of the NLST (Hoffman et al., 2015; Lewis et al., 2015). Since the uptake of LDCT and best practices to drive its adoption remains to be determined, we sought to investigate LDCT screening uptake within an academic setting by surveying patients and providers on their attitudes, knowledge, and beliefs regarding LDCT. Our goal was to identify facilitators and barriers to lung cancer screening within our medical center for improved adoption moving forward.

2. Methods

We evaluated 221 patients and 81 primary care providers from the Stanford Health Care (SHC) system and administered two separate, structured surveys for each group. Patients were interviewed by phone and providers completed an online survey. Survey implementation was performed using Qualtrics software (Qualtrics, Provo UT). All study related processes and materials were approved by the Stanford Institutional Review Board.

2.1. Study recruitment & data collection

2.1.1. Patient survey

We conducted a survey from August 2015 to January 2016 for patients referred for LDCT screening from 2013 to 2015 through Stanford's Lung Cancer Screening Program. Referrals were based on the NLST and National Comprehensive Cancer Network (NCCN) LDCT eligibility criteria. To identify eligible patients (those who actually were LDCT eligible by these consensus guidelines regardless of whether or not they were referred), we reviewed the electronic medical record (EMR) from patient charts (Fig. 1). NLST criteria were defined by patients 55–74 years old with a current or past smoking history (within 15 years) of at least 30 pack years (National Lung Screening Trial Research T et al., 2011). NCCN criteria were defined by patients >50 years old with a smoking history of at least 20 pack years (ever) and one additional risk factor such as Chronic Obstructive Pulmonary Disease (COPD), pulmonary fibrosis, a family member with lung cancer, major exposure to substances associated with lung cancer (i.e. radon, asbestos, or silica), or a past history of lymphoma, esophageal cancer, lung or head and neck cancer (Wood et al., 2015).

The patient survey consisted of 38 questions derived from previous work (http://www.cpic.org/page/stars/) and internal discussions among our study group with expertise in conducting survey research and lung cancer screening. All LDCT eligible patients were mailed an invitation letter to participate and were contacted by phone up to 5 times on a weekly basis in order to complete the survey. Two trained interviewers (DKD, HN) administered the surveys in a standardized fashion with questions covering past screening for lung and other cancers, reasons for undergoing or not undergoing LDCT, smoking behavior, and general socio-demographic information (Appendix 1). The average completion time for the survey was 11 min.

We based ethnicity and race on self-report for survey responders. Multi-racial patients were classified according to their minority race. We obtained patient information on age at the time of screening, sex, cancer history, insurance status, provider location, county of residence and ethnicity (but not race) from the EMR for non-responders to compare these data to responders.

2.1.2. Provider survey

Stanford primary care providers were recruited by e-mail from a study author (BS). An on-line link to the self-administered survey instrument was included in the e-mail correspondence after on-line consent. This survey was designed from previous literature and internal discussion among our study group with expertise in conducting survey research and lung cancer screening (Lewis et al., 2015; Henderson et al., 2011; http://healthcaredelivery.cancer.gov/screening_rp/screening_rp_colo_lung_inst.pdf). The on-line provider survey took an average of 15 min to complete, and included 27 questions on the following topics: knowledge of LDCT screening guidelines, LDCT referral practice, barriers and facilitators to LDCT referral, interest in learning more about

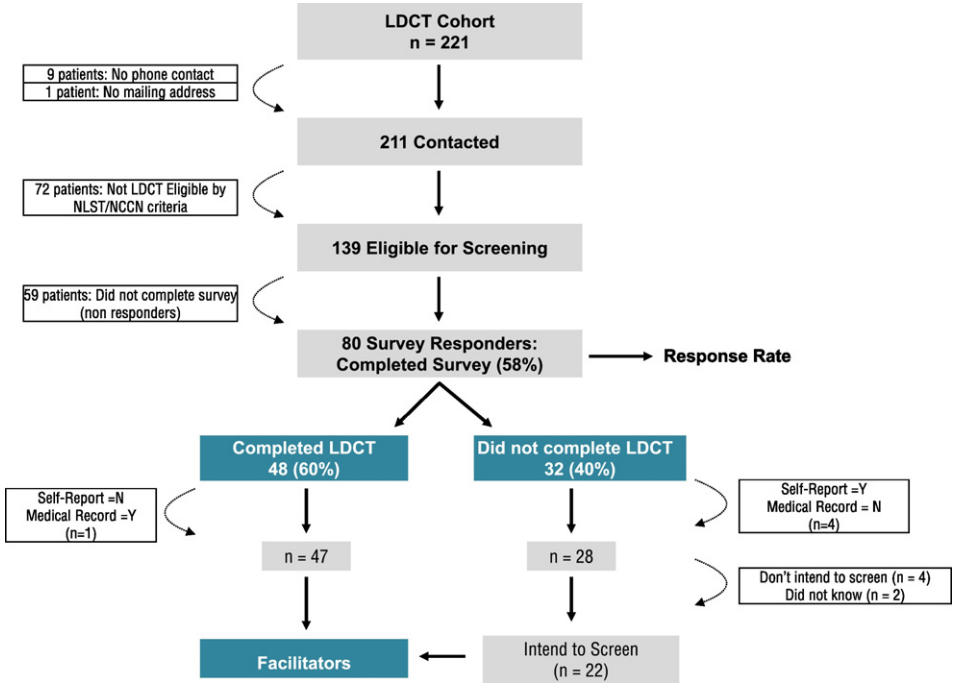

Fig. 1. We screened our program's lung cancer screening LDCT database to identify 221 patients, of which 139 were considered eligible by current guidelines. Eighty patients participated (response rate = 80/139; 58%) 48 of whom adhered to a prescribed LDCT and 32 who did not adhere. These two groups were analyzed for differences in patient demographics (Table 2). We then examined responses for those who were adherent and compared them to those who were not adherent but intended to make an appointment (Fig. 2).