Smoking Cessation and Lung Cancer Screening and Quality Initiative

The Toll, Stigma and Opportunity for High Risk Lung Cancer Populations

For current and former heavy tobacco smokers, early screening for lung cancer using low dose computed tomography (LDCT) affords a major breakthrough in terms of improving the odds of survival. In the absence of early screening, non-small cell lung cancer (NSCLC) – which accounts for 85 percent of all lung cancers—is typically diagnosed at later stages of the disease, when symptoms become apparent and cure highly unlikely.

Early screening translates into significantly improved odds of survival – 50 percent at 5 years. Screening, combined with advances in surgery and new medications, are cause, for the first time, for therapeutic optimism.

Realizing the population health gains of these advances, however, is still long off, reflecting the epidemiology of the disease, clinical inertia and nihilism, and sometimes confounding policy-making trends, all fanned by the stigma associated with the condition.

Lung cancer is the second most common U.S. cancer – 218,527 new cases in 2015 year – and the number one cancer killer, with 153,718 victims. This number-one killer does not stalk all of the U.S. geography equally however. The death count is highest in Kentucky and West Virginia (64.3 and 57.3 per 100,000, age-adjusted, respectively), and surrounding states, similar to the distribution of tobacco use in the U.S (figures 1 and 2), which is highest among those with the least education and economic resources. African Americans have the highest incidence and mortality from this disease.
Smoking is the major cause of lung cancer, linked to 80 to 90 percent of cases. Therein lies the rub: lung cancer is stigmatized as not only a hopeless condition but a self-inflicted disease. This perception neglects the fact that exposure to radon is estimated to cause 20,000 lung cancer cases each year. In addition, it is former smokers who make up the majority of lung cancer diagnoses – 50 percent.

Stigma negatively impacts patients, providers, and policy all through the cancer care continuum.

- Lung cancer patients have been shown to experience self-blame, guilt and shame, hiding symptoms and illness, delaying treatment-seeking, and falling prey to therapeutic nihilism, all of which worsen prognosis.
- Clinicians may exhibit or be perceived as holding stigmatizing views of smoking patients with lung cancer, compromising treatment engagement. In addition, clinicians continue to show gaps in knowledge about lung cancer screening and referral rates remain low, with fewer than 20% of at risk patients reporting a past-year discussion about lung cancer screening with their provider and fewer than 2% being referred.
- Stigma has been described as the driver of long-term underfunding of lung cancer research. And debate among health leaders at the very least sows seed of confusion about the U.S. Preventive Services Task Force’s (USPSTF) lung cancer screening recommendations. In a recent presentation, radiation oncologist Dr. Andrea McKee, a member of the American Lung Association’s Lung Cancer Expert Medical Advisory Panel, highlights evidence-based and theoretical assumptions, illustrating the overarching 20 percent mortality benefit and lack of evidence for such risks as increased patient anxiety, encouragement of smoking, costs, and low dose radiation exposure. (Table 1) She further contends that critics have confused the false discovery and false positive rate.

Lung cancer stigma most likely has its hardest impact on the rural poor, a population in the midst of a lung cancer epidemic. The 2017 Health Disparities in Appalachia report highlights the challenges in this region, including higher mortality rates than the nation due to heart disease, cancer, chronic obstructive pulmonary disease (COPD), injury, stroke, diabetes, and suicide and drug overdoses, all in the face of lower number of health care professionals. In addition, obesity, smoking, and physical inactivity are all more prevalent in this region. In a Medscape article, the pilot project’s principal investigator and project leader comment:

“...lung cancer suffers from the ignominy of being a "sin" cancer, one that largely depends on exposure to tobacco smoking. That these cases are most densely reported in Appalachia, along the Mississippi river, and in Arkansas may also skew the statistical perspective and professional experience of some policy-
makers and researchers, who often lack familiarity with these regions. Some experts have begun a clamor to eliminate coverage for lung cancer screening.”

With the results of the NELSON lung cancer screening trial showing a 20 percent reduction in lung cancer mortality for annual screening over 3 years with LDCT, and a greater benefit among women, USPTF is currently revising its recommendation. Advocates are addressing stigma head on too. The American Lung Association calls for increased research, patient empowerment, education, and working together to put a empathetic, human face on lung cancer in its publication “Addressing the Stigma of Lung Cancer.” The Lung Cancer Alliance (now the Go2 Foundation) also has campaigned against stigma, including the promotion of increased research funding which has lagged significantly behind other less common and deadly cancers.

Tackling primary care’s lack of knowledge about LDCT lung cancer screening and the significant barriers they face, especially in regions of high risk, are essential to translating the scientific advances into saved lives. This document summarizes a pilot project that applied an evidence-based strategy targeted to the regions in most need to accomplish just that.

**SHC-QIE Approach**

The most effective approaches to changing clinical practice and patient outcomes are informed by adult learning principles, are team-based, take into account learner readiness and motivation, and integrate with practice and quality improvement approaches. In addition, communications training, often crucial for improving practice and clinical outcomes, best takes the form of workshops with interactive opportunities.

The SHC-QIE (Sustainable Healthy Communities - Quality Improvement Education) approach incorporates these strategies, building on more than 12 years of development by SHC’s COO and EVP, first in the role of the director of Performance Improvement (PI) Education at the American College of Cardiology (ACC). The early PI-CME and In Situ simulation initiatives integrated educational programming with feedback data from the National Cardiovascular Data Registry (NCDR) registries in ST-Elevation Myocardial Infarction (STEMI) Door-2-Balloon initiatives and atrial fibrillation. These programs used registry data to assess need and monitor progress following interactive, practice- and team-based education focused on specific workflow changes, producing significant improvement in clinically relevant performance measures and awarded by the Alliance for CME for Outstanding CME Outcomes Assessment.
With the founding of the American College of Physician’s (ACP’s) Center for Quality, the QIE model was further enhanced to include the identification of multi-disciplinary practice champions who were trained in an intensive and interactive week-end long program and led the rapid-cycle QI projects in their practices – building on PDSAs or Plan-Do-Study-Act cycles – often going on to become QIE coaches and ACP leaders. In the course of 5 years, QIE programs focused on adult immunization, diabetes, and chronic pain were implemented in 19 states and involved over 2000 clinicians. Community engagement was added to some of these programs, with clinician champions going out to community groups to educate the public about evidence-based health recommendations. One published study focused on chronic pain management in primary care practices in Kentucky; it showed significant improvement in depression and pain screening in at-risk patients as well as the implementation of urine testing and substance use contracts (Figure 3). That program resulted not only in improved clinical care outcomes but 80% of the practices re-signing for ongoing QIE activities. Twenty-five percent of the 2019 ACP Board of Regents are veterans of the Center for Quality programs, suggesting its positive impact on physician leadership development.

Application of the SHC-QIE model continues at Sustainable Healthy Communities, LLC (SHC), a wholly-owned subsidiary of the National Minority Quality Forum (NMQF), focusing to an even greater extent on underserved patient populations and the practices providing their care. Efforts are underway in 6 states, including in the Appalachian region of Kentucky. The specific approach and results of the pilot program in 4 practices which focused on increasing referral to lung cancer screening and tobacco cessation resources are described below.

**Smoking Cessation and Lung Cancer Screening SHC-QIE Pilot**

In January 2018, SHC launched a SHC-QIE pilot with the goal of assisting primary care practices (PCPs) in Kentucky Appalachia in identifying their patients who are at high-risk of lung cancer so as to promote smoking cessation and referral for lung cancer screening. Following the SHC-QIE model, a group of local
and national experts and stakeholders were identified to participate in an advisory group, under the leadership of Dr. Greg Hood, a general internist from Lexington and past Governor of the Kentucky ACP Chapter (Table 2).

Multidisciplinary experts were included in the group, representing primary care physicians and nurses, educators, payers, surgeons, radiologists, and public health representatives. The group met on April 2, 2018 and reviewed the proposed plan, local resources, potential participants, and evaluation approaches. In the next month, 5 practices were recruited (although one dropped out due to health related issues in the small staff), representing both family medicine and general internal medicine as well as a residency training program and federally qualified health centers (FQHCs). The practices, some of which had multiple sites, mirrored the geographic density of high-risk populations as seen in figure four. Project leads at each practice completed a practice assessment survey, characterizing their practice make-up, QI experience and goals, and current approach to tobacco cessation and lung cancer screening. Practices ranged in size,
staffing, and QI experience, although virtually all of the champions sought greater QI experience and understanding as well as improvements in team work to enhance efficiency, no doubt reflecting their burn-out level workloads. They sit as barriers clinician and staff engagement. While most practices noted routine identification of patients who use tobacco, many fewer reported identification of patients for lung cancer screening or tobacco cessation efforts. Fear and fatalism were among the biggest barriers for patients posited by the participants as were transportation and getting an appointment.

A champion training week-end not only provided education about the epidemiology of smoking and lung cancer in KY, national guidelines for identifying and referring patients for screening, resources available for their practices in the state, and an interactive training on shared decision-making, but attendees got an opportunity to share their concerns and motivations for working with their patient population – many actually hailing from these communities – and to develop a quality improvement plan that they had vetted by the faculty and overall group.

Every practice faced the time-consuming problem of extracting the relevant data from the EHR, in terms of patients meeting the criteria for lung cancer screening referral. In fact, the first four months of the project focused to large extent on reprogramming their EHRs. However, this initial barrier translated into a major factor for sustainability, as one participant volunteered in their post-program survey responses: “The EHR was our biggest rate limiting step, but our efforts to reprogram it and develop specific widgets helped us achieve an ultimate goal for our EHR to better serve our patient. We now have an ability to capture and track results going forward. We will be able to continue efforts to promote screenings.” In each practice, improvements were made to the EHR allowing for better documentation and reporting of smoking history. One of the participating practices implemented a PDSA that focused on improving documentation in the EHR record, training staff on this best practice and providing them a feedback report weekly on correct documentation. As a result, their rates of proper documentation rose from 66.9 percent to 97.2 percent. The next section provides further details from the pilot sites and analyzed results.

A summary of results are described below. First, a close-up look at two practice sites illuminates the kinds of efforts that can be applied more broadly in this proposed activity.
Grace Health is a community health center in Kentucky, founded in 2008, with practices located in 4 communities and 7 sites, as well as school-based services in two regions. Grace served 30,000 patients in 2017 according to its report to HRSA, in southeastern Kentucky, a population that is largely non-Hispanic whites and 2/3rds of whom live at or below 200% of the poverty level.

Like all pilot participants, Grace had to make EHR changes to enact their PDSAs, using a sample of 70 patient records from 2017 Uniform Data System (UDS) reporting to get started and adding a note to a regular CT order in the EHR, given no specific code to order LDCT. Both issues were rectified during the course of the initiative.

Their first PDSA was implemented from August to November, 2018, in which they trained staff to gather the necessary data and document it in the EHR so as to promote appropriate referral for LDCT. Individuals received reports on their documentation, with compliance increasing nearly 100% from 34.6% to 62.2%. Grace also was able to reach out to another clinic that shared patients with them, reaching out to LDCT eligible patients and educating the primary care team about the importance of screening and the process. Finally, Grace conducted another PDSA from December 2018 to March 2019 in which smokers were assessed for readiness to quit, and those with a pre-designated score were handed off to behavioral health care providers who worked in the clinic for smoking cessation counseling. Screening and referral again increased two-fold, from 34 to 62%. Their plan includes continued monitoring of these rates and routinizing the processes, re-educating staff, should drop-off occurs.

Lake Cumberland’s Regional Internal Medicine and Family Medicine Residency Programs were another loci of the QI initiative in their ambulatory setting, implementing a program in Somerset KY, in South Central Kentucky, a rural region abutting the Appalachian region. The goals for their project included: creating a method to effectively track smoking pack-years within their EHR and increasing awareness and referrals for LDCT lung cancer screenings. Baseline work showed that not only were their practices failing to make referrals compared to others in the region, they were not checking pack years and had limited awareness of the recommendations. Similar to the other practices, their EHR required programming to calculate pack years and staff required training on the correct entry of that data. But with that in place, and an educational presentation in grand rounds, they nearly doubled the scans ordered (from 230 to 412) and anticipate a near further doubling to 712 in 2019. They further are
planning to enhance their system’s ability to track referrals and scan results, so as to assure their patients are not lost along the cancer care continuum. Resident-leaders in this practice have already presented their results nationally, at the 2019 American College of Medical Quality in Bethesda, MD.

In short, the pilot project showed a significant impact on care processes as well as strong engagement of participants so much so that they have been promoting their work at conferences and have indicated a strong interest in continuing and expanding their work, including in the expansion of this pilot to like nearby regions – rural, impoverished, high risk populations.

Each practice site successfully modified their EHR to identify patients that meet nationally recommended standards for referral to LDCT lung cancer screening. And each practice was able to double their screening referrals as shown in the table 3 below.

<table>
<thead>
<tr>
<th>Practice</th>
<th>Change in Lung Cancer Screening Referral¹</th>
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<tbody>
<tr>
<td>St. Claire Healthcare</td>
<td>3.8% to 9.7% of eligible patients (also increased smoking cessation counseling from 9.7% to 16.9% of smokers)</td>
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<tr>
<td>Clover Fork Clinic</td>
<td>2.5-fold increase in the number of referrals</td>
</tr>
<tr>
<td>Lake Cumberland</td>
<td>2-fold increase in the number of referrals</td>
</tr>
<tr>
<td>Grace Health</td>
<td>Improved documentation of referrals in the EHR from 34.6% to 62.2%</td>
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Pre- and post-practice assessment survey results provided further details about the changes enacted by the practices. As shown in figure 5 below, except for identifying smokers (which all did pre and post) and provide special lung cancer survivor care (which was not a focus of the initiative), improvements overall were realized for each element of evidence-based lung cancer screening care, with statistically significant improvements realized for the EHR tracking, promotion of community awareness, and providing materials to patient about screening.²

¹ Note that the practices used different measures reflecting the struggle to extra the data from their EHRs, thus keeping us from combining the information into an aggregate.
² Used non-parametric paired test, the Wilcoxon signed rank.
The practice survey confirmed the EHR as being the biggest barrier to the project. Their biggest satisfaction was being able to refer at-risk patients for screening—that is improving patient care.

Resource needs included pack year documentation training materials for medical assistants (MAs) and access to behavioral health care services for smoking cessation counseling. All professed deep satisfaction with the project in the open-ended assessment question: “Cannot say enough about how great the support staff and resources available were. Thank you!” and “The support and information given at the conference and followup is invaluable and would be great to continue so that we know we are not alone in this fight. Thank you all for this oppurtunity and all the hard work that the staff put in as it can be seen by such a great product that was provided. Please continue the hard work as this is not only a project but a significant impact on our patients lives. I myself have seen the impact it has had in my region and this doesn’t always show on the numbers. But does when these patients present back for followups and the greatfulness they have makes it all worth it.”

The survey responses signaled commitment to ongoing implementation of the activity as noted above and a desire to continue in another QI program (2 of the practices), to serve as a peer coach (1), and give
presentations on the topic, as a peer educator (1). In fact, 3 of the 4 practices have already presented or submitted for presentation their efforts, including at the 2018 Institute for Healthcare Improvement meeting in Orlando, FL; the 2019 American College of Medical Quality meeting in April in Bethesda, MD; ASCO Quality Care Symposium September 2019; and the Kentucky Rural Health Association conference in 2019.

In summary, we conclude that this pilot shows the SHC-QIE approach to be a successful one for supporting over-worked primary care providers serving high-risk populations and increasing lung cancer screening. Based on these results and the ongoing intensive need in rural Appalachia, the project leaders and participants are seeking expansion of the program to like practices.

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**SHC-QIE Model**


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