

# Lung Cancer Screening in Canada: Summary of Guidelines, Provincial Programs, and Role of Primary Care Providers

## Background

### Burden of disease

In Canada, approximately 1 in 14 people will develop lung cancer and lung cancer is the leading cause (24%) of cancer deaths.<sup>1</sup> Five-year survival rates for stages I, II, III and IV in Canada are 62%, 39%, 15% and 3%, respectively.<sup>2</sup> Tobacco smoking contributes to 72% of lung cancer cases,<sup>3</sup> and major non-modifiable risk factors include increased age, family history of lung cancer and personal history of lung disease. Through systemic, economic, and geographic barriers, people living in rural or remote communities and/or having a lower income experience inequities in lung cancer incidence, access to care, and outcomes.<sup>4</sup> Disparities in lung cancer incidence (e.g., 20-40% higher for First Nations people in Ontario),<sup>5</sup> mortality, and risk factors exist for Aboriginal peoples are caused by many social determinants of health.<sup>6,7</sup> First Nations, Inuit, and Métis populations have lower rates of cancer screening than other people in Canada.<sup>8</sup>

### Purpose of lung cancer screening

Lung cancers are often diagnosed at a late stage because early cancers are frequently asymptomatic. Screening aims to prevent mortality by detecting cancer earlier when treatment is more likely to be curative.

### Methods for this report

Evidence used for this report was located using i) a search in October 2024 for publications from 2014 onwards for clinical practice guidelines developed in Canada (nationally and provincially) and reviews describing effects and considerations related to informed/shared decision-making about lung cancer screening, and more broadly, cancer screening. Contacts at provincial lung screening programs provided publications of studies used to support their program development. Further, websites of provincial programs were searched to obtain descriptions of their programs (including materials to support primary care providers and patients) and any associated guidelines or empirical evidence. Findings about effects of informed decision-making were drawn from a systematic review specific to lung cancer screening supplemented with more recent (2020-onwards) individual studies cited in other reviews on cancer screening more broadly. Appendices 1 and 2 contain details of the evidence.

## Guidelines for Lung Cancer Screening

A high-quality evidence-based guideline by the Canadian Task Force on Preventive Health Care (task force) recommends annual screening with low-dose computed tomography (LDCT) up to three times, for adults aged 55-74 years with at least a 30 pack-year smoking history who currently smoke or quit less than 15 years ago.<sup>2</sup>

The recommendation is considered “weak”, due to there being several conditions: i) screening should be carried out in settings with expertise in early diagnosis and treatment of lung cancer, ii) primary care providers should discuss the potential harms and benefits (including false-positive results, adverse effects of invasive follow-up testing and overdiagnosis) of screening with suitable patients, and iii) overall health status should be considered since reasonable life expectancy and suitability for treatment of lung cancer (if identified) is required to receive benefit. The task force suggests that smoking cessation programs be incorporated into screening programs. The estimates of effects across the outcomes considered for their recommendation are presented in Table 1 and in the task force’s Patient Tool.<sup>10</sup> For most of the effects, the task force relied on the large National Lung Screening Trial (NLST; n=53,454) that used the eligibility criteria chosen by the task force and provided three rounds of screening. The guideline is endorsed by the College of Family Physicians of Canada. The task force is currently updating their recommendations. There are also upcoming recommendations for smoking cessation, with their [evidence reviews](#) completed.

**Table 1. Effects from screening used for current national evidence-based guideline**

Effects from three screening rounds with 6.5 years follow-up*	
<b>Benefits</b>	
Lung-cancer mortality	3 fewer per 1000 screened; number needed-to-screen (NNS) 322 to prevent one lung-cancer death
All-cause mortality	4.6 fewer per 1000 screened 3 times annually; NNS 219
Fewer advanced cancers	4 fewer late-stage cancers detected per 1000 screened; NNS 250
<b>Harms</b>	
Overdiagnosis (cancers that would not have caused illness or death, but are treated)	11% to 26% of cancers detected; 7 per 1000 screened
False positives (positive screen without cancer)	351 per 1000 screened; 95% of positive scans are not cancer
Deaths and major complications among those receiving invasive diagnostic procedures	Approximately 1 death and 3 major complications from invasive procedures per 1000 screened (some among those without cancer)

\*All effects are based on data from the NLST trial which compared CT with chest x-ray, but because of evidence showing lack of benefit from chest x-ray it is considered by most as equivalent to no screening.

### **Additional key evidence on screening effects**

The current guideline from the task force i) was developed prior to the release of results from long-term follow-up of the NLST and completion of several other trials, especially the relatively large NELSON trial that used broader eligibility criteria, different nodule management, and a different screening protocol, and ii) do not speak to incidental findings as a potential major implementation factor for consideration.

Data on mortality after a median of 12.3 years follow-up was reported for the NLST.<sup>11</sup> The relative risk for lung-cancer mortality was 0.92, representing an absolute risk difference of 3.3 fewer deaths per 1000 screened. This translates into a number needed-to-screen to prevent one lung-cancer death of 303, which is similar to the original estimate of around 320 after shorter follow-up. Though the 8% risk reduction is lower than the 15% to 20% seen in the earlier reports at 6.5 and 5.5-years, because the total number of deaths attributed to lung cancer increased over the longer follow-up (e.g., 1147 vs. 356) the absolute effects of about 3 fewer per 1000 remain the same. All-cause mortality reduced by 4.2 per 1000.

The NELSON trial assigned males (n=13,195) and females (n=2594) aged 50-74 years (smoking within past 10 years and with about a 20 pack-year history) to LDCT screening at baseline, year 1, year 3, and year 5.5 or no screening.<sup>12</sup> The trial used a less sensitive threshold than the NLST for determining a positive screening result requiring at least recall for more imaging (5 mm<sup>3</sup> size with nodule growth required at 2<sup>nd</sup> and subsequent rounds vs. NLST's 4 mm diameter and nodule growth required at 3<sup>rd</sup> round only). At 10 years, the relative effects for lung cancer mortality in males (24% reduction) and females (33%) were larger than those found in the NLST, indicating that a lower age and pack-year requirement may offer benefits from screening.

In a retrospective case series of 26,455 participants in the NLST who underwent at least one CT screen, one or more significant incidental finding (i.e., probably necessitating further diagnostic evaluation) was reported for 33.8% of participants; 18.3% of all scans across three rounds had an incidental finding and 89.1% of incidental findings were considered reportable to the referring physician.<sup>13</sup> A higher proportion of reportable findings were for those with a positive screen for lung cancer (e.g., 44% vs. 14% in negative screens at baseline). Approximately 6% of incidental findings signaled potential malignancies other than lung cancer (e.g., kidney or liver). The most common findings reported included emphysema (43.0%), coronary artery calcification (12.1%), and masses or suspicious lesions (7.4%). Incidental findings were also quite prevalent during the pilot studies for lung screening in Alberta (36.6%) and Ontario (31.6%)<sup>14</sup> which conducted one round of screening.

### **Comparison with other national/international guidelines**

The Canadian Association of Radiologists recommends routine annual screening for people who have a 1.5% or higher 6-year risk of lung cancer, or at least have the same smoking history as those enrolled in the NLST, unless they have/develop health problems that substantially limit life expectancy or would preclude curative treatment.<sup>15</sup> No age criteria are listed. No data was presented about the anticipated effects from using their eligibility criteria. This group recommends shared decision-making (SDM) and provides a link to a decision aid ([Should I Screen?](#)), containing calculators for pack-years and 6-year lung-cancer risk (PLCO<sub>m</sub>2012 with 4 smoking and 7 non-smoking variables). They also present best practice statements for radiology.

The United States Preventive Services Task Force (USPSTF) recommends annual screening for lung cancer with LDCT in adults aged 50 to 80 years who have a 20 pack-year smoking history and currently smoke or quit in the past 15 years.<sup>16</sup> They revised their 2013 criteria based on results from the NELSON trial as well as modelling data. They judged the evidence on risk prediction model-based screening as insufficient; modelling found that some of these programs were associated with slightly increased life-years gained, while some were not or were associated with fewer life-years gained. Further, these models (which shift screening to persons of older age) were associated with more overdiagnoses. They also note that lower age and smoking thresholds may help partially ameliorate racial disparities in screening eligibility (though did not evaluate any estimates on effects). Noting low adherence to lung screening in the US, the USPSTF stated that increasing lung cancer screening discussions and offering screening to eligible persons who express a preference for it is a key step to realizing the potential benefit of lung cancer screening. They cite the National Cancer Institute's guides<sup>17</sup> to assist with conversations.

## **Provincial Lung Screening Programs**

Currently, seven provinces have implemented or pilot tested lung screening programs (Appendix 1). British Columbia has a full, province-wide program, Ontario and Nova Scotia have partially implemented programs, and Alberta, Newfoundland and Labrador (jointly), and Quebec have either completed or are undertaking pilots with plans to implement programs. The programs differ somewhat from each other in terms of referral requirements, eligibility, screening interval, and nodule management. Except for Alberta and Nova Scotia (allowing for those at age 50), the minimum age is 55 for referral. Most programs require a 20-year smoking history for referral and all programs use risk-prediction calculators ( $\geq 1.5$  or 2.0% 6-year cancer risk) for final eligibility. They all use a navigator (usually a nurse) to assess eligibility, make the CT appointments, and follow up with patients and/or providers. Navigators in some but not all (e.g. BC, Alberta) programs facilitate informed decision-making. Apart from Quebec all programs rely on the primary care provider to manage incidental findings. Apart from BC the programs use [LungRADs](#) for nodule management. BC uses the [PanCan](#) nodule malignancy risk model which has

recently been prospectively evaluated for its performance<sup>18</sup> and allows for biennial screening in those with low risk (<1.5%). All programs have smoking cessation intervention for current smokers.

### **Evidence supporting provincial programs**

None of the provinces have developed their own guideline in support of their screening protocol. There is evidence that the task force and USPSTF's recommendations for screening helped underpin the initiation of the programs. Much of the narrative describing support for a risk-based approach was outlined in a publication about the BC screening program.<sup>19</sup>

Some support comes from cost-effectiveness evaluations. The BC Ministry of Health found that screening 55-74 year-olds with a 30 pack-year history (currently smoking or quit in past 15 years) was cost effective from a healthcare system perspective; they did not evaluate risk-based eligibility.<sup>20</sup> Two other modelling studies were provided in support of using risk prediction-based versus categorical age and smoking-history eligibility. Across four simulation models (validated to NLST incidence and mortality data), among a US population starting at age 45 all of the scenarios using age and smoking-history criteria (including USPSTF 2013 and 2021 recommendations) were dominated (less cost-effective) by the risk model-based strategies and the strategy using a 1.2% 6-year cancer risk threshold yielded the highest health benefit.<sup>21</sup> A study in Canada compared "high-risk" versus "low-risk" screening (using cancer incidence data from those in NLST with a PLCO<sub>m</sub>2009  $\geq 2\%$  risk; n=9788 and <2% risk; n=39,987) over 15 rounds of screening with follow-up up to 30 years.<sup>22</sup> Canadian data on cost and data from screening and treatment in the Pan-Canadian Early Detection of Lung Cancer Study (PanCan) was also used. The high-risk screening approach reduced the number of individuals who needed to be screened in the NLST by 81%. Cost-effectiveness was driven primarily by non-lung cancer outcomes (e.g., improved quality of life among those not diagnosed with cancer) and the authors suggest that low-cost interventions known to improve quality of life, such as smoking cessation, are likely to make screening programs more cost effective. Further, the cost-effectiveness was greater when assessed over the entire NLST population, due to gaining relatively more QALYs than the relative increase in cost, such that the benefits of risk selection came from the ability to reduce the overall budget impact of screening by excluding low-risk participants.

A few other key studies have been used to support risk-based screening. A secondary analysis of NLST participant data showed that if the PLCO<sub>m</sub>2012 6-year lung cancer risk was less than 0.64%, LDCT did not reduce lung cancer mortality.<sup>23</sup> At risk  $\geq 1.5\%$  the mortality rates were consistently below the control arm's rates (range 6-9 fewer lung cancer deaths per 10,000 person-years). The number needed to screen to prevent one lung cancer death in this group was 255, and in those with  $>0.64\%$  to  $<1.5\%$  risk was 963. Further support for the PLCO<sub>m</sub>2012 1.5% threshold comes from data on cancer detection outcomes within the International Lung Screening Trial (n=5571), where the PLCO<sub>m</sub>2012 prediction tool (at  $\geq 1.7\%$  6-year risk, to keep the same number of individuals being selected for screening as with the 2013 USPSTF criteria) was shown to be 15.8% more sensitive (higher detection rate) than the 2013 USPSTF criteria (162 vs. 135 of 171 individuals with cancer detected over 2.3 years) and the positive predictive value was significantly higher (4.0% vs. 3.4%, P = .01).<sup>24</sup> It should be noted that better prediction of lung cancer does not necessarily translate to better mortality outcomes. Finally, the PLCO<sub>m</sub>2012 race model removes race/ethnicity and sex disparities (i.e., selects more for screening) compared with the 2021 USPSTF screening criteria,<sup>25, 26</sup> though no studies about the effects on patient-important outcomes were cited. No evidence was cited or provided to support improved health outcomes from differing screening intervals based on risk level.

### **Role of primary care providers**

In most provinces, primary care providers will be **responsible for ensuring shared decision-making (SDM)** about lung cancer screening and **referring patients for screening**. Though there are defined referral criteria based on age and smoking history, and screening program navigators who can make further assessment related to the program's risk-based eligibility, because SDM should encompass knowledge about one's risk for lung cancer it is suitable for primary care providers to assess their patient's risk and refer only those who will be eligible for screening. In pilot programs within Alberta and Ontario, 62% and 66.5%, respectively, of those referred were eligible; referring those who will likely be eligible could reduce the burden of screening programs and facilitate their efficiency. Providers should be aware of any additional exclusion criteria, such as being under surveillance for lung nodules; having had hemoptysis of unknown cause or unexplained weight loss of more than 5 kilograms in the past year; and undergoing diagnostic assessment, treatment or surveillance for life-threatening conditions (such as a cancer with a poor prognosis). Patients who are not initially assessed as eligible for screening may become eligible at a later date and **re-assessment should be undertaken** though there are no guidelines informing the frequency.

Most screening programs will facilitate appointments for further screening or diagnostic work-up for those with positive screening results, though **patients may need to be supported when making decisions about how aggressive their subsequent testing will be and during the timeframe (which may take up to 2 years) of their diagnosis**. A major role for the primary care provider **will be acting on incidental findings**. The radiology report may present management recommendations for any findings noted. Ontario has developed recommendations for the most commonly reported incidental findings,<sup>27</sup> as has the American College of Radiology Incidental Findings Committee.<sup>28</sup> Notably, these two sets of recommendations differ in their recommendations for emphysema, the most commonly found incidental finding, which is not considered "actionable" for the Ontario lung screening population. Both of these sets of recommendations are based on expert consensus and the quality of the evidence and strength of the recommendations were not assessed. Another common finding is coronary artery calcification, and if moderate or severe this should prompt formal assessment of cardiovascular risk. The

smoking cessation interventions within the screening programs may prompt **discussions about relevant pharmacotherapy for smoking cessation**.

## Shared Decision Making

The relatively low likelihood of benefit coupled with the relatively high likelihood of harms (from false positives, risks for complications from invasive procedures, possible overdiagnosis, potential negative consequences from incidental findings) makes the decision to undergo lung cancer screening preference sensitive. Shared decision-making (SDM), during which health decisions are made together by patients and clinicians, “ensures patients’ rights to be informed and involved in care decisions and that these decisions are patient-centered... especially for decisions about prevention, for which interventions are delivered to people not seeking care for the target condition”.<sup>29</sup> Appendix 2 contains links and more details about the evidence described.

### **Effectiveness of tools to support SDM**

A 2020 systematic review identified decision aids and other educational tools designed to support SDM for lung cancer screening with CT and evaluated their effectiveness, acceptability, and feasibility. Fourteen studies evaluated 15 tools (7 print and 8 video/web-based; 9 described as decision aids), with five studies evaluating tools used during SDM encounter and others using the tool for preparing patients. Six decision aids were reported to include a value clarification exercise. Only six studies limited their population to participants who met established lung cancer screening eligibility criteria.

Overall knowledge improved in the nine studies that measured knowledge. The one randomized trial (n=229) showed slightly greater gains in knowledge from a booklet-plus-film compared with a booklet alone. Across studies, participants often had good conceptual knowledge (e.g., 60-96% and 74-97% correct for knowing screening reduces lung-cancer mortality and leads to false positives, respectively) but lower knowledge about specific magnitudes of effect (e.g., 45-80% and 20-48% correctly answering questions of proportions of false positives and amount of mortality reductions). Information about screening eligibility criteria (most tools portraying age and pack-year criteria) was not easily retained. In seven studies measuring decisional conflict, there was low decisional uncertainty after using the tools though only three studies compared scores with those from before using the tool. The randomized study showed slightly higher decision certainty in the group receiving the booklet and film versus booklet alone, and another study comparing in-person with telephone administration of a tool found similar effects between groups. Intentions to screen were relatively high (63-80%) after use of tools in three studies measuring this outcome, though changes from before using the tool were not measured. Overall, the screening completion rates were high, ranging from 45% to 95%, in four studies using tools with counseling, whereas they were lower (2-20%) when used without counselling. Seven studies measuring acceptability report high rates of acceptability. In one study, at least one-quarter of participants needed help when using a web-based decision aid (Should I Screen?) that enabled calculation of personal risk and many participants preferred a paper-based over a web-based tool.

Fifteen studies on decision-making in lung cancer screening published after this review were located from other reviews focused on cancer screening. Fourteen decision aids were evaluated, with five studies using the tool during SDM. Study participants were at high risk of lung cancer and eligible for screening in all studies. A randomized trial (n=516) comparing a patient decision aid to standard educational materials demonstrated that the decision aid enhanced knowledge, preparedness, and value clarity, though it did not significantly impact screening intention and uptake. Another randomized study (n=348) found that inclusion of information on incidental findings enhanced knowledge about this outcome and did not influence the importance placed on this outcome for decision-making or intentions to screen. Most participants (74.4%) in this trial preferred to discuss screening with a healthcare provider as a next step prior to making a screening decision. One pre-post study (n=1090) evaluated whether a decentralized, multifaceted intervention consisting of clinician-facing EHR prompts and an EHR-integrated everyday SDM tool was associated with improvements in the ordering and completion of screening. CT imaging orders increased from 7.1% over 12 months prior to the study to 27.3% in the subsequent 9 months, each with about 70% of screening completed. One cross-sectional study (n=264) evaluating the impact of SDM process scores found that i) a discussion of the pros of screening associated positively with greater intentions to make the same screening decision again and to undergo screening again, ii) overall scores associated with less decisional conflict, and iii) more discussions about reasons to not screen and the cons of screening associated with higher knowledge scores. Across studies, findings showed that decision aids generally enhanced knowledge and participants' understanding of screening benefits and harms, reduced decisional conflict and increased decision certainty. Interactive or detailed formats (e.g., booklet-plus-film or Option Grids) showed greater effectiveness in some studies. Screening intentions and uptake were often similar across intervention and comparator groups.

### **Existing decision aids and related tools**

Decision aids are tools to enhance SDM conversations but are not designed to replace patient-physician conversation. Other tools may effectively serve as conversation guides as long as they provide the relevant information and the discussion includes clarification of the patient’s values. Overdiagnosis (i.e., diagnosis of a cancer that would not have caused illness or death in the person’s lifetime because of its slow-growing nature or competing causes of death) is a serious concern because it can initiate treatment in a healthy person who would not benefit from the treatment. It is also a challenging and poorly understood concept to discuss in part because those who are overdiagnosed will likely never know. Because recall imaging or diagnostic work-up

can take many months, false positive results may cause considerable distress for some individuals. Poorly communicated, false positives may make people think that their nodule is highly likely to be malignant when in fact many recalls are for incomplete or nodules that are “probably benign”. Tools useful for SDM should include balanced information on the positive and negative features of screening (ideally using text and natural frequencies as relative effects can be highly misleading when people overestimate the risks), as well as the purpose of screening, the screening process, and the eligibility criteria for lung cancer screening. Several systemic influences are viewed as ethically questionable in cancer screening programs since they might compromise informed decision making.<sup>30</sup> These should be considered when choosing between tools for use with patients.

**Table 2. Some available decision tools with considerations for their use**

Tool	Considerations
<a href="#">Should I Screen?</a>	Focuses on USPSTF eligibility but can be used for cancer-risk (PLCO <sub>m</sub> 2012) and pack year calculators and information on most outcomes. The cancer-risk calculator results page shows absolute numbers from screening for mortality reductions, false positives, invasive procedures and overdiagnosis; mortality reductions come from modeling which may not be accurate though help show how benefits rise with increased risk. Online only. Incidental findings are not mentioned.
<a href="#">Canadian Task Force Patient tool</a>	The recommendations do not match the provincial screening program criteria. The benefits and risks are presented in absolute terms which is ideal. The magnitude of benefit presented may be slightly lower than expected for those at higher risk. Does not present mortality rates in those not screened, for context. The rates of false positives may be higher than expected from current screening programs using different nodule management system than did the NLST, but reflect cumulative over multiple rounds which other tools do not. Incidental findings are not mentioned. Personal risk of cancer is not captured. Can request print copies.
<a href="#">BC Cancer Patient Brochure</a>	Patient brochure describes screening as a way to prevent cancer. Presents false positives as suspicious for cancer. The benefits from cancer are presented in relative terms (20% reduction in death) without any context around the risk of death from not screening. Risks from false positives and overdiagnosis are not association with any magnitudes. Incidental findings are not mentioned. Personal risk of cancer is not captured.
<a href="#">Video decision aid</a>	The benefits and risks are presented in absolute terms which is ideal. The magnitude of benefit presented may be slightly lower than expected for those at higher risk. Incidental findings are mentioned. Personal risk of cancer is not captured.
<a href="#">Is Lung Cancer Screening Right for Me?</a>	Developed by AHRQ though archived.
<a href="#">Annual Screening for Lung Cancer: Is it right for me?</a>	Developed by US Department of Veteran Affairs

### **Additional considerations for shared decision making and supporting patients**

**Specific populations.** A systematic review evaluating the impact of income and education on lung-cancer screening utilization found that lower income was associated with lower utilization, possibly due to lower insurance coverage, having jobs that are not flexible in allowing for screening during work hours, and care in clinics that are under-resourced leaving providers with less time and support to perform SDM. The authors recommend gearing SDM tools towards those with low socioeconomic status where health literacy can be limited, and highlight that a teach-back technique can increase the likelihood that patients understand the information. A meta-analysis of studies on SDM tools for cancer screening (15% of studies related to lung cancer) found that tools were more effective for improving knowledge, reducing decisional conflict, and increasing screening intentions among vulnerable populations compared to non-vulnerable populations. Further, there were differing preferences for SDM tools between clinicians and vulnerable populations, with vulnerable populations favoring tools with relevant information, cultural tailoring, and accessible communication whereas clinicians prioritized tools that integrated seamlessly into medical systems and support efficient, patient-centered care.

**SDM during nodule management.** Providing information and SDM may be necessary if patients are provided with options about actions taken for lung nodules detected with screening. A recent systematic review found that several factors influence the implementation of SDM for these situations, including i) uncertainty when faced with options with different levels of aggressiveness (e.g., surveillance versus biopsy and possibly surgery), ii) willingness to be actively involved in the decision-making (58% preferring SDM), iii) confusion about medical terms, misperceptions (e.g., 50% believing that the nodule caused shortness of breath, gross overestimates of the likelihood of a malignancy), and distress which may impact follow-up compliance. Patients found it helpful when physicians used lay terms, showed the CT image, and quantified cancer risk. Authors of one study laid out several patient-important communication elements: provide verbal communication of scan results and estimates of cancer risks, avoid dismissing or minimizing language, recognize that the nodule may be an importance concern, and provide details about the nodule and the evaluation plan including its possible downsides.

**Barriers and facilitators.** A review of 52 qualitative studies on the barriers and facilitators of lung cancer screening participation found that an essential factor influencing decisions is “awareness”, including knowing where to access services, assumptions about the screening process (e.g., high perceived risk of CT), that screening was used in an asymptomatic state, and having inaccurate information about what a lung cancer screening result means (e.g., unrealistic fear and fatalism). The influence of social or cultural beliefs on individuals’ decisions to participate in screening was demonstrated in many studies. SDM and decision-making aids were considered significant facilitators of participation in lung cancer screening and influenced participant views. Quality of patient–provider communication plays a crucial role in addressing barriers and facilitators to screening.

**Consultation time for SDM.** A systematic review of decision aids used for screening and treatment decisions across a variety of conditions found that when the aids were used during a consultation, consultation length only increased by 1.5 minutes. Because

the purposes of screening and some outcomes related to screening, including false positives and overdiagnosis, may require time to understand conceptually, it may be expected that SDM for screening may take longer than for treatment. The review described above on effectiveness of decision aids for lung cancer screening found that 5 to 10 minutes was required for use of the decision aids. Having nurses or other trained personnel help prepare patients for SDM may help with feasibility.

Health IT interventions. A scoping review examining Health IT interventions (84% using HER-based tools; all studies based in US) used for breast, cervical, and colorectal cancer screening found that these interventions generally led to improved screening rates. Most studies focused on the reach of interventions, with fewer addressing adoption barriers related to primary care settings. Barriers included limited staff time, inaccurate cancer screening data reported by the HIT intervention and the burden of HIT development and maintenance, and challenges involved with working with an EHR vendor to activate and update the tool. Facilitators included having dedicated staff assigned to operate and manage a given HIT tool, HIT automation and customization features, organizational policies supporting HIT adoption, and Medicaid expansion including cancer screening as an incentivized metric. There was little evidence on how to enhance the adoption of effective technologies.