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Brief Original Report

Feasibility of a patient decision aid about lung cancer screening with low-dose computed tomography

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ABSTRACT

Objective. New clinical guidelines endorse the use of low-dose computed tomography (LDCT) for lung cancer screening among selected heavy smokers while recommending patients be counseled about the potential benefits and harms. We developed and field tested a brief, video-based patient decision aid about lung cancer screening.

Methods. Smokers in a cancer center tobacco treatment program aged 45 to 75 years viewed the video online between November 2011 and September 2012. Acceptability, knowledge, and clarity of values related to the decision were assessed.

Results. Fifty-two patients completed the study (mean age = 58.5 years; mean duration smoking = 34.8 years). Acceptability of the aid was high. Most patients (78.8%) indicated greater interest in screening after viewing the aid. Knowledge about lung cancer screening increased significantly as a result of viewing the aid (25.5% of questions answered correctly before the aid, and 74.8% after; $P < .01$) although understanding of screening eligibility remained poor. Patients reported being clear about which benefits and harms of screening mattered most to them (94.1% and 86.5%, respectively).

Conclusions. Patients have high information needs related to lung cancer screening. A video-based decision aid may be helpful in promoting informed decision-making, but its impact on lung cancer screening decisions needs to be explored.

Introduction

Lung cancer is the second most common cancer and the leading cause of cancer deaths in the US and worldwide (American Cancer Society, 2012; Khan et al., 2010). Because of its strong link to tobacco use, lung cancer is the most preventable form of cancer death.

In June 2011, the National Lung Screening Trial (NLST) published its primary result: among persons 55 to 74 years of age who previously or currently smoke heavily, 20% fewer lung cancer deaths were observed among those who received low-dose computed tomography (LDCT) rather than standard chest x-rays for screening (Aberle et al., 2011). These findings have led many professional medical societies to endorse annual LDCT screening for lung cancer for individuals meeting NLST eligibility (Bach et al., 2012; Moyer, 2013; Wender et al., 2013). Yet, lung cancer screening with LDCT is associated with potential harms, including radiation exposure and a high false-positive rate leading to subsequent follow-up and invasive testing with its own associated harms (Stacey et al., 2011). In addition to the physical harms associated with LDCT screening, there is the risk of overtreatment for possibly non-fatal cancers, psychological harms (anxiety, depression), and real or perceived financial strain (Harris et al., 2013). Because of these potential harms, many organizations highlight the need for informed decision making. For example, the evidence-based guideline of the American Cancer Society (ACS) and the recommendation of the US Preventive Services Task Force emphasize the importance of patients having the opportunity to weigh the harms and benefits when making a decision about screening for lung cancer with their health care provider (Moyer, 2013; Wender et al., 2013).

Patient decision aids can play an important role in promoting shared decisions about lung cancer screening. These interventions are designed to help people think about the choices they face by describing where and why a choice exists. Decision aids provide information about options, help people deliberate by considering relevant attributes of the options, support people in forecasting how they might feel about outcomes associated with the outcomes, and support their constructing

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preferences for the options (Volk et al., 2013). Compared with usual care interventions, patient decision aids significantly improve knowledge, result in more accurate risk perceptions, help patients become more assured about their decisions, decrease passive participation in decision making, and result in decisions consistent with patients' values (Stacey et al., 2011).

In response to new evidence and potential misconceptions about the benefits and harms of LDCT screening for lung cancer, we developed a video-based patient decision aid to promote informed screening decisions. Here we report on field testing of the decision aid among current and former smokers.

Methods

Development of the patient decision aid

The video "Lung Cancer Screening: Is It Right for Me?" was designed to be used in primary care settings by candidates for lung cancer screening (the final video was approximately 6 min long), but the format allows the aid to be used in other settings as well. A video-format was selected to maximize its potential use with patients having low health literacy. The content was written at the 8th-grade reading level. The aid was tested for comprehension with patients and modified during development. Features of the aid include an on-screen narrator, information about lung cancer and its risk factors, footage of a patient undergoing a scan, animations communicating the magnitude of harms and benefits of LDCT screening, and an implicit values clarification component that depicts trade-offs between potential harms and benefits. A unique feature of the aid is the use of animated pictographs to depict the likelihood of benefit from LDCT screening and the false-positive rate associated with testing (Fig. 1).

Subjects and procedures

An uncontrolled, before–after design was used to evaluate the decision aid. These designs are typically used as part of a systematic development process for patient decision aids, where the aid is field tested with patients to determine acceptability of the tool and gain initial indicators of the tool's effectiveness in promoting informed decisions (Coulter et al., 2013). Eligible subjects were patients from a tobacco treatment program at a large cancer center who were English speakers and had no history of lung cancer. Current and former patients were mailed invitation letters ($n = 500$) and recruitment fliers were included in new patient packets ($n = 60$). Interested patients were given a link to an online survey where they completed a pre-intervention assessment, viewed the decision aid video, and completed a post-intervention assessment. The project was approved by the Institutional Review Board at The University of Texas MD Anderson Cancer Center.

Measures and analysis

The usability of the patient decision aid was tested using the Ottawa Acceptability Measures(O'Connor and Cranney, 1996), general ratings of the quality of the aid, and the perceived impact of the aid on screening decisions. The effectiveness of the decision aid in promoting informed screening decisions was assessed using two of the decision aid evaluation criteria defined by the International Patient Decision Aid Standards Collaboration: being informed and feeling clear about values (Sepucha et al., 2013). We used an 11-item measure of lung cancer screening knowledge and the values clarity subscale of the Decisional Conflict Scale (O'Connor, 2010). We also included 3 knowledge items specific to risks and benefits presented in the aid for a subset of the sample. The Decisional Conflict Scale values clarity subscale questions were compared with standards for the scale (O'Connor, 2010).

At the time of the study, new guidelines had not yet been released and screening with LDCT was not being reimbursed by insurance. Post hoc analyses comparing patients ($n = 14$) who met both age and pack-year history eligibility for LDCT screening and those who did not ($n = 38$) showed all screen-eligible patients rated the length as about right, while 6 (15.8%) of the remaining patients indicated the video should have been longer. No other differences were observed, and the combined data are reported below.

Results

Of the 52 participants in the field testing, 23 (44.2%) were current smokers and the remainder were former smokers. The average smoking history was 30 pack-years, and the average time smoking was

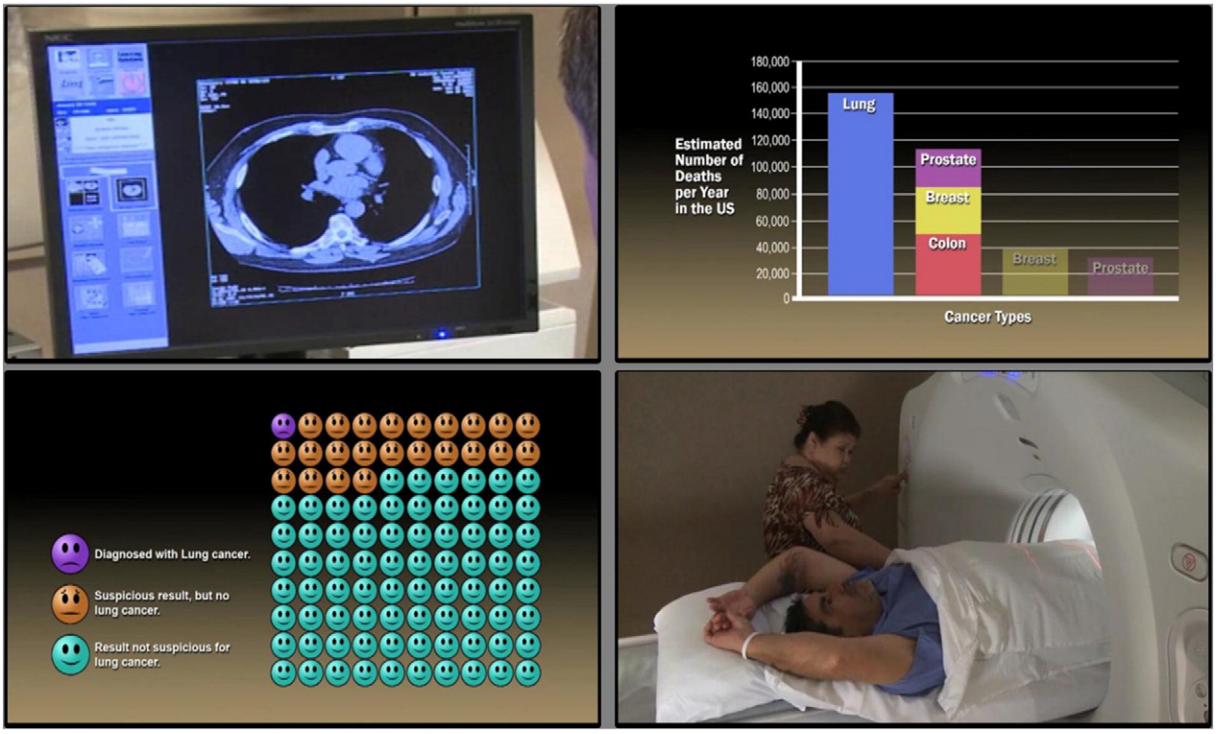

Fig. 1. Screen shots from the patient decision aid video. Clockwise from top left: LDCT image on a monitor; deaths due to lung cancer compared to other cancers; icon array showing likelihood of a positive LDCT result; and an LDCT scan procedure. Subjects were cancer center patients in a tobacco treatment program who participated in the study between November 2011 and September 2012.