Lung: Short Report

Qualitative Assessment of a Decision Tool for Stage I Lung Cancer Treatment

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ABSTRACT

BACKGROUND Some patients are candidates for either surgical resection or stereotactic body radiotherapy for treatment of stage I lung cancer. We refined a previously developed decision tool about this treatment choice and evaluated interest in a personalized risk calculator.

METHODS We conducted qualitative interviews from October 2023 to May 2024 with patients who had been treated for stage I lung cancer at a Midwestern comprehensive cancer center and with clinicians who treat such patients.

RESULTS Participants responded positively to the tool and indicated that it could support decisions if provided before or during conversations following diagnosis. There was no consensus on which clinician should deliver the tool. Suggested tool adaptations focused on clarifying eligibility for options and accurately describing the range of patients' recovery experiences. Participants were open to the idea of a personalized risk calculator but expressed concerns about accuracy and interpretation of the results.

CONCLUSIONS Decision tools can help clinicians and patients collaborate on care decisions. Future work will explore opportunities to incorporate personalized risk information and evaluate this decision tool with a diverse group of patients deciding on treatment for stage I lung cancer.

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ew guidelines for lung cancer screening have resulted in more diagnoses of stage I lung cancer.¹ The current National Comprehensive Cancer Network standard of care for operable patients with this diagnosis is surgical resection, which removes the tumor and allows pathologic staging.² Stereotactic body radiotherapy (SBRT) demonstrates effective primary tumor control and is recommended by the National Comprehensive Cancer Network for patients with medically inoperable or high-risk operable stage I lung cancer.^{1,2} Although SBRT has more ambiguity during pathologic staging and surveillance and may have a higher local recurrence rate, it carries a

IN SHORT

- Patients with stage I lung cancer considering surgical resection or radiation therapy can benefit from shared decision-making.
- Patients and clinicians support using a stage I lung cancer decision tool to supplement clinical conversations.
- The tool should be available in multiple formats to enhance access.

lower risk of acute complications and does not require inpatient hospitalization or significant recovery time.^{3,4}

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For patients who are potentially operable but have comorbidities that can make surgical treatment for stage I lung cancer riskier, shared decision-making about treatment is appropriate.⁵ Shared decision-making supports informed, preference-concordant decisions. Decision aids can aid in shared decision-making by providing information, eliciting patient preferences about options, and describing decision-making steps.⁶ Decision aids have been applied successfully to numerous surgical decisions.^{6,7}

In previous work, we convened a multidisciplinary team (decision scientists, thoracic surgeons, radiation oncologists, patients) to develop a tool about surgical resection and SBRT for stage I lung cancer using high-quality, transparent evidence and best practices in decision tool development.⁸ Clinical teams suggested studying how to improve its usability and whether to add personalized risk estimates into the tool. This paper describes gathering end-user preferences through qualitative interviews to refine the content and delivery process.

PATIENTS AND METHODS

We conducted semistructured interviews from October 2023 to May 2024 with patients who received surgical treatment or radiation therapy for stage I lung cancer at a comprehensive cancer center in the Midwest or with clinicians treating such patients. The study was approved as exempt research (IRB #202307040; approval date, August 10, 2023).

RECRUITMENT. Flyers were posted in clinic and distributed to potentially eligible patients by clinicians or staff. Interested patients contacted the study team, who confirmed eligibility: \geq 18 years, English speaking, and diagnosed with stage I lung cancer in the last 3 years. Patients were then emailed or mailed a copy of the decision tool and consent to review.

Clinical partners forwarded flyers to their professional networks. Interested clinicians contacted the study team to enroll. Multiple clinician types were eligible (eg, surgeons, radiation oncologists, nurses) if they counseled patients about stage I lung cancer treatment.

PROCEDURES. Study coordinators trained in qualitative interviewing scheduled interviews by phone or Health Insurance Portability and Accountability Act-compliant video conferencing. After giving informed consent, participants were asked to describe general impressions of the content and format of the tool, perceived benefits and drawbacks, possible delivery in routine care, and acceptability of adding a hypothetical personalized risk calculator to the tool (interview guide available as Appendix A). Deidentified interview transcripts were analyzed with NVivo 12 software (Lumivero). Participants received a \$20 gift card.

We attended standing clinician meetings to solicit additional feedback on the tool at the onset and midpoint of the study. Suggestions were compiled and tracked with the Framework for Reporting Adaptations and Modifications– Expanded (FRAME).⁹

ANALYSIS. We used deductive and inductive thematic analysis to analyze data. A codebook was generated using the Behavior Change Wheel, which posits 3 interacting components to any behavior: capability, opportunity, and motivation.¹⁰ Codes within these domains were refined inductively by 2 members of the research team (E.G. and C.A.). Coders met to revise codes, to discuss discrepancies, and to ensure intercoder reliability (Cohen $\kappa \ge 0.75$ and percentage agreement $\ge 95\%$).

RESULTS

We interviewed 23 participants: 12 patients treated for stage I lung cancer and 11 clinicians (Table). One patient participant was excluded from analysis because of technical issues with the recording.

Theme 1: The tool is overall valuable for patient education.

Participants responded positively to the tool. They found colors, images, length, and content engaging and comprehensive:

"It's said in a way anybody who can read can pretty much understand, and I like that about it. It says enough without saying so much that you don't understand what they're trying to tell you." - P16, patient who received radiation therapy

Every participant discussed the tool's educational value. Clinicians noted that reviewing the tool could help patients understand their options, generate questions to facilitate productive decision-making conversations, and retain information. Patients agreed:

"...when [people] hear the word cancer, they just kind of shut down ... if you're handed that [tool], then you could look at it at your convenience ... review a couple of times ...

TABLE Participant Characteristics	
Patients (n $=$ 12) ^a	No. (%)
Age, y Mean, 69.6 (SD 10.81) Range, 46-86	
Treatment received Surgical treatment Radiation Both	6 (50.0) 5 (41.7) 1 (8.3)
Sex Female Male	7 (58.3) 5 (41.7)
Race Black/African American White/Caucasian	2 (16.7) 10 (83.3)
Education Less than 4-year college degree 4-year college degree or more	7 (58.3) 5 (41.7)
Income <\$25,000 \$20,000-40,000 \$60,000+ Prefer not to say	1 (8.3) 5 (41.7) 5 (41.7) 1 (8.3)
Health insurance Government sponsored Employer sponsored Self-purchase	9 (75.0) 2 (16.7) 1 (8.3)
Clinicians (n = 11) Specialty Thoracic surgery Radiation oncology	No. (%) 4 (36.4) 7 (63.6)
Years of experience <5 5–10 >10	3 (27.3) 5 (45.5) 3 (27.3)
^a One patient excluded because of audio recording issues.	

And then if they have any questions ... they could always refer ... to the doctor." - P15, patient who received radiation therapy

Theme 2: The tool should be used at multiple time points during treatment.

Asked when, how, and where the tool would be most valuable, participants encouraged an earlyand-often approach:

"...as soon as [patients] recognize that they have a stage I lung cancer, they're going to start Googling things anyway ... trying to figure out what the common treatments are. So they might as well ... give them ... our vetted tool." - P12, radiation oncologist

"...maybe as soon as you're diagnosed ... they could give you this or ... put it on the website or something and say, 'This is something we have for you ... go over it, see what the options are. See what you think. Talk to your family." - P1, patient who received surgical treatment

Theme 3: Multiple formats would enhance access. Participants agreed that the tool should be available on paper based on the typical age of patients with lung cancer and potential internet access or literacy challenges. Some suggested making the tool available in multiple formats (eg, emailed PDF, patient portal message) for easy access at different times:

"You probably do need to have a multifaceted approach. [Portal name] would be excellent, but then also have it available in paper form or accessible on the PCs in the exam rooms." - P5, radiation oncologist

Theme 4: A clinician should review the tool with patients, but inconsistent paths to treatment pose difficulties.

One challenge participants discussed was determining who should share the tool with patients (physician, nurse, navigator). Patients described moving rapidly between clinicians during diagnosis and treatment. Many expressed that the tool could provide consistency during the patient journey:

"...to have this be ... a common denominator ... so that no matter who they saw, what clinic they were seen in, how short or long their consult was, they have this as the common denominator ... that type of standardization is really good." - P14, radiation oncologist

Suggestions

Participants offered suggestions to improve readability and to clarify why some patients may not be candidates for both treatments on the basis of preoperative testing or health status. Clinicians expressed concern that without this information, the options could appear equivalent for all patients, which might generate confusion.

"...if they were to read this and see all the surgical options that they have, and then only later find out that they're not a surgical candidate, it may prompt a considerable number of questions." - P5, radiation oncologist

Many clinicians commented on the difficulty in presenting treatment options in a balanced manner without equating the treatments and made suggestions to reduce a perceived negative bias toward radiation therapy and to emphasize long-term benefits of treatments rather than focusing on short-term effects:

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"Pain is always an issue with surgery, so people ... tend to focus on pain relief and all of that, but ... if I was a patient, I'd want to know what is going to happen to me in a year." -P13, surgeon

Most suggestions from patients were centered around clarifying the extent or intensity of treatment adverse effects, noting symptoms persisted longer than the tool presented. One patient who received surgical treatment (P8) described the surgical treatment recovery section as "awfully optimistic." Another patient commented:

"I guess surgery is the gold standard in terms of making sure you get ... the cancer out. But ... I didn't want to be laid up for 6 to 8 weeks." - P20, patient who had radiation therapy

Clinicians joined patients in suggesting information about severe complications of each treatment:

"These are sorts of details that ... are important when the surgeon is counseling the patient ... it is something that you don't want your patients to be blindsided by." -P19, surgeon

Finally, some clinicians indicated interest in adding personalization:

"...there's a lot of little things that are really impactful in decision-making ... things that have a lot of numbers associated with them ... pulmonary function tests ... cardiovascular risks ... those kinds of things ..." – P9, radiation oncologist

The final version of the tool is included as Appendix B.

Risk Calculator

Participants were open to the idea of a hypothetical personalized risk calculator to support clinical conversations about individual risk-benefit tradeoffs. Most indicated that the electronic medical record could source data and deliver results while providing data security. However, participants expressed some concern about whether a calculator would be able to produce accurate results because of the number of variables required:

"It can lead to a lot of confounders ... a patient has X blood pressure, X cholesterol level, and then X blood counts; 2 patients with the those same 3 things may have very different outlooks depending on a lot of different other [social/family] factors in their life ... those are hard to kind of capture in these risk tools." - P12, radiation oncologist

Most participants emphasized that the risk calculator should be used with a clinician to enhance communication of results. As 1 surgeon said:

"There's always going to be a nuanced patient that has a result that's way off or ... doesn't match what the physician feels. And maybe the patient gets this information and starts worrying about something or wanting a procedure that might not be good for them ... the understanding ... will be missing if they get it ... without talking to a physician." -P21, surgeon

COMMENT

Education and decision tools can support treatment conversations and promote patient engagement. Patients and clinicians were enthusiastic about this stage I lung cancer treatment tool and suggested ways to enhance implementation. However, they cautioned that it might not be clinically appropriate for all patients. Some suggested that radiation or surgical treatment sections could be used in isolation if a patient is a candidate for only 1 option.

The qualitative approach used for this study was appropriate to refine the tool with suggestions relevant to clinicians and patients. However, our qualitative methods were not used to quantify changes in knowledge, attitudes, or outcomes. Future work could evaluate the tool in a larger study examining quantitative outcomes, include perspectives from a more racially diverse patient population, and consider adapting the tool into other languages. Suggestions about the risk calculator could be used to support treatment discussions; development of a personalized risk calculator to enhance clinical conversations is underway in a comparative effectiveness cohort study (5R01CA258681-03).

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DISCLOSURES

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