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Clinician Perspectives on Overscreening for Cancer in Older Adults With Limited Life Expectancy

Nancy L. Schoenborn, MD, MHS[*], **Jacqueline Massare, BS**[*], **Reuben Park**[†], **Craig E. Pollack, MD, MHS**[‡], **Youngjee Choi, MD**[*], **Cynthia M. Boyd, MD, MPH**[*]

[*]Department of Medicine, The Johns Hopkins University School of Medicine, Baltimore, Maryland [†]Johns Hopkins University, Baltimore, Maryland [‡]Department of Healthy Policy and Management, The Johns Hopkins University School of Public Health, Baltimore, Maryland.

Abstract

BACKGROUND/OBJECTIVES: Guidelines recommend against routine screening for breast, colorectal, and prostate cancers in older adults with less than 10 years of life expectancy. However, clinicians often continue to recommend cancer screening for these patients. We examined primary care clinicians' perspectives regarding overscreening, as defined by limited life expectancy.

DESIGN: Semistructured, in-depth individual interviews.

SETTING: Twenty-one academic and nonacademic primary care clinics in Maryland.

PARTICIPANTS: Thirty primary care clinicians from internal medicine, family medicine, medicine/pediatrics, and geriatric medicine.

MEASUREMENTS: Interviews explored whether the clinicians believed that overscreening for breast, colorectal, or prostate cancers existed in older adults and their views on using life expectancy to decide on stopping routine screening. Audio recordings of the interviews were transcribed verbatim. Two investigators independently coded all transcripts using qualitative content analysis.

RESULTS: Most clinicians were physicians (24/30) and women (16/30). Content analysis generated three major themes. (1) Many, but not all, clinicians perceived overscreening in older adults as a problem. (2) There was controversy around using limited life expectancy to define overscreening due to concerns that the guidelines did not capture potential nonmortality benefits of

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Address correspondence to Nancy L. Schoenborn, MD, MHS, 5200 Eastern Ave, Mason F. Lord Building Center Tower, Room 703, Baltimore, MD 21224. nancyli@jhmi.edu.

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Study concept and design: Schoenborn, Boyd, Choi, and Pollack.
Data collection and management: Schoenborn and Massare.
Data analysis and interpretation: Schoenborn, Massare, Park, Boyd, Choi, and Pollack.
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screening; that population-based screening data could not be easily applied to individuals; that this approach failed to account for patient choice; and that life expectancy predictions were inaccurate. (3) Some clinicians worried that using life expectancy to define overscreening may inadvertently introduce bias and lead to unintended harms.

CONCLUSIONS: Several clinicians disagreed with guideline frameworks of using limited life expectancy to guide cancer screening cessation. Some disagreement stems from inadequate knowledge about the benefits and harms of cancer screening and indicates a need for education or decision support. Other reasons for disagreement highlight the need to refine the current recommended cancer screening approaches and identify strategies to avoid unintended consequences, such as introducing bias or exacerbating existing disparities.

Keywords

cancer screening; clinician perspective; life expectancy

The benefits of routine screening for breast, colorectal, and prostate cancers typically have a lag time of 10 or more years.[1,2] On the other hand, multiple harms from screening can occur in the short-term, and the risk of these harms increases with age and accumulation of comorbidities.[3-8] Guidelines recommend against routine cancer screening in older adults for whom the harms outweigh the benefits, traditionally defined using specific age cutoffs.[9-11] As a growing body of literature demonstrates that older adults of the same age can have heterogeneous health status and health trajectories,[3,12] clinical practice guidelines increasingly use limited life expectancy (ie, <10 years) to guide when routine cancer screening should stop, as opposed to using only age thresholds.[13-19] However, older adults with limited life expectancies still frequently receive cancer screening, raising concern for overscreening in these patients.[20-23]

Studies suggest that clinician recommendation may be a powerful contributor to overscreening.[24-27] In one national study, clinicians' recommendation to receive screening accounted for over 90% of patients who had overuse of prostate-specific antigen (PSA) screening; in the absence of clinician recommendation, patient-initiated screening occurred in less than 3% of the cases.[25] Another study showed that higher rates of mammography screening in women with limited life expectancy were associated with both access to and number of primary care clinicians.[26]

Some of the reasons for why clinicians may overscreen patients have been described in the literature, such as patient request and expectations, malpractice concerns, limited time for discussion, and influence of quality metrics.[28-30] A less understood yet critical question is what clinicians think about the current guidelines on using limited life expectancy to inform the appropriateness of cancer screening in older adults. In our prior work that explored clinicians' perspectives about prognosis in general, we found that some clinicians were uncomfortable with stopping preventive care, such as cancer screening, in younger people with limited life expectancy.[31] We did not previously evaluate clinicians' perspectives on overscreening or whether clinicians supported using limited life expectancy to define overscreening in older adults.

Using life expectancy rather than age to inform when to stop screening is a paradigm shift, and clinicians' perspectives about this new paradigm is poorly understood. Better understanding clinicians' views around overscreening and specifically around the current approach of using limited life expectancy to guide screening cessation would critically inform efforts aimed to reduce overscreening. We aimed to address this important knowledge gap through qualitative interviews.

METHODS

Design and Study Setting

This was part of a larger mixed-methods study where we also explored patient and clinician decision making around cancer screening in older adults; these results have been reported elsewhere (under review). In this article, we focus on the results from semistructured individual interviews with primary care clinicians regarding their views on overscreening, as defined by limited life expectancy. This project was approved by a Johns Hopkins School of Medicine institutional review board.

Subjects and Recruitment

We used a combination of snowball sampling and maximum variation sampling to recruit primary care clinicians, including physicians, certified registered nurse practitioners, and physician assistants, who cared for adults aged 65 years and older. Maximum variation sampling sought to recruit clinicians diverse in age, sex, clinician type, specialty, and practice type (academic, academic-affiliated community practice, and community private practice). We recruited clinicians via email from three geriatric clinical programs (an ambulatory clinic, a house-call program for homebound older adults, and a Program for All-Inclusive Care of the Elderly); three academic primary care clinics affiliated with Johns Hopkins Medicine; the Johns Hopkins Community Physicians, which is the largest outpatient community group practice in Maryland with 20 primary care clinic sites; and 16 private practices in Maryland not affiliated with Johns Hopkins Medicine.

Interview Guide

The interview guide was piloted with two general internal medicine faculty at our institution to ensure clarity and appropriateness. At the beginning of the interview, we briefly described that since evidence showed that it took 10+ years to benefit from breast, colorectal, and prostate cancer screenings,[1,2] guidelines increasingly suggested using less than 10 years of life expectancy as the threshold to stop routine screening.[13-19] We also mentioned that studies using validated life expectancy prediction tools showed that many older adults with predicted life expectancy of less than 10 years still received screening, suggesting overscreening.[20-23] We asked whether the clinicians thought there was overscreening in older adults and their views on using life expectancy to decide when routine screening should stop. The interviews were semistructured and allowed for new topics to emerge.

Data Collection and Analysis

One investigator (N.S.) conducted the clinician interviews in person from October 2018 to May 2019. The interviews were audio recorded and transcribed verbatim. The transcripts were analyzed using Atlas.ti textual data analysis software. We continuously reviewed the transcripts and stopped data collection when no new ideas emerged, suggesting that theme saturation was reached.[32] We used standard techniques of qualitative content analysis to code the transcripts.[32-34] A preliminary coding scheme was developed based on the interview guide and revised with additional themes identified through open coding procedures using the constant comparative approach.[32,34] Each transcript was coded independently by at least two of the investigators (N.S., J.M., or R.P.). Differences were reconciled by consensus until 100% agreement was reached.

RESULTS

Thirty primary care clinicians from 21 different clinic sites participated in the study (Table 1). The mean clinician age was 48.2 years. Most clinicians were physicians (24/30) and women (16/30). Clinician specialties included 17 internal medicine, 6 family medicine, 2 medicine/pediatrics, and 5 geriatric medicine. Content analysis revealed three major themes and subthemes; these are presented below and illustrated using representative quotes.

Theme 1: Many, But Not All, Clinicians Perceived Overscreening in Older Adults as a Problem

Most participants (18/30) perceived that there was overscreening in older adults. One clinician said: "*We order so many labs and testing. I think we definitely overscreen patients unnecessarily.*" Another clinician commented: "*Older [patients are] still getting mammograms and they are on a whole bunch of medicines… Why are they getting mammograms when they have [congestive heart failure] and they have all [these conditions] and they are in and out of the hospital? I think sometimes overscreening is harmful.*"

Other participants did not believe there was overscreening or thought that overscreening was acceptable. Some thought so because they believed that cancer screening's benefits outweighed the harms: "*I think we always have to screen for things that are malicious and are reversible like colon cancer. I don't think you ever overscreen for colon cancer because it's something very preventable and malignancy can be very bad.*" Some responses stemmed from skepticism about the guidelines: "*Anytime science makes a dramatic change in their recommendations from PSA screening every man at age 40 to this sort of casual 'if you want, you can start talking about it at age 55, but you don't really have to.' I am uncomfortable with that…My concern is we might end up back peddling…years later we realize we should have been doing PSA.*" Other reasons for clinicians not believing that there was overscreening had to do with disagreement with how overscreening is being defined (see theme 2 below).

Theme 2: Controversy Around Using Limited Life Expectancy to Define Overscreening

Some clinicians agreed with the guideline recommendations of stopping routine cancer screening in older adults with limited life expectancy: "*I agree with an approach more towards [using] life expectancy than just age-based screenings because obviously there [are] very sick 55 year olds [for whom screening] could not make sense.*" Many commented that they used the 10 years of life expectancy as a threshold to guide their screening decisions.

One clinician said: "*I find that the 10-year life expectancy is a really helpful guidepost for me…as an evidence-based recommendation to help me to be able to say with confidence: 'no, you shouldn't get this screening'*." Another commented specifically that she thought using the 10-year life expectancy threshold was "*the right way to define overscreening*."

Other clinicians disagreed with using limited life expectancy to guide screening cessation or define overscreening, citing several reasons, as described below. These comments occurred among those who did and those who did not believe that overscreening was a significant concern among older adults.

The Guidelines Did Not Account for Non–Mortality-Related Benefits of Cancer Screening—Guidelines on stopping cancer screening in patients with limited life expectancy are based on rationale that cancer-specific mortality benefits from screening lag for many years.[1,2] However, clinicians mentioned that cancer screening may provide other benefits that would make it worthwhile, even if it did not impact the patient's mortality; these benefits included quality of life, less extensive treatment, reassurance, and positive changes triggered by knowing a cancer diagnosis (Table 2).

Population-Based Screening Data Were Difficult to Apply to Individual Patients—Many clinicians wrestled with what it meant to apply evidence based on population-level data to individual patients. One clinician commented that the specific people who were benefited and who were harmed by screening were different people. "*Is it worthwhile if three other women got screened for breast cancer and might have issues that come up as a result but you find an early breast cancer and then don't have the mortality morbidity associated with that down the road?… Does this person's harm outweigh this [other] person's benefit, especially if you don't know which one is actually going to be the beneficiary?*"

Distrust of Life Expectancy Predictions—Clinicians were skeptical of the existing tools for predicting life expectancy. They questioned how applicable it was to use life expectancy prediction based on population-level data to an individual patient: "*I'm not convinced that any of those predictive algorithms are accurate enough to apply to a single person in clinical care… you can look at a population of people and say X percent will live Y years from today but it's incredibly risky and foolhardy to bring that to a single person*." In addition, clinicians mentioned that the existing models may be missing important predictor variables, such as family history of longevity, and did not account for changes in patient status or changes in medical technology.

Accounting for Patient Choice—Clinicians generally felt that so long as patients were informed about the benefits and risks involved with cancer screening, they should be able to make the ultimate decision, even if that meant choosing screening when they had limited life expectancy. "*I'll always default to patient preference so long as there's been a conversation where I feel it's informed consent*."

Using Life Expectancy Felt Impersonal—Several clinicians commented on that using life expectancy felt too impersonal. "*The thing about using life expectancy is it feels* *calculated and … sort of challenges my humanity and my human connection with someone*.” Some felt uncomfortable with this approach even when they understood the rationale behind the guidelines: “*If 10 years is the rule then I don’t think any of my patients are gonna live for 10 years… and [that] instinctively makes me a little bit uncomfortable….it feels like quitting but at the same time I realize that it’s realistic*.”

Theme 3: Concern for Bias and Unintended Consequences

Several clinicians voiced concern for bias in using life expectancy to guide cancer screening: “*If you offer them to everyone then you are not not offering to people so there’s no disparity like internal bias… if you just do it for everybody then you can’t be unfair*.” One clinician described her perception that this approach was biased toward racial minorities: “*To be quite honest as a black physician and enduring or experiencing my own level of racism… I automatically perceive [a prognostic tool] as a negative, as maybe another tactic to potentially not give minorities the care that they need because there’s gonna be bias. These biases exist now amongst minorities… somebody may say: ‘well, you know this black person - they’ll be dead in 5 years so we don’t need to screen them anyway… because they are gonna die anyway because that’s what the guidelines say*’” Others mentioned bias for the sake of reducing cost. One clinician perceived bias in the data: “*A lot of these population studies the intent is not to spend the money… so we are trying to find these ways of saying: ‘well, screening is not useful’… I have a hard time with those studies*.” Another clinician worried that bias will be introduced when operationalizing the life expectancy prediction: “*My fear is that people in the decision-making positions are going to influence how those [life expectancy prediction] programs get written…Some people are gonna build the bias in so that everybody will get screened and tested. Other people are gonna build the bias in so that the least amount of money is gonna get spent so we can spread healthcare among more people*.”

Clinicians were also concerned that the guidelines will be implemented in a way that limits patient access to care and/or undermines patient-centered care. “*I don’t want to see us moving to where people who control the money simply say—ain’t paying for that because based on this actuarial table you are likely to die in the next 7.1 years*.”

DISCUSSION

Although there has been growing literature describing the existence of overscreening in older adults with limited life expectancy and increasing efforts to reduce overscreening,[20-23] little is known about how clinicians perceive this issue. In this study, we found that many, but not all, clinicians believed that overscreening was a problem in older adults, and there was significant controversy around whether stopping routine screening in those with limited life expectancy was appropriate.

Some of the results on why study participants did not think overscreening was a problem reflected the clinicians’ strong belief in the benefit of cancer screening and insufficient awareness of the harms. This is consistent with literature describing that clinicians often have inaccurate perceptions of benefits and harms from medical interventions.[35] Strategies to counter these misperceptions may include clinician education or decision support tools with evidence summaries. For example, the skepticism about changing guidelines found in this study may be remedied by better informing clinicians about the evidence behind guideline changes.

Several clinicians agreed with and supported the paradigm of using limited life expectancy to inform screening cessation, but others brought up several valid concerns that raise more fundamental questions about this framework. First, evaluation of the benefits of cancer screening has mostly focused on mortality.[6-8] Other outcomes that may be equally important to patients were not routinely studied, such as quality of life and reassurance from cancer worry. A recent study of older adults found that, around hypertension and diabetes treatment, the outcomes typically examined in trials were often not the outcomes that were important to patients.[36] Our findings suggest that, similarly for cancer screening, the current evidence base likely does not adequately capture all the benefits patients may associate with screening and consider meaningful. This is an extremely important issue since the rationale for not screening those with less than 10 years of life expectancy is based solely on the outcome of cancer-specific mortality and its lag time to benefit of 10+ years.[1,2] If other measures of screening benefit were considered, the lag time to these other benefits may be drastically different; for example, reassurance from cancer worry is a benefit that is almost immediately experienced in the cases of normal screening tests.

A second concern that the participants mentioned was whether existing life expectancy prediction tools were accurate enough to inform screening decisions. Similar skepticism was found in our prior work that examined how clinicians thought about prognosis in general when caring for older adults.[31] The current results extend this prior understanding and provide more in-depth reasons for why clinicians thought the existing tools are not adequate. Although prediction of future events involves inherent uncertainty and perfect accuracy in prediction tools is not realistic, there are opportunities to better account for this uncertainty. For example, guidelines often mention a cutoff point of 10 years of life expectancy for continuing vs stopping screening,[13-19] whereas using a range (ie, 8-10 years) may better reflect the uncertainty in prediction algorithms. As noted by study participants, little is known about whether and how life expectancy predictions change over time for individual patients and should be examined in future studies; it is conceivable that changes in a patient’s health status and functional status may improve life expectancy sufficiently and result in different conclusions about screening appropriateness. Last, despite the face validity that short-term harms of screening may outweigh delayed benefits in patients with limited life expectancy, there is currently no direct evidence on health outcomes after screening in patients with limited predicted life expectancy; this is sorely needed to better inform cancer screening decisions in this patient population.

The concerns for how to optimally apply population-derived data to individuals and incorporate patient preference in the decisions are not unique to cancer screening. One approach that has been used in other clinical contexts is systematic, quantitative benefit-harm assessment that allows for benefit/harm estimates to be tailored to individual characteristics as well as individual preferences.[37] A more challenging question is how to balance respecting patient preference with well-documented excessive public enthusiasm about cancer screening.[38] Patients routinely overestimate the benefits and underestimate the harms of cancer screening.[39] In a national survey, 87% of participants believed that routine cancer screening is almost always a good idea.[38] In this context, it is critical to ensure patients are informed about the benefits and harms of the decision before eliciting preferences.

The concerns that using life expectancy to inform cancer screening may inadvertently introduce bias and lead to unintended consequences, such as limiting access to care, are novel findings. Given the study design, we cannot comment on the prevalence of these beliefs among clinicians, but it is important to recognize the range of perceptions and reactions that a shifting paradigm may produce. Some clinicians perceived a link between using life expectancy to guide cancer screening and racism. With existing disparities in the receipt of cancer screening among racial and ethnic minorities,[40] any intervention to reduce overscreening needs to consider the effect in subpopulations that may be actually underscreened. Specifically, some of the life expectancy prediction tools include sociodemographic predictors, such as educational attainment and income[41]; these tools should not then be used to inform the receipt of care that would likely exacerbate existing disparities. Even the tools that do not include sociodemographic predictors may need to be further examined for potential bias, in light of a recent study that identified inadvertent racial bias in an algorithm used to target patients for high-risk care management.[42]

Certain clinicians believed that using life expectancy to guide cancer screening may introduce bias for the sake of cost containment. Although the guidelines' basis for not routinely screening patients with limited life expectancy is because the harms of screening outweigh the benefits and not because of cost, the more general movement to reduce healthcare overuse and promote high-value care was at least partially inspired by the crisis of rising healthcare cost.[43] To avoid misperceptions, efforts to reduce overscreening may benefit from explicitly stating that optimizing patient benefit/harm balance, rather than reducing cost, is the primary driver for incorporating life expectancy in cancer screening.

This study has several limitations. Although we tried to include participants diverse in background, specialty, and practice setting, the sample is of limited size and from a single state such that the participants' views may not represent clinicians elsewhere. The results are based on self-report and are subject to recall and social desirability biases. Qualitative studies are designed to gain rich, in-depth information about an area where little was previously known, but as such the sample size and study design were not suited to examine how the participants' responses may have varied by participant characteristics, such as clinician beliefs, demographic characteristics, practice settings, or patient populations. Further, because little is currently known about clinicians' views on defining overscreening on the basis of life expectancy, we are not able to comment if the findings from this project represent general consensus among clinicians at large. We plan, as one next step, to conduct a national survey of a larger sample of clinicians to test the generalizability of the current results, in which we will be able to test association between responses and specific participant characteristics.

In summary, we found that several clinicians disagreed with guideline frameworks of using limited life expectancy to guide cancer screening cessation. Some disagreement may stem from inadequate knowledge about the benefits and harms of cancer screening and indicates a need for education or decision support as a next step to counter these misperceptions. Other reasons for disagreement raise valid concerns that highlight the need to refine current recommended cancer screening approaches; specifically, future work is needed to grow the evidence base on patient-centered outcomes in cancer screening, to better account for uncertainty in life expectancy predictions, and to identify strategies to avoid unintended consequences, such as introducing bias or exacerbating existing disparities.

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Table 1.

Primary Care Clinician Participant Characteristics (N = 30)

Characteristics	Value
Age, y	48.2 (10.0)
Female sex	16 (53)
Race	
White	18 (60)
African American	6 (20)
Asian	5 (17)
Other	1 (3)
Degree	
MD	21 (70)
DO	3 (10)
Certified registered nurse practitioner	5 (17)
Physician’s assistant	1 (3)
Time since completing training, y	17.5 (10.2)
Specialty	
Internal medicine	17 (57)
Family medicine	6 (20)
Medicine/pediatrics	2 (7)
Geriatrics	5 (17)
No. of clinic sessions (one 4-h session) per week	7.4 (2.4)
Clinician affiliation	
Academic	11 (37)
Group practice	14 (47)
Private practice	5 (17)
Proportion of older patients in patient panel	
<25%	7 (23)
25%-49%	13 (43)
50%-74%	4 (13)
>75%	6 (20)

Note. Data are given as mean (SD) or number (percentage).

Abbreviations: DO, doctor of osteopathic medicine; MD, doctor of medicine.

Table 2.

Perceived Benefits From Cancer Screening Independent of Mortality Benefit

Type of Benefit	Quotes
Quality of life	Regarding a patient who had a large breast cancer in the absence of screening: *"I don't think that we could have changed her mortality. I think she was still gonna pass away, she had other health problems but the mass was coming out of her chest, [if caught earlier] maybe they could have just done a lumpectomy… she may have had a better quality of life at the end."*
Less invasive treatment	*"The patient may still die at the same age regardless of whether we do a simple lumpectomy at age 75 or do a more invasive, aggressive surgery or other treatment at age 78 or 80… at the end the survival may be the same but how [do] you measure the quality of those years in terms of physical impact of the treatment as well as the mental impact?"*
Reassurance	"*It's easy to dismiss those things when you look at them in an abstract standpoint, but if you are really anxious about breast cancer and you really want that reassurance of the mammogram it can mean an awful lot.*"
Cancer diagnosis may trigger positive changes	*"[As the patient], I [may] want to know I have a stage 2 breast cancer and maybe repair relationships with family or behave differently towards others."*