

Primary Care Providers' Perceptions of the Acceptability, Appropriateness, and Feasibility of a Mammography Decision Aid for Women Aged 75 and Older

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Abstract

Background. Clinicians need to find decision aids (DAs) useful for their successful implementation. Therefore, we aimed to conduct an exploratory study to learn primary care clinicians' (PCPs) perspectives on a mammography DA for women ≥ 75 to inform its implementation. **Methods.** We sent a cross-sectional survey to 135 PCPs whose patients had participated in a randomized trial of the DA. These PCPs practiced at 1 of 11 practices in Massachusetts or North Carolina. PCPs were asked closed-ended and open-ended questions on shared decision making (SDM) around mammography with women ≥ 75 and on the DA's acceptability, appropriateness, and feasibility. **Results.** Eighty PCPs participated (24 [30%] from North Carolina). Most ($n = 69$, 86%) thought that SDM about mammography with women ≥ 75 was extremely/very important and that they engaged women ≥ 75 in SDM around mammography frequently/always ($n = 49$, 61%). Regarding DA acceptability, 60% felt the DA was too long. Regarding appropriateness, 70 (89%) thought it was somewhat/very helpful and that it would help patients make more informed decisions; 55 (70%) would recommend it. Few ($n = 6$, 8%) felt they had other resources to support this decision. Regarding feasibility, 53 ($n = 67%$) thought it would be most feasible for patients to receive the DA before a visit from medical assistants rather than during or after a visit or from health educators. Most ($n = 62$, 78%) wanted some training to use the DA. **Limitations.** Sixty-nine percent of PCPs in this small study practiced in academic settings. **Conclusions.** Although PCPs were concerned about the DA's length, most found it helpful and informative and felt it would be feasible for medical assistants to deliver the DA before a visit. **Implications.** Study findings may inform implementation of this and other DAs.

Keywords

older women, mammography screening, decision aids, implementation

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Introduction

The US Preventive Services Task Force (USPSTF) recommends mammography screening biennially for women aged 50 to 74 years but states that the current evidence is insufficient to assess the balance of benefits and harms of screening mammography in women ≥ 75 years since none of the randomized trials of mammography screening included these women.¹ The USPSTF

further notes that if mammography is offered to women ≥ 75 they should be made aware of the uncertainty of benefit (e.g., chance of avoiding breast cancer death) and potential for harm (e.g., chance of false positive tests,

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overdiagnosis).^{1,2} Overdiagnosis is a particularly concerning harm of mammography screening since 30% of screen-detected tumors in women ≥ 70 are estimated to be overdiagnosed.² The risk of overdiagnosis rises with age due to increasing competing mortality risks and because breast cancer tends to have more favorable biologic characteristics with age.^{2,3} Yet many women ≥ 75 are offered screening without being informed of possible harm.⁴ Primary care clinicians (herein referred to as PCPs) may offer screening to women ≥ 75 because they find shared decision making around mammography challenging due to patient enthusiasm for screening, because overdiagnosis is a difficult concept to explain, and because these discussions may lead to uncomfortable conversations about patient life expectancy.⁴⁻¹⁰

To help inform women ≥ 75 of the potential benefits and harms of mammography screening, investigators developed a workbook decision aid (DA) for women ≥ 75 .¹¹ The DA, written at a sixth-grade reading level, includes information on breast cancer risk factors, life expectancy, competing mortality risks, screening outcomes, and a values clarification exercise. It is available at ePrognosis.ucsf.edu¹² and was found in an independent review to be high quality based on International Patient DA Standards (IPDAS).¹³ In a PCP-clustered randomized clinical trial (RCT) that included 546 women ≥ 75 seen by 137 PCPs practicing at 1 of 11 primary care practices (9 in Massachusetts [MA], 2 in North Carolina [NC]), receipt of the DA in the waiting room before a primary care visit led to women ≥ 75 being more knowledgeable of mammography's benefits and harms and to 9% fewer women being screened; 87% of women found the DA helpful.¹⁴

The next step is to prepare for DA implementation in practice. Prior work suggests that clinicians need to recognize the usefulness of a DA for it to be successfully implemented and the IPDAS recommends field testing DAs with clinicians.¹⁵⁻¹⁷ Despite this, few trials of patient DAs have assessed clinicians' perspectives.¹⁸ Therefore, to inform implementation of the mammography DA, we

aimed to learn PCPs' perspectives on the DA's *acceptability* (palatability), *appropriateness* (fit), and *feasibility* (workability). These three outcomes are included in Proctor and colleagues' Implementation Outcomes Framework and may be assessed to inform how best to introduce a DA into practice.¹⁹

Methods

Design and Setting

PCPs (physicians and nurse practitioners) whose patients had participated in the mammography DA's RCT were sent a web-based questionnaire to learn their perspectives on the DA's acceptability, appropriateness, and feasibility, regardless of their randomization arm. The DA trial has been described previously.^{14,20} In brief, 546 women 75 to 89 years old from 137 different PCPs practicing at 1 of 11 primary care practices participated. Nine practices were in the Boston area (one academic internal medicine, one academic geriatrics, seven community-based practices from two different health systems) and two were in Chapel Hill, NC (one academic internal medicine and one academic family medicine practice); see Supplementary Table A1 for more details on each practice. Once the first patient for each PCP agreed to participate, the PCP was randomized to the intervention (the DA) or to the control arm (a home safety pamphlet). All subsequent patients for each PCP received the same intervention. On average, four patients participated for each PCP. Before a visit, PCPs were sent a copy of the DA or home safety pamphlet and were informed that their patients would be coming in early to read study materials. So as not to add burden, PCPs were not required to complete any training to use the DA; however, PCPs randomized to the intervention were sent a link to a 3-minute video example of a PCP discussing mammography with an older woman plus five PowerPoint slides on shared decision making around mammography screening with women ≥ 75 in case some PCPs sought training; four PCPs accessed this information during the trial. To avoid contamination of the trial, PCPs were asked to participate from May 2017 to October 2018 after all of a PCP's patients that participated in the trial had completed follow-up (18 months). The study was institutional review board approved at the Beth Israel Deaconess and University of North Carolina Medical Centers.

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For the current study, PCPs were sent a link to a secure web-based questionnaire; a link to the DA was embedded within the questionnaire and the DA was also

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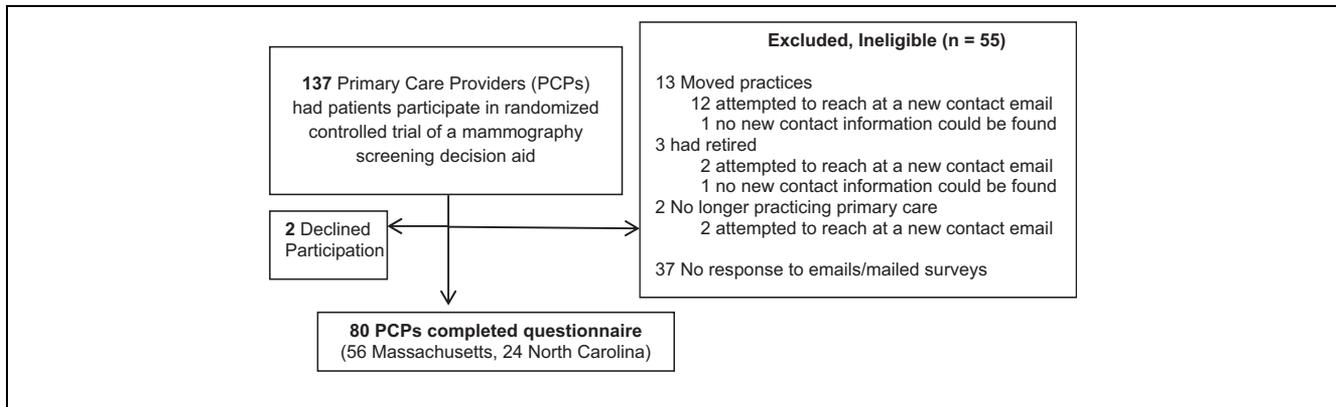


Figure 1 Participant study flow diagram

sent as an attachment to the study's invitation email. Three attempts were made to reach PCPs by email. PCPs that did not respond were mailed a paper copy of the questionnaire with a stamped and preaddressed envelope for return. PCPs were informed that their participation was voluntary, their decision to participate would not affect their employment, they could withdraw any time, their responses were confidential, and that a \$50 check would be mailed to them in appreciation for participating. PCPs were required to indicate their consent before completing the questionnaire. Current contact information was sought for PCPs who had moved or retired.

Data Collection

The study questionnaire, available in the appendix (see Supplemental Material), asked PCPs about the importance of shared decision making around mammography screening with women ≥ 75 (from strongly agree to strongly disagree on a 5-point Likert-type scale), whether they engage women ≥ 75 in shared decision making around mammography screening, and whether these women want to participate in shared decision making (from never to always on 5-point Likert-type scales). Then PCPs were asked about the DA's *acceptability* including its length, amount of information, balance, and format; whether its use would be *appropriate* including whether it would help their patients make more informed and/or value-laden decisions; whether they would recommend it; and whether they had other good resources to support this decision. PCPs were also asked about the DA's *feasibility* including whether it would save them time, whether they would need training to use the DA, who should deliver the DA, and the feasibility of different delivery methods (e.g., how likely would it be for a medical assistant to give the

patient the DA before a visit on a 5-point Likert-type scale from very unlikely to very likely). PCPs were also asked open-ended questions on how to improve the DA and barriers and facilitators to its use. Moreover, PCPs were asked their specialty, years in practice, number of patients seen weekly, time allotted for a physical, and their sociodemographics. The questionnaire was cognitively tested by seven PCPs not included in the trial.

Analysis

The study was designed to be descriptive. However, in exploratory analyses, chi-square tests were used to examine whether PCPs' perspectives on the DA varied by their trial randomization assignment and/or by their region since among patients the DA's effects varied by region.¹⁴ In MA, where 72% of women in the control arm were screened during follow-up, DA use was associated with 13% fewer women being screened. In NC, where only 22% of women in the control arm were screened during follow-up, DA use was associated with 2% more women being screened.¹⁴

We also conducted a qualitative content analysis to identify themes in PCPs' open-ended comments about the DA.^{21,22} Two investigators (MAS, MK) independently reviewed all of participants' open-ended comments to identify themes; code discrepancies were resolved by consensus.²³ Direct quotes and participants' study identification numbers were used to illustrate themes. This research was supported by NIH/NCI (R01CA181357). The funding source had no role in the study.

Results

Figure 1 demonstrates PCP recruitment flow. Of 137 PCPs whose patients participated in the DA trial, 13 had

changed practices, 3 had retired (contact information could not be found for 1 PCP who had moved and 1 who had retired), 2 had left primary care before the PCP survey was initiated, 37 never responded to attempts at contact, 2 declined participation, and 80 participated (78 completed the web-based questionnaire and 2 completed a paper questionnaire). PCP participants were similar to nonparticipants with regard to site, race, number of women ≥ 75 in their panel, and randomization assignment; however, participants were more likely to be female and non-Hispanic White (Supplementary Table A2). Of the 80 PCP participants, 52 (65%) were female, 35 (44%) had been randomized to the trial's DA arm, 55 (69%) practiced in an academic setting, and 24 (30%) practiced in NC (Table 1). There were no significant differences in PCP characteristics by randomization arm (Supplementary Table A3). PCPs from NC were more likely to be family medicine physicians, to have less time allotted for Medicare Annuals, and were more likely to report using DAs in practice than MA PCPs (Table 1). In exploratory analyses, there were no significant differences in PCPs' perspectives of the DA by randomization arm; however, differences were found by region. Therefore, in the tables, outcomes are presented overall and by region.

Shared Decision Making

The majority ($n = 69$, 86%) of PCPs thought that involving women ≥ 75 in shared decision making around mammography screening was extremely or very important (Table 2); however, PCPs in NC tended to be less likely to feel this way (75% in NC v. 91% in MA, $P = 0.03$). Most PCPs ($n = 49$, 61%) reported that they engaged women ≥ 75 years in shared decision making around mammography screening frequently, 54 (68%) felt that women ≥ 75 years wanted to participate in shared decision making around mammography screening, and 60 (75%) felt that doing so would result in fewer women choosing screening.

Acceptability

Half of PCPs thought the amount of information in the DA was just right while the other half thought there was too much information (Table 3). Forty-eight (60%) felt that the DA was too long; however, PCPs did not agree on what information could be cut from the DA (Supplementary Table A4). PCPs preferred that the DA be available on paper ($n = 25$, 31%) or both on paper and the web ($n = 49$, 61%). While 50 PCPs (63%)

thought the DA presented a balanced view of mammography's benefits and harms, 22 (28%) thought it was slanted away from mammography and 7 (9%) thought it was slanted toward mammography. In open-ended comments, PCPs noted that the DA "seemed appropriately slanted, by presenting data that there is a high risk a false positives and a low chance of saving a life" (PCP8). Overall, PCPs perceptions of the DA's acceptability varied (Table 4). Some viewed the DA positively, "Love it! Can't wait to use it" (PCP38), while others felt it was "too complex" (PCP17), that "it could be made more visually attractive" (PCP71), and that there should be a "longer v. a shorter version" (PCP12) based on patient literacy.

Appropriateness

The majority of PCPs (70/79, 89%) thought the DA was somewhat or very helpful, that it would complement their usual approach to mammography screening in older women ($n = 68$, 85%), and that using the DA would result in their patients making more informed ($n = 70$, 88%) and value-laden screening decisions ($n = 65$, 81%; Table 3). Fifty-five PCPs (70%) would recommend the DA. Few (8%, 6/74) felt that they had other good resources to support this decision. In open-ended comments PCPs views varied on the DA's appropriateness (Table 4). For example, some felt the DA "would be most helpful for those with poor health but who nonetheless continue to wish to have screening" (PCP42), while others wanted data to "show me that women want this" (PCP74).

Feasibility

Few PCPs ($n = 13$, 16%) thought DA use would save them time. Eighteen (23%) thought that PCPs should primarily be responsible for delivering the DA, while others thought that medical assistants ($n = 34$, 43%), nurses ($n = 13$, 16%), or other staff ($n = 14$, 18%) should deliver the DA (Table 3). In order of likelihood of success, PCPs felt that it would be most likely for a medical assistant to deliver the DA to patients before a visit, then for patients to be mailed the DA before a visit, and then for a health educator to review the DA with a patient. Few PCPs thought that it would be likely for a practice assistant to give the DA to patients after a visit, that it be sent through a patient portal, or that patients receive it from breast imaging. About half of PCPs (49%) thought it would be feasible for PCPs to deliver the DA during a visit.

Table 1 Primary Care Provider (PCP) Sample Characteristics Overall and by Region ($n = 80$)

Characteristic	Overall, $N = 80, n (\%)$	MA PCPs, $n = 56, n (\%)$	NC PCPs, $n = 24, n (\%)$	<i>P</i> Value
Site ^a				
Boston academic		31 (55)	—	
Boston community 1		9 (16)	—	
Boston community 2		16 (29)	—	
Randomized to decision aid in the trial	35 (44)	26 (46)	12 (50)	0.86
Race				0.28
Non-Hispanic White	67 (84)	46 (82)	21 (88)	
Non-Hispanic Black	3 (4)	1 (2)	2 (8)	
Asian	6 (8)	5 (9)	1 (4)	
Hispanic	4 (5)	4 (7)	0	
Age				0.45
20–39	15 (19)	8 (14)	7 (29)	
40–49	22 (28)	17 (30)	5 (21)	
50–59	27 (34)	20 (36)	7 (29)	
60 or older	16 (20)	11 (20)	5 (21)	
Female	52 (65)	37 (66)	15 (63)	0.76
Role				<0.001
Nurse practitioner	3 (4)	3 (5)	0	
Internist	61 (76)	48 (86)	13 (54)	
Geriatrician	8 (10)	5 (9)	3 (13)	
Family medicine doctor	8 (10)	0	8 (33)	
Proportion of patients 75+ years				0.23
<10%	13 (16)	10 (18)	3 (13)	
10% to <20%	24 (30)	20 (36)	4 (17)	
20% to <30%	19 (24)	11 (20)	8 (33)	
30% or more	24 (30)	15 (27)	9 (38)	
Years in role				0.54
<5 years	3 (4)	1 (2)	2 (8)	
5 to <15 years	29 (36)	20 (36)	9 (38)	
16 to 25 years	20 (25)	15 (27)	5 (21)	
>25 years	28 (35)	20 (36)	8 (33)	
Number of patients per week				0.57
20 or less	15 (19)	9 (16)	6 (25)	
30 to 40	39 (49)	27 (48)	12 (50)	
50 to 60	17 (21)	14 (25)	3 (13)	
70 or more	9 (11)	6 (11)	3 (13)	
Average time for follow-ups				0.40
15 minutes	15 (19)	11 (20)	4 (17)	
20 minutes	56 (70)	37 (66)	19 (79)	
30 minutes	9 (11)	8 (14)	1 (4)	
Average time for Medicare Annual				<0.001
25 minutes or less	14 (18)	2 (4)	12 (50)	
30 minutes	26 (33)	23 (41)	3 (13)	
40 minutes	26 (33)	23 (41)	3 (13)	
45 minutes or longer	8 (10)	3 (5)	5 (21)	
Not applicable	6 (8)	5 (9)	1 (4)	
Use decision aids in practice ($n = 79$)	28 (35)	14 (25)	14 (58)	0.005
	Mean (SD)	Mean (SD)	Mean (SD)	
Number of their patients participated in trial	4 (4)	4 (4)	3 (2)	0.94

MA, Massachusetts; NC, North Carolina.

^aThe Boston community practices in group 1 are directly affiliated with the same health system as the academic medical center, while those in group 2 are affiliated with a different health system.

Table 2 Primary Care Clinicians' Perspectives on Shared Decision Making on Mammography Screening With Women 75+ Overall and by Region ($N = 80$)

Characteristic	Overall ($N = 80$) PCPs, n (%)	MA PCPs, $n = 56$, n (%)	NC PCPs, $n = 24$, n (%)	P Value
Importance of shared decision making about mammography with women 75+?				0.03
Extremely/very important	69 (86)	51 (91)	18 (75)	
Moderately important	6 (8)	4 (7)	2 (8)	
Not at all/slightly important	5 (6)	1 (2)	4 (17)	
How often do you involve women 75+ in shared decision making on mammography?				0.10
Frequently/always	49 (61)	35 (63)	14 (58)	
Sometimes	21 (26)	17 (30)	4 (17)	
Seldom	9 (11)	3 (5)	6 (25)	
Never	1 (1)	1 (2)	0 (0)	
How often do women 75+ want to participate in shared decision making on mammography?				0.64
Frequently/always	54 (68)	39 (70)	15 (63)	
Sometimes	24 (30)	16 (29)	8 (33)	
Seldom	2 (3)	1 (2)	1 (4)	
How would shared decision making affect screening decisions in women 75+?				0.32
More likely to be screened	16 (20)	9 (16)	7 (29)	
No difference	4 (5)	3 (5)	1 (4)	
Less likely to be screened	60 (75)	44 (79)	16 (67)	
How often do you discuss the benefits of mammography with women 75+ when discussing screening?				0.78
Frequently/always	48 (60)	35 (63)	13 (54)	
Sometimes	20 (25)	13 (23)	7 (29)	
Never/seldom	12 (15)	8 (14)	4 (17)	
How often do you discuss the harms of mammography with women 75+? ($n = 79$)				0.52
Frequently/always	35 (44)	23 (42)	12 (50)	
Sometimes	28 (35)	19 (35)	9 (38)	
Never/seldom	16 (20)	13 (24)	3 (13)	
How often do you discuss overdiagnosis when talking about mammography screening with women 75+? ($n = 79$)				0.80
Frequently/always	40 (51)	27 (48)	13 (57)	
Sometimes	19 (24)	14 (25)	5 (22)	
Never/seldom	20 (25)	15 (27)	5 (22)	

MA, Massachusetts; NC, North Carolina; PCP, primary care physician.

In open-ended comments (Table 4) PCPs noted that “the best approach is to hand the aid out in advance of an appointment” (PCP10) via “email or on the web or to provide in the waiting room” (PCP26) especially with “Medicare wellness” forms (PCP7). PCPs also noted the need for systems to record when the DA was used and to document a patient’s decision to stop screening, “Once the decision is made not to continue screening, need to have a system where it is not then addressed over and over” (PCP32). PCPs also noted barriers to using the DA including competing demands during a visit, the “overwhelming number of prevention issues that need to be discussed during a wellness visit” (PCP25), that it can be challenging to get patients to complete forms prior to a visit, and that some women ≥ 75 may have trouble accessing a patient portal. PCPs also expressed concern that the DA would lead to more patient phone calls or emails. However, several PCPs felt that the DA “could help facilitate discussion and speed up decision making”

(PCP29). Others noted that discussing the DA “was worth it” (PCP38) and “may save them time on the back end because of having fewer mammograms to track” (PCP53). Most PCPs ($n = 50$, 71%) reported that they would like some training to use the DA and generally preferred a presentation or to watch a video rather than reading an instructional workbook.

Discussion

PCPs from primary care practices in Massachusetts and North Carolina felt that shared decision making around mammography screening with women ≥ 75 years is important, valued by patients, and leads to older women making more informed screening decisions. PCPs also reported that use of a mammography screening DA for women ≥ 75 was *appropriate* in that it would help their patients make more informed and value-laden decisions and felt that they had few other resources to support

Table 3 Primary Care Clinicians' Perspectives on the Decision Aid Overall and by Region ($N = 80$)

	Overall, $n = 80, n (\%)$	MA PCPs, $n = 56, n (\%)$	NC PCPs, $n = 24, n (\%)$	<i>P</i> Value
<i>Acceptability outcomes</i>				
Amount of information ($n = 78$)				0.80
Too much	39 (50)	28 (51)	11 (48)	
Just right	39 (50)	27 (49)	12 (52)	
The DA's length is				0.49
Too long	48 (60)	35 (63)	13 (54)	
Just right	32 (40)	21 (38)	11 (46)	
Preferred format for the DA is				0.32
Paper	25 (31)	20 (36)	5 (21)	
Web-based	6 (8)	5 (9)	1 (4)	
Both web and paper	49 (61)	31 (55)	18 (75)	
Slant of the DA ($n = 79$)				0.03
Slanted toward mammograms	7 (9)	2 (4)	5 (22)	
Completely balanced	50 (63)	36 (64)	14 (61)	
Slanted away from mammograms	22 (28)	18 (32)	4 (17)	
<i>Appropriateness outcomes</i>				
How helpful is the DA ($n = 79$)				0.09
Very helpful	37 (47)	53 (29)	8 (33)	
Somewhat helpful	33 (42)	20 (36)	13 (54)	
A little helpful	4 (5)	4 (7)	0	
Not at all helpful	5 (6)	2 (4)	3 (13)	
Likely to tell women about the DA ($n = 79$)	55 (70)	39 (71)	16 (67)	0.42
The DA complements my usual approach, agree	68 (85)	49 (88)	19 (79)	0.49
The DA will lead patients to make more informed decisions, agree	70 (88)	52 (93)	18 (75)	0.06
DA will help patients make value laden choices ($n = 79$), agree	65 (82)	47 (84)	18 (78)	0.53
There are other good resources to support decision making on mammography in women 75+ ($n = 76$), agree	6 (8)	4 (8)	2 (8)	0.99
<i>Feasibility outcomes</i>				
DA use will save me time, agree	13 (16)	8 (14)	5 (21)	0.66
Pieces of the DA can be used by themselves ($n = 79$), agree	62 (78)	44 (80)	18 (75)	0.62
Who should provide the decision aid? ($n = 79$)				0.42
Primary care provider	18 (23)	15 (27)	3 (13)	
Medical assistant	34 (43)	21 (38)	13 (57)	
Other staff	14 (18)	10 (18)	4 (17)	
Nurses	13 (16)	10 (18)	3 (13)	
How likely would it be for each of the following DA delivery methods to be used in your practice?				
A medical assistant (MA) gives the DA to women 75+ before a visit. Likely ($n = 79$)	53 (67)	33 (60)	20 (83)	0.04
The DA is mailed to women 75+ before a visit. Likely ($n = 79$)	47 (59)	34 (61)	13 (57)	0.73
A nurse/health educator reviews the DA with women 75+. Likely ($n = 79$)	42 (53)	30 (54)	12 (52)	0.91
The clinician reviews the decision aid with women 75+ during a visit. Likely ($n = 79$)	38 (50)	27 (51)	11 (48)	0.80
The clinician gives the DA to women 75+ during a visit. Likely ($n = 79$)	39 (49)	32 (58)	7 (29)	0.02
Women 75+ are sent the DA through a patient portal. Likely ($n = 78$)	33 (42)	20 (37)	13 (54)	0.16
A practice assistant gives the DA to women 75+ after a visit. Likely	27 (34)	19 (34)	8 (33)	0.96
Women 75+ receive the DA from radiology at the time of mammography screening. Likely	26 (33)	19 (34)	7 (29)	0.68
My preferred training to use the DA is				0.53
A brief video to watch	23 (29)	17 (30)	6 (25)	
A talk/presentation	21 (26)	14 (25)	7 (29)	
A workbook to read	6 (8)	6 (11)	0	
No preference	10 (13)	7 (13)	3 (13)	
No training needed	18 (23)	11 (20)	7 (29)	
Other	2 (3)	1 (2)	1 (4)	

DA, decision aid; MA, Massachusetts; NC, North Carolina; PCP, primary care physician.

Table 4 Themes in Primary Care Clinicians' Open-ended Comments on the Mammography Screening Decision Aid for Women ≥ 75 .

Varying views on acceptability	<p><i>Positive:</i> "The questionnaire about a patient's comorbidities, functional status, etc seems very useful because it's tailored to an individual patient's estimated life expectancy." (PCP8)</p> <p>"The decision making tool looks good and would be beneficial to my practice." (PCP59)</p> <p><i>Negative:</i> "In the current form has too many words, small fonts, and many graphs, which may not be easy for many older adults to understand." (PCP6)</p> <p>"Too long and complicated." (PCP25)</p>
Varying views on appropriateness	<p><i>Positive:</i> "I would find it useful for the healthy senior who seems to underestimate their longevity or want to understand what they have read better." (PCP20)</p> <p><i>Negative:</i> "Too complex for most of my patients without my reviewing with them." (PCP77)</p>
Feasibility	"Figuring how best/when to administer it is probably the question." (PCP18)
Varying attitudes on DA's effect on time	<p><i>Facilitator:</i> "Will improve care to a greater degree than it will slow down flow . . . and on back-end suspect will be fewer mammograms ordered/tracked." (PCP53)</p> <p><i>Barriers:</i> "I think it would take too long if we are using it in the office." (PCP36)</p>
Provide immediately before a visit	<p><i>Facilitator:</i> "If patient has time to read before I enter the room, this would help facilitate our discussion." (PCP65)</p> <p><i>Barriers:</i> "Patients often do not arrive in time before visit to review." (PCP42)</p> <p>"Adding to the many tasks MAs are given to perform these days, will stretch them even thinner." (PCP18)</p>
Mail before a visit	<p><i>Facilitator:</i> "Include in Medicare packet mailed out to patients so they may read/fill out prior to appointment." (PCP62)</p> <p><i>Barriers:</i> "Hard to get people to fill out forms at home prior to visit." (P52)</p>
During a visit	<p><i>Facilitators:</i> "Ideally, the aid should be administered in-person by the NP, who can discuss the nuances and answer questions." (PCP49)</p> <p><i>Barriers:</i> "May not have time to discuss in 20 min office visit." (PCP71)</p>
After a visit	<p><i>Facilitators:</i> "A quick discussion during the office visit and then hand the aid to patient." (PCP36)</p> <p><i>Barriers:</i> "After the visit, those who are unhealthy, often have many other things to do/focus on." (PCP42)</p>
Nurse/health educator administers	<i>Facilitator:</i> "The RN who does our annual wellness visits prior to seeing the provider, she would be a great person." (PCP29)
System revisions	<p><i>Facilitator:</i> "Once the decision is made NOT to continue screening, need to have a system where it is not then addressed over and over." (PCP32)</p> <p><i>Barrier:</i> "There is no reimbursement for this." (PCP49)</p>
Implement through radiology	<p><i>Facilitator:</i> "Send to patients when they book a mammogram or at their mammogram appointment." (PCP15)</p> <p><i>Barrier:</i> "Stop them [Radiology] at age 75 sending out those annual recalls if you want any input from primary care to matter." (PCP70)</p>
Integrate in record	<p><i>Facilitator:</i> "Auto calculate the risk, link it in EMR [electronic medical record]." (PCP1)</p> <p><i>Barrier:</i> "Our medical record doesn't have great ways to track something like this." (PCP8)</p>
Make available on portal	<p><i>Facilitator:</i> "Could send the material electronically to the patients who use the portal." (PCP43)</p> <p><i>Barrier:</i> "Some women >75 will not prefer the web based format." (PCP4)</p>
Multimodality	<p><i>Facilitators:</i> "Have their insurance company include it in their outreach newsletters." (PCP61)</p> <p>"Work in conjunction with senior centers, churches, PACE programs, and other places where older women gather." (PCP73)</p>

these decisions. However, they varied on its *acceptability*, as many PCPs felt the DA was too long and would be challenging for women with low health literacy to use. Last, while PCPs felt that several methods for delivering

the DA would be *feasible*, most felt that it would be most feasible for medical assistants to give patients the DA before a visit. Most PCPs also wanted some training to use the DA.

While DAs have been shown to increase patient knowledge and involvement in medical decisions, their use in practice is low.²⁴ Cited barriers include limited time during visits, competing agendas, difficulty identifying appropriate patients for use of a specific DA, low health literacy, and a perceived lack of need.²⁵⁻³⁰ PCPs in our study noted some of these barriers in planning for implementation of our DA, but still most felt that it would be helpful to their patients, would help their patients make higher quality screening decisions, and would be feasible for medical assistants to provide to patients before a visit. While PCPs felt the DA was too long they did not agree on what information could be cut. The DA was designed to be comprehensive to include what many PCPs find important when deciding whether to continue mammography screening after age 75, but a PCP could remove a page or pages of the DA that they thought were unnecessary to shorten the DA before giving it a patient. Despite PCPs' concerns about the DA's complexity, 78% of patients in the DA trial felt that its length was just right or even too short.¹⁴ Also, 84% of patients found the DA helpful regardless of their educational attainment and 97% with a high-school degree or less reported understanding most or all of the DA's information.³¹ Notably, these patients are the very patients that PCPs in the current study see. However, the DA was designed for patients to read before a visit and not to support clinician counseling during a visit, which may explain these discrepancies. Increasingly, easy-to-use web-based conversation aids are recommended to support clinician-patient shared decision making during a visit.³² Based on study findings, investigators plan to develop a conversation aid to support shared decision making around mammography screening between PCPs and women ≥ 75 during a visit. To inform the content of the conversation aid, investigators are using simulation model output on the possible benefits and harms of screening women ≥ 75 .³³

As recommended by IPDAS, the mammography DA was written at a sixth-grade reading level using low literacy principles and uses large font, bullet points, short sentences, and includes illustrations; yet, many PCPs were still concerned about its literacy level.³⁴ Therefore, investigators have recently developed and pilot tested an even lower literacy mammography DA for women ≥ 75 years.³⁵ The modified DA (also available at ePrognosis) is shorter than the original DA and does not use pictographs since older women with low health literacy who evaluated the original DA found the pictographs difficult to understand.³⁶ There is some debate about whether pictographs actually lead to more accurate interpretation

of risk information for patients with low numeracy.³⁷ While additional research is needed on how best to support shared decision making for low literacy populations, some experts recommend that patients be offered skills training in shared decision making and others recommend decision coaching.^{38,39} Studies examining the added effectiveness of decision coaching to patient decision aids alone are needed particularly in low literacy populations.⁴⁰

While training programs for clinicians have been developed on shared decision making in general, few such programs have been implemented and few trainings have been developed for the use of specific DAs.^{41,42} Our DA was developed in the hopes of reducing PCP workload; thus, the DA trial did not mandate PCPs be trained on DA use.²⁰ However, 77% of PCPs in the current study reported wanting some type of training to use the DA. Few PCPs watched an optional video training during the DA trial, suggesting a more interactive training may be needed. Successful clinician trainings generally require modeling and role playing in addition to didactics.^{43,44} To support training, investigators have published example scripts for PCPs to use to engage women ≥ 75 in shared decision making around screening.⁴⁵ Furthermore, experts realize that shared decision making in the confines of primary care needs to be brief. Elwyn and colleagues developed a three-step model for shared decision making: 1) introducing that there is a choice, 2) describing options which may be supported by the use of patient decision aids, and 3) helping patients explore their preferences and make decisions.⁴⁶ Caverly and Hayward promote everyday shared decision making which encourages clinicians to qualitatively weigh the benefits and harms of a decision in 1 to 2 minutes. Their model includes use of patient DAs, like ours, outside of visits to support brief everyday shared decisions.⁴⁷ To further prepare women for decision making at age 75, PCPs could let women know before age 75 that at age 75 guidelines recommend shared decision making around whether to continue screening.

Although the majority of PCPs regardless of region felt that SDM around mammography screening was important, PCPs in NC were less likely to feel this way than PCPs in MA. Receipt of mammography screening is more frequent among older women in MA than in NC.⁴⁸ While DAs on average add 2.5 minutes to clinic visits, PCPs in NC may not feel that they need to spend extra time or resources engaging women ≥ 75 in shared decision making around mammography screening when most of their patients have already chosen to stop being screened. Since the risk of harm from screening relative

to the chance of benefiting increases with rising age and comorbidity burden, choosing not to readdress this decision seems reasonable.² The findings suggest that the DA may be most helpful in areas where screening among women ≥ 75 is common.

There are several limitations to this study. This was a small, descriptive study. The majority of PCPs practiced in an academic setting (69%) and/or in Massachusetts (70% v. 30% from North Carolina) limiting generalizability. Twenty-seven PCPs (34%) practiced in the same large academic internal medicine practice as the principal investigator; however, there were no significant differences in perceived helpfulness of the DA by site. PCPs were approached for this study on average 590 days (± 196 days) after their last patient participated in the trial; therefore, some PCPs were no longer reachable. Reassuringly, nonparticipants were similar to participants with regard to many factors; however, PCP participants were more likely to be female and non-Hispanic White. Some PCPs may have been more motivated to participate since their patients participated in the RCT; however, 56% of PCPs had been randomized to the trial's control arm so the survey was the first time these PCPs learned of the DA.

Our findings may be useful for designing and implementing this and other DAs for older adults. Specifically, PCPs preferred that the DA be available in a shorter and longer version for patients with different health literacy levels to use, that it be available both on paper and on the web, that it be delivered to patients before encounters and that PCPs receive training to use the DA. PCPs also recommended that electronic medical records be modified to include space for documentation of DA use and any decision made.

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Supplemental Material

Supplemental material for this article is available on the *Medical Decision Making Policy & Practice* website at <https://journals.sagepub.com/home/mpp>.

References

1. Siu AL; US Preventive Services Task Force. Screening for breast cancer: US Preventive Services Task Force recommendation statement. *Ann Intern Med.* 2016;164(4):279–96.
2. Walter LC, Schonberg MA. Screening mammography in older women: a review. *JAMA.* 2014;311(13):1336–47.
3. Schonberg MA, Marcantonio ER, Li D, Silliman RA, Ngo L, McCarthy EP. Breast cancer among the oldest old: tumor characteristics, treatment choices, and survival. *J Clin Oncol.* 2010;28(12):2038–45.
4. Hoffman RM, Lewis CL, Pignone MP, et al. Decision-making processes for breast, colorectal, and prostate cancer screening: the DECISIONS survey. *Med Decis Making.* 2010;30(5 Suppl):53S–64S.
5. Schonberg MA, Ramanan RA, McCarthy EP, Marcantonio ER. Decision making and counseling around mammography screening for women aged 80 or older. *J Gen Intern Med.* 2006;21(9):979–85.
6. Torke AM, Schwartz PH, Holtz LR, Montz K, Sachs GA. Older adults and forgoing cancer screening: “I think it would be strange.” *JAMA Intern Med.* 2013;173(7):526–31.
7. Breslau ES, Gorin SS, Edwards HM, Schonberg MA, Saiontz N, Walter LC. An individualized approach to cancer screening decisions in older adults: a multilevel framework. *J Gen Intern Med.* 2016;31(5):539–47.
8. Wegwarth O, Gigerenzer G. Less is more: overdiagnosis and overtreatment: evaluation of what physicians tell their patients about screening harms. *JAMA Intern Med.* 2013;173(22):2086–7.
9. Hersch J, Barratt A, Jansen J, et al. Use of a decision aid including information on overdiagnosis to support informed choice about breast cancer screening: a randomised controlled trial. *Lancet.* 2015;385(9978):1642–52.
10. Pappadis MR, Volk RJ, Krishnan S, et al. Perceptions of overdiagnosis of breast cancer among women 70 years of age and older in the USA: a mixed-methods analysis. *BMJ Open.* 2018;8(6):e022138.
11. Schonberg MA, Hamel MB, Davis RB, et al. Development and evaluation of a decision aid on mammography screening for women 75 years and older. *JAMA Intern Med.* 2014;174(3):417–24.
12. ePrognosis. Decision aids that consider prognosis [cited November 20, 2019]. Available from: https://eprognosis.ucsf.edu/decision_aids.php
13. Hild S, Johanet M, Valenza A, et al. Quality of decision aids developed for women at average risk of breast cancer eligible for mammographic screening: systematic review and assessment according to the international patient decision aid standards instrument. *Cancer.* 2020;126(12):2765–74.
14. Schonberg MA, Kistler CE, Pinheiro A, et al. Effect of a mammography screening decision aid for women 75 years and older: a cluster randomized clinical trial. *JAMA Intern Med.* 2020;180(6):831–42.
15. Alden DL, Friend J, Chun MB. Shared decision making and patient decision aids: knowledge, attitudes, and practices among Hawai'i physicians. *Hawaii J Med Public Health.* 2013;72(11):396–400.
16. Sepucha KR, Simmons LH, Barry MJ, Edgman-Levitan S, Licurse AM, Chaguturu SK. Ten years, forty decision aids, and thousands of patient uses: shared decision making at

- Massachusetts General Hospital. *Health Aff (Millwood)*. 2016;35(4):630–6.
17. Joseph-Williams N, Newcombe R, Politi M, et al. Toward minimum standards for certifying patient decision aids: a modified Delphi consensus process. *Med Decis Making*. 2014;34(6):699–710.
 18. Dobler CC, Sanchez M, Gionfriddo MR, et al. Impact of decision aids used during clinical encounters on clinician outcomes and consultation length: a systematic review. *BMJ Qual Saf*. 2019;28(6):499–510.
 19. Proctor E, Silmere H, Raghavan R, et al. Outcomes for implementation research: conceptual distinctions, measurement challenges, and research agenda. *Adm Policy Ment Health*. 2011;38(2):65–76.
 20. Schonberg MA, Kistler CE, Nekhlyudov L, et al. Evaluation of a mammography screening decision aid for women aged 75 and older: protocol for a cluster-randomized controlled trial. *J Clin Trials*. 2014;4:191.
 21. Hsieh HF, Shannon SE. Three approaches to qualitative content analysis. *Qual Health Res*. 2005;15(9):1277–88.
 22. Morse JM. Critical analysis of strategies for determining rigor in qualitative inquiry. *Qual Health Res*. 2015;25(9):1212–22.
 23. Crabtree F, Miller WL, eds. *Doing Qualitative Research*. Sage; 1992.
 24. O'Connor AM, Wennberg JE, Legare F, et al. Toward the “tipping point”: decision aids and informed patient choice. *Health Aff (Millwood)*. 2007;26(3):716–25.
 25. Barry MJ. Health decision aids to facilitate shared decision making in office practice. *Ann Intern Med*. 2002;136(2):127–35.
 26. Engelen A, Vanderhaegen J, Van Poppel H, Van Audenhove C. The use of decision aids on early detection of prostate cancer: views of men and general practitioners. *Health Expect*. 2017;20(2):221–31.
 27. Legare F, Ratte S, Gravel K, Graham ID. Barriers and facilitators to implementing shared decision-making in clinical practice: update of a systematic review of health professionals' perceptions. *Patient Educ Couns*. 2008;73(3):526–35.
 28. Lin GA, Halley M, Rendle KAS, et al. An effort to spread decision aids in five California primary care practices yielded low distribution, highlighting hurdles. *Health Aff (Millwood)*. 2013;32(2):311–20.
 29. Brackett C, Kearing S, Cochran N, Tosteson AN, Blair Brooks W. Strategies for distributing cancer screening decision aids in primary care. *Patient Educ Couns*. 2010;78(2):166–8.
 30. Jimbo M, Shultz CG, Nease DE, Fetters MD, Power D, Ruffin MT. Perceived barriers and facilitators of using a Web-based interactive decision aid for colorectal cancer screening in community practice settings: findings from focus groups with primary care clinicians and medical office staff. *J Med Internet Res*. 2013;15(12):e286.
 31. Cadet T, Pinheiro A, Karamourtopoulos M, et al. Effects by educational attainment of a mammography screening patient decision aid for women aged 75 years and older. *Cancer*. 2021;127(23):4455–63.
 32. Montori VM, Breslin M, Maleska M, Weymiller AJ. Creating a conversation: insights from the development of a decision aid. *PLoS Med*. 2007;4(8):e233.
 33. Schousboe JT, Sprague BL, Abraham L, et al. Cost-effectiveness of screening mammography beyond age 75 years: a cost-effectiveness analysis. *Ann Intern Med*. Published online November 23, 2021. doi:10.7326/M20-8076
 34. Muscat DM, Smith J, Mac O, et al. Addressing health literacy in patient decision aids: an update from the International Patient Decision Aid Standards. *Med Decis Making*. 2021;41(7):848–69.
 35. Cadet T, Aliberti G, Karamourtopoulos M, et al. Evaluation of a mammography decision aid for women 75 and older at risk for lower health literacy in a pretest-posttest trial. *Patient Educ Couns*. 2021;104(9):2344–50.
 36. Cadet T, Aliberti G, Karamourtopoulos M, Jacobson A, Siska M, Schonberg MA. Modifying a mammography decision aid for older adult women with risk factors for low health literacy. *Health Lit Res Pract*. 2021;5(2):e78–e90.
 37. Bonner C, Trevena LJ, Gaissmaier W, et al. Current best practice for presenting probabilities in patient decision aids: fundamental principles. *Med Decis Making*. 2021;41(7):821–33.
 38. Muscat DM, Shepherd HL, Nutbeam D, Trevena L, McCaffery KJ. Health literacy and shared decision-making: exploring the relationship to enable meaningful patient engagement in healthcare. *J Gen Intern Med*. 2021;36(2):521–4.
 39. Nouri SS, Damschroder LJ, Olsen MK, et al. Health coaching has differential effects on Veterans with limited health literacy and numeracy: a secondary analysis of ACTIVATE. *J Gen Intern Med*. 2019;34(4):552–8.
 40. Rahn AC, Jull J, Boland L, et al. Guidance and/or decision coaching with patient decision aids: scoping reviews to inform the International Patient Decision Aid Standards (IPDAS). *Med Decis Making*. 2021;41(7):938–53.
 41. Simmons L, Leavitt L, Ray A, Fosburgh B, Sepucha K. Shared decision making in common chronic conditions: impact of a resident training workshop. *Teach Learn Med*. 2016;28(2):202–9.
 42. Diouf NT, Menear M, Robitaille H, Painchaud Guerard G, Legare F. Training health professionals in shared decision making: update of an international environmental scan. *Patient Educ Couns*. 2016;99(11):1753–8.
 43. Lakin JR, Koritsanszky LA, Cunningham R, et al. A systematic intervention to improve serious illness communication in primary care. *Health Aff (Millwood)*. 2017;36(7):1258–64.
 44. Nestel D, Tierney T. Role-play for medical students learning about communication: guidelines for maximizing benefits. *BMC Med Educ*. 2007;7:3.
 45. Schonberg MA, Jacobson AR, Karamourtopoulos M, et al. Scripts and strategies for discussing stopping cancer

- screening with adults >75 years: a qualitative study. *J Gen Intern Med.* 2020;35(7):2076–83.
46. Elwyn G, Frosch D, Thomson R, et al. Shared decision making: a model for clinical practice. *J Gen Intern Med.* 2012;27(10):1361–7.
47. Caverly TJ, Hayward RA. Dealing with the lack of time for detailed shared decision-making in primary care: everyday shared decision-making. *J Gen Intern Med.* 2020;35(10):3045–9.
48. National Cancer Institute. State cancer profiles. Screening and risk factors table [cited January 5, 2022]. Available from: <https://statecancerprofiles.cancer.gov/risk/index.php>