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Assessing the medical workforces perceived barriers to the prescription of risk-reducing medication for women at high-risk of breast cancer

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Abstract:

This study aims to determine the attitudes and barriers of Australian oncology health professionals towards using tamoxifen as a breast cancer risk-reducing medication (RRM). Our target group was health professionals involved in breast cancer risk assessment or treatment. Members of relevant medical organizations in Australia and New Zealand were invited to participate in a web-based survey assessing: their attitudes towards tamoxifen as a RRM; which health professionals they felt were responsible for initiating and monitoring women on RRM and their views on workforce issues related to RRM prescription. There were 100 respondents, including 33 genetic health professionals, 32 medical oncologists and 20 surgeons. Respondents perceived tamoxifen to be effective as a RRM (99%). However, only 41% of prescribing health professionals (n=64) had ever prescribed tamoxifen as a RRM.

Overall, survey respondents felt that the initiation of RRM was the role of specialists. Assessing a patient's risk of breast cancer was reported to be the role of cancer geneticists/familial cancer clinicians (74%) and medical oncologists (66%). Discussion about the use of RRM was reported to be the role of these same groups (84% and 85% respectively). Medical oncologists (83%) and breast physicians (70%) were most frequently considered to be responsible for initiating the prescription and monitoring women once commenced on RRM (72% and 71% respectively). Oncology health professionals express confidence in the effectiveness of tamoxifen as a RRM despite reporting low prescription rates. Findings demonstrate that these oncology health professionals felt that initiation of

RRM was the role of cancer specialists, despite preventative medicine being seen as a primary care activity. If uptake among at-risk women increases, this will put a significant burden on cancer services and GPs will need to take on a greater role in the delivery of RRM.

Introduction

Breast cancer is the most commonly diagnosed cancer in US females accounting for 231,840 cases each year (1). The National Surgical Adjuvant Breast and Bowel Project (NSABP) P-1 study showed that tamoxifen reduced the risk of breast cancer by 49% in at risk women according to the Gail model (2). Since then the effectiveness of tamoxifen, raloxifene, anastrozole and exemestane have been confirmed (3-7), providing a range of options for women considering RRM. Both tamoxifen and raloxifene are approved by the USA Federal Drug Administration Authority as RRM and included in clinical guidelines (8, 9). Yet, despite the consistency and strength of recommendations, studies show uptake of RRM in at risk women is low, ranging between 0.5% to 4.7% (10-12).

There are a number of potential facilitators and barriers to RRM uptake. Fear of side-effects has consistently been shown to prevent uptake (11, 13, 14). Whilst physician recommendation appears to be the most important factor in facilitating patient acceptance(12, 15). This suggests that attitudes and practices of health care professionals are likely to be important contributors to low RRM use.

Australian guidelines suggest that delivery of RRM is the responsibility of general practitioners (GPs) in their role of encouraging cancer prevention (16). However, Australian GPs are not currently comfortable with this role (17). Similarly, only a minority of US GPs have ever prescribed tamoxifen as a RRM (18, 19) and UK GPs were less likely than secondary care clinicians to initiate RRM use (20). There is a global reticence by GPs to prescribe RRM. This raises the question: If the prescription of RRM is not being taken on by GPs, then who should be responsible for RRM delivery in practice?

This current study aims to assess the attitudes of specialist healthcare professionals who have experience with either breast cancer risk assessment or breast cancer treatment. We hypothesized that health professional background would affect knowledge of risk assessment tools, perceived benefit and willingness to prescribe RRM.

Material and Methods:

The WorldApp KeySurvey software program was used to develop the online survey, which included 11 demographics and professional background items. One item assessed awareness of risk assessment tools. Six three-point Likert-type items assessed perceived usefulness of tamoxifen as a RRM and seven items assessed previous experience in prescribing tamoxifen. Five items elicited perceptions around which health professionals should: identify patients who may benefit from tamoxifen; and discuss, initiate and monitor use (more than one could be endorsed from a list of possible health professionals). Thirteen five-point and six four-point Likert-type items assessed views on perceived barriers to the prescription of tamoxifen from health professionals' and women's perspectives respectively. Three items assessed respondents' access to familial cancer clinics (FCC).

The inclusion criteria were: being a member of a target professional group (genetics health professional, medical or radiation oncologist, surgeon, or breast care nurse). An invitation e-mail was sent to all Australian FCC's and members of relevant professional organizations. Advertisements were placed in e-newsletters. The e-mail contained a link to the online survey and participant information sheet. Participants who completed the survey had the option of receiving a $30 book voucher. This study was approved by Sydney Local Health District Human Research Ethics Committee.

Data analysis:

Data were analyzed using the Statistical Package for the Social Sciences 22 (SPSS Inc., IL, USA). Descriptive statistics were generated, and Pearson's Chi Square and Kruskal-Wallis tests were performed to identify the demographic and professional predictors for the outcomes of interest. The results were considered statistically significant at a two-tailed test and a p-value<0.05.

Results

Respondent demographics

One hundred and three participants completed questionnaires between August 2014 and May 2015. Three surveys were excluded because individuals were not from a target professional group leaving 100 remaining respondents. Table 1 summarizes the sociodemographic and professional characteristics of participants.

Table 1: Characteristics of Health Professionals (N=100)

	Genetic health professionals (n=34)		Non-genetic health professionals (n = 66)		
	Prescribers* (n=7)	**Non-prescribers (n=27)**	**Medical oncologists (n=32)**	**Surgeons (n=20)**	**Other ** (n=14)**
	n (%)	**n (%)**	**n (%)**	**n (%)**	**n (%)**
Gender					
Male	2 (29)	3 (11)	17 (53)	11(55)	1 (7)
Female	5 (71)	24 (89)	15 (47)	9 (45)	13(93)
Practice					
Public Hospital	7 (100)	25 (92)	21(66)	2 (10)	6 (43)
Private Practice	0 (0)	0 (0)	0 (0)	5 (25)	2 (14)
Mixture of Private/ Public	0 (0)	1(4)	11(34)	13 (65)	4 (29)
Other	0 (0)	1(4)	0	0 (0)	2 (14)
Area					
Urban	5 (71)	21(78)	27 (84)	16 (80)	9 (64)
Rural	0 (0)	0 (0)	1 (3)	4 (20)	2 (14)
Both	2 (29)	6 (22)	4 (13)	0 (0)	3 (21)
In practice for					
0-5 years	2 (29)	14 (52)	11(34)	3 (15)	4 (29)
6-10 years	0 (0)	10 (37)	7 (22)	2 (10)	3 (21)
11-20 years	3 (42)	3 (11)	5 (16)	6 (30)	3 (21)
More than 20 years	2 (29)	0 (0)	9 (28)	9 (45)	4 (29)

***** Genetic Health professionals included oncologists, CMO and geneticists who work in familial cancer clinics

** Breast care nurses, breast physicians and radiation oncologists.

Assessing risk

Knowledge of risk assessment tools differed according to professional background, with medical oncologists less aware than genetic health professionals and surgeons of, BOADICEA (21) (X^2=67.14, p<0.001), Cancer Australia/NBOCC/FRA-BOC (22) (X^2=35.03, p<0.001), Gail Model (23) (X^2=6.87, p=0.032) and IBIS (Tyrer Cuzik Model) (24) (X^2=17.27, p=0.002), (Table S1).

Medical oncologists reported seeing fewer women at-risk of breast cancer (n=22, 69%) than surgeons (n=20, 100%) and genetic health professionals (n=34, 100%) (p < 0.001) (Table 2) and lower rates of discussions about RRM (n=14, 44%) compared to genetic health professionals (n=33, 97%) and surgeons (n=19, 95%) (p < 0.001) (Table 2).

Table 2: Experience with RRM in at-risk women by professional background (N=100)

	Genetic health Professional* (n=34) n (%)	**Medical oncologists (n=32) n (%)**	**Surgeons (n=20) n (%)**	**Other ** (n=14) n (%)**
Managing women with breast cancer as part of my practice is:				
Major	9 (26)	23 (72)	17 (85)	13 (93)
Minor	3 (9)	7 (22)	3 (15)	0 (0)
Infrequent	2 (6)	2 (6)	0 (0)	1 (7)
Do not manage	20 (59)	0 (0)	0 (0)	0 (0)
Discuss risk of breast cancer with unaffected women				
Yes	33 (97)	14 (44)	19 (95)	11 (79)
No	1(3)	18 (56)	1 (5)	3 (21)
Number of at risk				

women seen				
0	0 (0)	10 (31)	0 (0)	5 (36)
1-10/year	0 (0)	19 (59)	2 (10)	5 (36)
11-49/year	10 (30)	2 (6)	13 (65)	2 (14)
50-100/year	15 (48)	1 (3)	2 (10)	0 (0)
> 100/year	9 (22)	0 (0)	3 (15)	2 (14)

Perceived effectiveness of tamoxifen as a RRM.

Most respondents (99%) thought that tamoxifen was "somewhat" or "very" effective in reducing the risk of developing breast cancer. Surgeons (65%) and genetic health professionals (62%) were more likely to consider tamoxifen "very" effective than medical oncologists (34%) (χ^2=6.6, p=0.036).

Tamoxifen prescribing practices

Of the prescribers (64% of all respondents), most (80%) were willing to prescribe tamoxifen as a RRM. The most common reasons for *not* wanting to prescribe were a feeling that it was not their role (8%) and that they did not have the knowledge to prescribe (8%). Of those who were happy to prescribe, only 41% had ever done so.

Surgeons (80%) were significantly more likely to have ever prescribed tamoxifen as a RRM compared to medical oncologists (28%) (χ^2=12.4, p=0.001) (Figure 1) and to have had the topic of RRM raised with them (71% and 31% respectively) (χ^2=9, p=0.011). Seventy-four percent of prescribers were willing to see additional patients for the purpose of supervising tamoxifen as a RRM but only 10% were willing to see 50 or more additional patients per year.

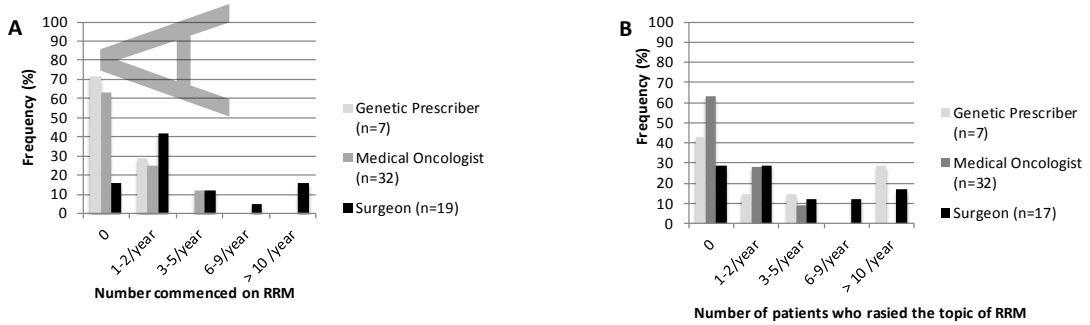

Figure 1. Tamoxifen prescribing practices in the last year.

Who should be prescribing tamoxifen?

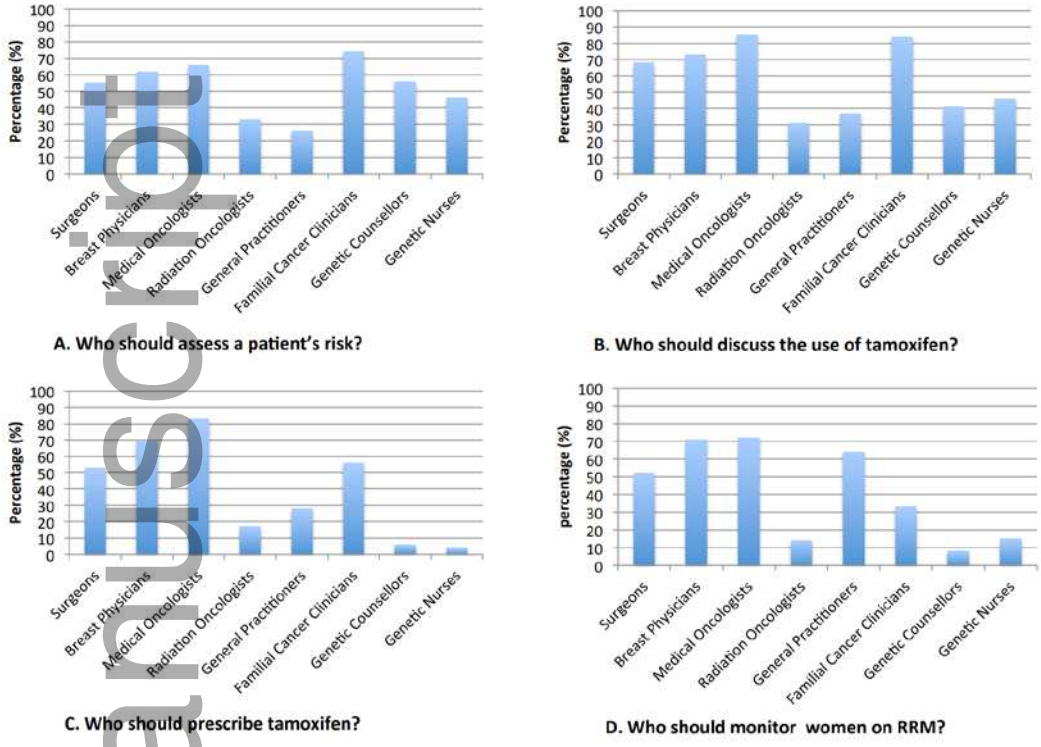

Figure 2. Health professionals considered responsible for the following roles.

Most health professionals (74%) endorsed FCCs as responsible for assessing a patient's risk, followed by medical oncologists (66%, more than one could be endorsed). FCCs (84%) and medical oncologists (85%) were endorsed as responsible for discussions. Medical oncologists (83%) and breast physicians (71%) were endorsed as most appropriate to prescribe RRM and to monitor patients once RRM was initiated (72% and 71% respectively). Medical oncologists reported that it was their role to assess risk (62%), educate (84%), prescribe (87%) and monitor tamoxifen (78%) use in at-risk women as did surgeons (95%, 95%, 95% and 85% respectively).

Potential barriers to prescription of RRMs

Of prescribers, 88% reported at least one barrier (figure 3). The long-term risk of thromboembolism (28%) and short-term side-effects (25%) were the most frequently identified barriers. (Figure 3).

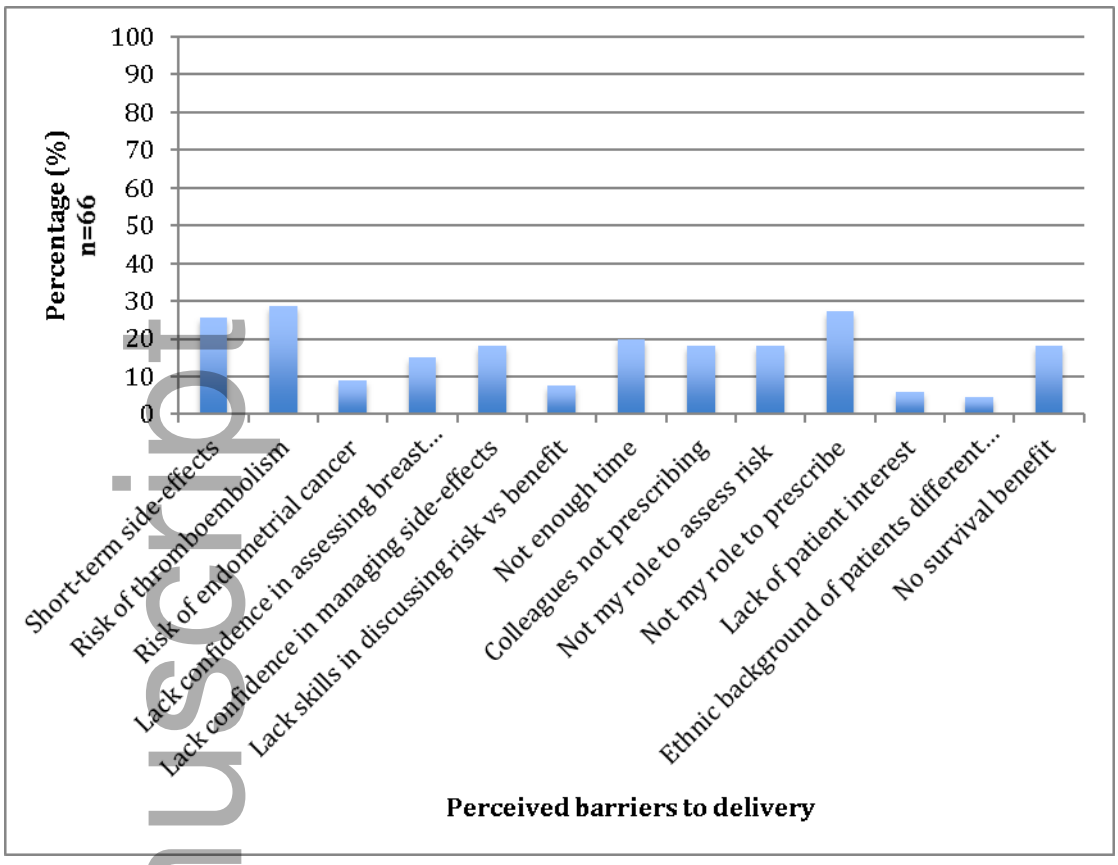

Figure 3. Barriers reported by prescribing health professionals.

Health professionals indicated that concern about both long-term (92%) and short-term (65%) side-effects was a barrier to patient acceptance of tamoxifen as a RRM (figure 4). These rates were higher than in figure 3.

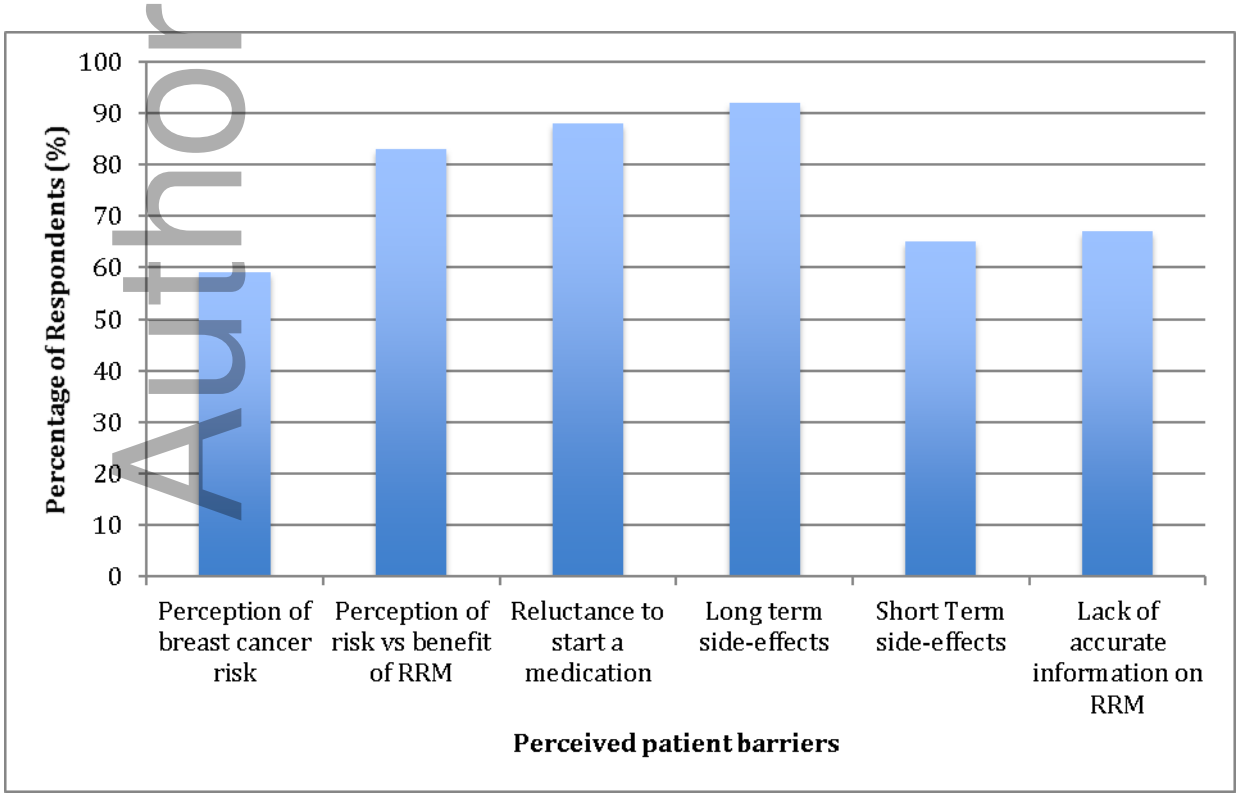

Figure 4. Health professional's perception of barriers for at risk women.

Specialist risk management clinics

Overall, 58% of surveyed specialists from oncology clinics had a risk management screening clinic in their area. Few clinics (19%) arranged screening for moderate-risk women.

Discussion

This survey is the first to assess the attitudes and perceptions of Australian oncology health professionals to the prescription of tamoxifen as a RRM. Most (99%) respondents considered tamoxifen to be effective as a RRM. If there is high acceptance of the utility of tamoxifen as a RRM by health professionals why is there such a low frequency of prescription? Most prescribers (88%) reported at least one perceived barrier to prescription, however, the nature of the perceived barriers varied across prescribers (figure 3). Consistent across prescribers was that fear of long-term (92%) and short-term side-effects (65%) was perceived to be a barrier to patient acceptance. This view aligns with previous studies which report many patients (46-75%) decline RRM due to fear of toxicity (11, 12, 25). In the IBIS-1 trial there were 2.4 excess DVT/PE's per 1,000 women in the tamoxifen arm and 0.21 excess endometrial cancers (26). This increase in toxicity was only seen in the first 5 years (26) whilst the risk of breast cancer continued to reduce with longer follow-up, with 22 at risk women needed to be treated with tamoxifen for 5 years to prevent one breast cancer in the next 20. (27). IBIS-II using anastrozole for 5 years had a numbers needed to treat (NNT) of 36 to prevent one breast cancer incidence in the next 7 years with no increased risk of thromboembolic events or fractures (5). Physician recommendation is influential on patient uptake of RRM (12, 15). Thus, physician education on the risk versus benefit of RRM and communication skills training to equip physicians to address patient toxicity concerns are essential if we are to improve RRM uptake.

If resources and education are to be effectively distributed, it is important to identify the appropriate health professionals to take on the role of risk assessment, education and prescription of RRM. Overall, our findings showed that this was considered the role of cancer care specialists, such as cancer geneticist and medical oncologists, despite cancer prevention usually being considered a primary care activity. Although inconsistent with Australian Clinical Guideline recommendations, this does fit with findings that Australian GPs report they are uncomfortable prescribing tamoxifen as a RRM (17). Interestingly, in a recent survey of British GPs, many more were comfortable monitoring women on tamoxifen after it was

initiated in secondary care than initiating the prescription themselves (20) and this sentiment was reflected in our study with more respondents (64%) seeing GPs to have a role in monitoring than identifying (26%), discussing (37%) and prescribing (28%). Still, if there is an increase in women's interest in RRM this will put a significant burden on existing specialists. While respondents in this study were willing to see some additional patients for this purpose, few were willing to see these patients in high numbers. This means that either specialist service capacity will have to be increased or GPs will need to take on a greater role in the delivery of RRM.

It is interesting to note that medical oncologists were considered to play a leading role in risk assessment and prescription of RRM when, as a group, they were less familiar with risk assessment tools, saw fewer at risk patients, and were less likely to have prescribed tamoxifen as a RRM than surgeons and genetic health professionals. It is encouraging that surveyed medical oncologists agreed with this view but this might not reflect the general attitude of medical oncologists across Australia due to potential response bias. Survey respondents and genetic health professionals themselves felt that genetic health professionals should play a role in risk assessment and education of women. However, survey respondents indicated that few FCC accept referrals for moderate-risk women who can also benefit from RRM, leaving this group of women potentially in a "no man's land" with specialists reluctant to see them and GPs reluctant to initiate discussion and prescribing of RRM.

This study is the first to report on potential workforce issues in the delivery of RRM to women at risk and is important to gain a more detailed understanding of the delivery RRM in clinical practice, but our results do need to be viewed in light of a number of limitations including a small sample size limiting the statistical power to test differences between some groups. The opt-in design of the survey which may have generated response bias as those with more favorable attitudes may have been more likely to participate and this cannot be confirmed or discounted due to the anonymous nature of the survey renders this impossible to investigate. We acknowledge that response rates were low at less than 10% but absolute response rate cannot be determined as recruitment methods were multiple and via societies that had overlapping membership and at times broader membership than our target group.

In summary, respondents in this study expressed confidence in the effectiveness of tamoxifen as a RRM but reported low prescription rates. It was clear that health professionals who treat cancer considered that delivery of tamoxifen as a RRM was a role for cancer specialists, despite preventative medicine usually being seen as a primary care activity. If

uptake of RRM among at-risk women increases, this will put a significant burden on cancer services. To assist this group of women to make informed decision about tamoxifen as a RRM, resources and education needs to be distributed appropriately and to do this effectively, we need to decide who should take on the responsibility of delivery of RRM.

References:

1. Siegel RL, Miller KD, Jemal A. Cancer statistics, 2015. CA Cancer J Clin. 2015;65(1):5-29.
2. Fisher B CJ, Wckerham D. Tamoxifen for the prevention of breast cancer: report of the National Surgical Adjuvant Breast and Bowel Project P-1 Study. J Natl Cancer Inst. 1998;90:1371-88.
3. Powles TJ, Ashley S, Tidy A, Smith IE, Dowsett M. Twenty-year follow-up of the Royal Marsden randomized, double-blinded tamoxifen breast cancer prevention trial. J Natl Cancer Inst. 2007;99(4):283-90.
4. Veronesi U, Maisonneuve P, Rotmensz N, Bonanni B, Boyle P, Viale G, et al. Tamoxifen for the prevention of breast cancer: late results of the Italian Randomized Tamoxifen Prevention Trial among women with hysterectomy. J Natl Cancer Inst. 2007;99(9):727-37.
5. Cuzick J, Sestak I, Forbes JF, Dowsett M, Knox J, Cawthorn S, et al. Anastrozole for prevention of breast cancer in high-risk postmenopausal women (IBIS-II): an international, double-blind, randomised placebo-controlled trial. Lancet. 2014;383(9922):1041-8.
6. Goss PE, Ingle JN, Ales-Martinez JE, Cheung AM, Chlebowski RT, Wactawski-Wende J, et al. Exemestane for breast-cancer prevention in postmenopausal women. N Engl J Med. 2011;364(25):2381-91.
7. Nelson HD, Smith ME, Griffin JC, Fu R. Use of medications to reduce risk for primary breast cancer: a systematic review for the U.S. Preventive Services Task Force. Annals of Internal Medicine.158(8):604-14.
8. Exellence NIfHaC. Familial breast cancer. Classification and care of people at risk of familial breast cancer and management of breast cacner and related risks in people with a family history of breast cancer. In: Excellence. NIfHaC, editor. London2013.
9. Visvanathan K, Chlebowski RT, Hurley P, Col NF, Ropka M, Collyar D, et al. American society of clinical oncology clinical practice guideline update on the use of pharmacologic interventions including tamoxifen, raloxifene, and aromatase inhibition for breast cancer risk reduction. Journal of Clinical Oncology.27(19):3235-58.
10. Fagerlin A, Zikmund-Fisher BJ, Nair V, Derry HA, McClure JB, Greene S, et al. Women's decisions regarding tamoxifen for breast cancer prevention: responses to a tailored decision aid. Breast Cancer Research & Treatment. 2010;119(3):613-20.

11. Port ER, Montgomery LL, Heerdt AS, Borgen PI. Patient reluctance toward tamoxifen use for breast cancer primary prevention. Annals of Surgical Oncology. 2001;8(7):580-5.
12. Taylor R, Taguchi K. Tamoxifen for breast cancer chemoprevention: low uptake by high-risk women after evaluation of a breast lump. Annals of Family Medicine. 2005;3(3):242-7.
13. Kinney AY, Richards C, Vernon SW, Vogel VG. The effect of physician recommendation on enrollment in the Breast Cancer Chemoprevention Trial. Preventive Medicine. 1998;27(5 Pt 1):713-9.
14. Ropka ME, Keim J, Philbrick JT. Patient decisions about breast cancer chemoprevention: a systematic review and meta-analysis. Journal of Clinical Oncology. 2010;28(18):3090-5.
15. Holmberg C, Bandos H, Fagerlin A, Bevers TB, Battaglia TA, Wickerham DL, et al. NRG Oncology/National Surgical Adjuvant Breast and Bowel Project Decision-Making Project-1 Results: Decision Making in Breast Cancer Risk Reduction. Cancer Prevention Research. 2017.
16. Registries AIoHaWAAoC. Cancer in Australia: an Overview, 2012. In: AIHW, editor. Canberra2012.
17. Collins IM, Steel E, Mann GB, Emery JD, Bickerstaffe A, Trainer A, et al. Assessing and managing breast cancer risk: clinicians' current practice and future needs. Breast. 2014;23(5):644-50.
18. Armstrong K, Quistberg DA, Micco E, Domchek S, Guerra C. Prescription of tamoxifen for breast cancer prevention by primary care physicians. Archives of Internal Medicine. 2006;166(20):2260-5.
19. Kaplan CP, Haas JS, Perez-Stable EJ, Des Jarlais G, Gregorich SE. Factors affecting breast cancer risk reduction practices among California physicians. Preventive Medicine. 2005;41(1):7-15.
20. Smith SG, Foy R, McGowan JA, Kobayashi LC, DeCensi A, Brown K, et al. Prescribing tamoxifen in primary care for the prevention of breast cancer: a national online survey of GPs' attitudes. Br J Gen Pract. 2017;67(659):e414-e27.
21. Antoniou AC, Pharoah PP, Smith P, Easton DF. The BOADICEA model of genetic susceptibility to breast and ovarian cancer. Br J Cancer. 2004;91(8):1580-90.
22. Australia C. Familial Risk Assessment - Breast and Ovarian Cancer (FRA-BOC): Australian Government; 2017 [Available from: https://canceraustralia.gov.au/clinical-best-practice/gynaecological-cancers/familial-risk-assessment-fra-boc.
23. Gail MH, Brinton LA, Byar DP, Corle DK, Green SB, Schairer C, et al. Projecting individualized probabilities of developing breast cancer for white females who are being examined annually. J Natl Cancer Inst. 1989;81(24):1879-86.
24. Tyrer J, Duffy SW, Cuzick J. A breast cancer prediction model incorporating familial and personal risk factors. Stat Med. 2004;23(7):1111-30.
25. Daly M, Seay J, Balshem A, Lerman C, Engstrom P. Feasibility of a telephone survey to recruit health maintenance organization members into a tamoxifen chemoprevention trial. Cancer Epidemiology, Biomarkers & Prevention. 1992;1(5):413-6.
26. Cuzick J, Forbes JF, Sestak I, Cawthorn S, Hamed H, Holli K, et al. Long-term results of tamoxifen prophylaxis for breast cancer--96-month follow-up of the randomized IBIS-I trial. Journal of the National Cancer Institute. 2007;99(4):272-82.
27. Cuzick J, Sestak I, Cawthorn S, Hamed H, Holli K, Howell A, et al. Tamoxifen for prevention of breast cancer: extended long-term follow-up of the IBIS-I breast cancer prevention trial. Lancet Oncol. 2015;16(1):67-75.