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Prostate screening uptake in Australian *BRCA1* and *BRCA2* carriers

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Abstract

Men who carry mutations in *BRCA1* or *BRCA2* are at increased risk for prostate cancer. However the efficacy of prostate screening in this setting is uncertain and limited data exists on the uptake of prostate screening by mutation carriers. This study prospectively evaluated uptake of prostate cancer screening in a multi-institutional cohort of mutation carriers. Subjects were unaffected male *BRCA1* and *BRCA2* mutation carriers, aged 40-69 years, enrolled in the Kathleen Cuningham Consortium for Research into Familial Breast Cancer (kConFab) and who had completed a mailed, self-report follow-up questionnaire 3 yearly after study entry. Of the 75 male carriers in this study, only 26 (35%) had elected to receive their mutation result. Overall, 51 (68%) did not recall having received a recommendation to have prostate screening because of their family history, but 41 (55%) had undergone a prostate specific antigen (PSA) test and 32 (43%) a digital rectal examination (DRE) in the previous 3 years. Those who were aware of their mutation result were more likely to have received a recommendation for prostate screening (43 vs. 6%, p=0.0001), and to have had a PSA test (77 vs. 43%, p=0.005) and a DRE (69 vs. 29%, p=0.001) in the previous 3 years. The majority of unaffected males enrolled in kConFab with a *BRCA1/2* mutation have not sought out their mutation result. However, of those aware of their positive mutation status, most have undergone at least one round of prostate screening in the previous 3 years.

The authors of the recent short report summarising the 2006 AIDIT and IMPACT conference are to be congratulated on their planned study, which should provide useful information to guide screening recommendations for male *BRCA1* and *BRCA2* mutation carriers [1]. While knowing about the current screening behaviours of male *BRCA1* and *BRCA2* carriers could assist the investigators in maximising recruitment and adherence to the study, relevant published data are limited [2].

We recently analysed prospective data on the uptake of prostate cancer screening in male *BRCA1* and *BRCA2* mutation carriers, aged 40 to 69 years (the age for eligibility for the IMPACT study), with no personal history of cancer, enrolled in the Kathleen Cuningham Consortium for Research into Familial

Table 1. Prostate screening recommendations received by *BRCA1* and *BRCA2* mutation carriers

Recommended screening	Carriers aware of mutation result n=26 (%)	Carriers unaware of mutation result n=49 (%)
PSA and DRE	6 (23)	1 (2)
PSA only	3 (12)	0 (0)
DRE only	2 (8)	2 (4)
No recommendation	12 (46)	39 (80)
Unknown	3 (11)	7 (14)

Table 2. Prostate screening undertaken by *BRCA1* and *BRCA2* mutation carriers

Screening	Frequency	Carriers aware of mutation result n=26 (%)	Carriers unaware of mutation result n=49 (%)
PSA	yearly	9 (35)	2 (4)
	2 yearly	6 (23)	8 (16)
	not regular	5 (19)	11 (23)
	not in last 3 years	6 (23)	26 (53)
	don't know	0	2 (4)
DRE	yearly	3 (12)	1 (2)
	2 yearly	5 (19)	3 (6)
	not regular	10 (38)	10 (21)
	not in last 3 years	8 (31)	34 (69)
	don't know	0	1 (2)

Breast Cancer (kConFab) Follow-Up Study [3]. kConFab is a cohort of over 1110 families with strong histories of breast and/or ovarian cancer [4, 5]. Every three years after enrolment, the Follow-Up Study collects updated information on cancer events, screening behaviour, epidemiological and lifestyle risk factors and preventive strategies from these individuals using self-report questionnaires [3]. The kConFab Follow-Up study has ethics approval at all sites from which participants are recruited.

Since 2001 we have mailed follow-up questionnaires to 123 male *BRCA1* and *BRCA2* mutation carriers with no personal history of cancer, aged 40 to 69 years. Overall 82 (67%) responded. Of these, seven were excluded from the current analysis (two had cancer diagnosed and five had benign prostatic hypertrophy during the follow-up period). Only 26 of the remaining 75 men (35%) had elected to receive their (positive) mutation test result after being informed that a genetic test result was available. The mean follow-up period for the entire group was 4.2 years and the mean time between genetic test result disclosure and completion of the follow-up questionnaire was 2.8 years. The average age of participants was 53 years, with 32 (43%) under the age of 50 years.

Overall, a majority of men (68%) did not report receiving any recommendations regarding prostate screening guidelines because of their family cancer history. Those who knew their mutation result were seven times more likely to report having received recommendations compared with those who did not know their mutation status (43 vs. 6%, p=0.0001). Table 1 shows the reported recommendations received, with the most common being yearly prostate specific antigen (PSA) testing and digital rectal examination (DRE). Table 2 shows the prostate screening actually undertaken. Overall about half (55%) had had a PSA test in the previous 3 years, with carriers who knew their result 80% more likely to have had the test than those who did not know their genetic test result (77 vs. 43%, p=0.005). Similarly for digital rectal examination, overall uptake of the test within the previous 3 years was 43% and more than twice as likely in men who knew their result (69 vs. 29%, p=0.001).

In our study, only 35% of men elected to learn their mutation test results, which is lower than the uptake rate of about 50% seen for women in the kConFab Follow-Up Study [6]. The low proportion of men from *BRCA1* and *BRCA2* mutation positive families who chose to learn their mutation status is important. If these rates apply elsewhere, this could be an impediment to optimal recruitment to IMPACT. Education of men from these families about the possible personal health benefits of genetic testing may improve uptake rates.

There are no Australian population guidelines for prostate cancer screening in the general population and current Australian guidelines on management of familial cancer are silent on the issue of prostate cancer screening for *BRCA1* and *BRCA2* mutation carriers [7]. The diversity of recommendations (or not) received by male mutation carriers in this study is likely a reflection of the paucity of guidelines. Clearly, more information is needed on whether prostate screening is effective for *BRCA1* and *BRCA2* carriers so that evidence-based guidelines can be established for the management of this high risk group. We look forward to the results of the IMPACT study.

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