Health professionals’ evaluation of delivering treatment-focused genetic testing to women newly diagnosed with breast cancer


1Department of Medical Psychology, Academic Medical Center, University of Amsterdam, 1100 DD Amsterdam, The Netherlands; 2Psychosocial Research Group, Prince of Wales Clinical School, Lowy Cancer Research Centre C25, University of New South Wales Australia, Sydney, NSW 2052, Australia; 3Familial Cancer Service, Westmead Institute for Cancer Research, Westmead Millenium Institute, University of Sydney, NSW, Australia; 4Familial Cancer Centre, Peter MacCallum Cancer Centre, Melbourne, Victoria 3002, Australia; 5Sir Peter MacCallum Department of Oncology, The University of Melbourne, Melbourne, Victoria 3010 Australia, 6School of Surgery, University of Western Australia, Crawley WA 6009, Australia; 7Sydney Medical School, Sydney University; 8Hunter Family Cancer Service, Newcastle, NSW, Australia; 9Hereditary Cancer Clinic, Prince of Wales Hospital, Randwick, Sydney.

Corresponding author: Kirsten Douma, Department of Medical Psychology, Academic Medical Center, University of Amsterdam, 1100 DD Amsterdam, The Netherlands, E-mail: k.f.douma@amc.uva.nl, phone: +31-(0)20-5668735, fax: +31-(0)20-5669104.
Abstract

Increasingly, women are offered genetic testing shortly after diagnosis of breast cancer to facilitate decision-making about treatment, often referred to as ‘treatment-focused genetic testing’ (TFGT). As understanding the attitudes of health professionals is likely to inform its integration into clinical care we surveyed professionals who participated in our TFGT randomized control study.

Thirty six completed surveys were received (response rate 59%), 15 (42%) health professionals classified as genetic and 21 (58%) as non-genetic. Mainly positive experiences with participating in the TFGT trial were reported. The high cost of testing and who could best deliver information about TGFT to the patient were raised as key constraints to implementation of TFGT in usual care. More non-genetic than genetic health professionals (44% vs 8%) preferred that the surgeon provide the information for decision-making about TFGT.

While costs of TFGT itself and time and effort of staff involved were perceived barriers, as testing costs become lower, it is expected that TFGT will become a routine part of standard clinical care for patients at high genetic risk in the near future.
Introduction

Since the discovery of the *BRCA1* and *BRCA2* genes, many women at high risk of developing breast and/or ovarian cancer have undergone genetic testing. Most women are referred for genetic counselling after completing cancer treatment (1;2), and in this context the genetic test result will provide information on their personal future cancer risk as well as allow for risk clarification for their family members.

However, increasingly it is being recognised that genetic testing results can also be used to guide treatment decisions for the woman’s current breast cancer (3-8). Thus, there has been a trend to offer women genetic testing shortly after cancer diagnosis to facilitate decision-making about surgical management options in particular, and such testing is often referred to as ‘treatment-focused genetic testing (TFGT)’. In addition, genetic testing may be used to inform management of the woman’s increased risk of a second future breast cancer and her risk of serous fallopian, ovarian and peritoneal adenocarcinoma. In this context, the genetic testing result may facilitate decision-making regarding risk–reducing surgery and other preventive options such as chemoprevention. The influence of genetic test results on breast cancer management has been extensively discussed elsewhere (3-8).

Most studies have focused on the attitudes of patients towards the use of TFGT (9-11). This research suggests that TFGT is highly acceptable among breast cancer patients. However, the opinion of health professionals is equally important, given the major role they will play in offering TFGT to, and counselling of, newly diagnosed patients (1;4;12). When integrating TFGT in future clinical care, it is important to understand the attitudes of health professionals who have actually been involved in TFGT. A recent survey among surgeons, oncologists and breast care
nurses showed that most of these oncology health professionals have a positive attitude towards TFGT, nevertheless, they have different views on whom should provide the initial offer of TFGT to the patient (13). Breast care nurses and oncologists were divided, with no clear preference as to who would be the best health professional to make the initial offer of TFGT, while surgeons felt they would be the best professional to make the initial offer. Another study by Ardern-Jones et al. (2005) yielded similar findings in that there was a general consensus that breast surgeons or perhaps oncologists would be the best professional to make the initial offer of TFGT (1). Following these attitudinal surveys of health professionals, data on those who have been involved in actual TFGT provision are needed to provide more insight into the challenges associated with the implementation of TFGT, including the roles adopted by the different health professionals involved.

We recently carried out a randomized controlled trial (RCT) that focused on delivering education about TFGT to women newly diagnosed with breast cancer (14). Eligible women with either a significant family history of breast and/or ovarian cancer or with other high risk features suggestive of a mutation detection rate of >10% are invited by their surgeon prior to mastectomy or radiotherapy. Women either received an educational pamphlet about genetic testing from their treating team (intervention) or a genetic counselling appointment at a family cancer centre (standard care). The brief educational pamphlet contains information about: (i) what TFGT is; (ii) the purpose of TFGT; (iii) why a woman might consider having TFGT; (iv) what is involved in having TFGT; and (v) different outcomes of TFGT and their implications for the patient and her family. Each participant was offered genetic testing for germline \textit{BRCA1} and \textit{BRCA2} mutations. Individuals, in both intervention and usual care, that decide to undergo genetic testing attend the genetic service to receive the
test result. The outcomes of the study will be presented in a different paper (in preparation). As part of this RCT we also investigated the views of health professionals on their experiences of delivering and/or implementing TFGT to eligible women, as well as its perceived effectiveness. The survey was targeted to all those health professionals involved in the delivery of TFGT in the trial, which included professionals without specialist training in genetics (breast surgeons, medical oncologists and breast cancer nurses), hereafter referred to as ‘non-genetics health professionals’ as well as health professionals with specialist training in genetics (clinical geneticists and oncologists with specialist training in hereditary cancer, and genetic counsellors), hereafter referred to as ‘genetics health professionals’. In Australia, genetic counsellors are typically trained in genetic counselling at the Masters degree level. Cancer genetic services have developed along different pathways in different states in Australia with some embedded in genetics services (sometimes in paediatric services) and others embedded in adult cancer services.

In our previous survey on attitudes to, and perceptions of, health professionals who did not have actual experience with TFGT (13) we found differences in their views on whom should provide the initial offer of TFGT as well as differences in terms of the perceived usefulness of TFGT. Health professionals had a preference for the surgeon, compared to genetic counsellor, oncologist or breast cancer nurse. In accordance with findings from this study (13), we hypothesized that health professionals without specialist training in genetics would be more likely to believe that surgeons would be the best health professional to make an initial offer of TFGT, compared to health professionals with specialist training in genetics.
Methods

Study sample

All oncology health professionals involved in the clinical care of women with breast cancer who were participating in the TFGT trial were invited to complete this survey between January and July 2013 after completion of recruitment for the TFGT trial. Overall, 61 oncology healthcare professionals were involved in the implementation of the trial at 9 sites across Australia. The sample consisted of three groups: 1) surgeons, who were the primary recruiters of participants for the trial; 2) other health professionals without specialist training in genetics (i.e. medical oncologists, radiation oncologists and breast care nurses) involved in trial implementation and who sometimes recruited participants to the trial; and 3) health professionals with specialist training in genetics (i.e. clinical geneticists and oncologists with additional training in hereditary cancer and genetic counsellors), who delivered formal pre- and post-test genetic counselling to women participating in the trial.

Procedure

Invitations were sent via e-mail to all eligible oncology health professionals along with a link to access the online survey. After three weeks a reminder email was sent to non-responders. Technical difficulties in accessing the online survey were reported from several participants; therefore, a paper version was mailed out to participants who had not completed the online survey following the initial invitation. Ethical approval was received from the institutional review boards for each site. All participants gave informed consent prior to inclusion to the study.
Measures

Survey items assessed health professionals’: 1) experience with the TFGT trial (9 items); 2) perceptions of their patients’ experience with the TFGT trial (6 items); and 3) views on how TFGT is best integrated into future standard care (13 items) (see supplementary material for the survey).

The items were purposively designed and informed by a literature review and the experience of the co-authors, several of whom had been involved in the implementation of the TFGT trial as health professionals. Most items had Likert-type response options, and most items also provided additional space for open-ended responses. The online survey software tool KeySurvey was used to collect the data.

Data analysis

Data were analysed using the Statistical Package for the Social Sciences 21 (SPSS Inc. Chicago, IL). Univariate statistical methods were used to describe the results. Health professionals were classified as either non-genetics or genetics health professionals. Sometimes these two groups were grouped together because the numbers were too small to split the groups. Therefore differences between these two groups will be reported when possible and deemed relevant. As groups were small we decided not to test for significant differences between the two groups.

Results

Demographics and professional background

In total, 36 completed questionnaires were received (response rate 59%), from the participants with the following professional backgrounds: surgeons (n=17, 47%),
breast care nurses (n=3, 8%), medical oncologists (n=1, 3%), clinical geneticists (n=3, 8%), specialists in cancer genetics (n=4, 11%) and genetic counsellors (n=8, 22%).

The four specialists in cancer genetics reported having qualifications in medical oncology (3) and radiation oncology (1). Thus a total of 21 (58%) participants were classified as non-genetics health professionals and 15 (42%) as genetics health professionals.

**Health professionals’ experiences with the TFGT breast cancer trial**

In response to the item ‘On average, how much time did you spend with a patient explaining implications of genetic testing results’?, 53% of all participating health professionals reported having spent ‘up to 10 minutes’, while 47% reported having spent more than 10 minutes having done so.

Satisfaction with the turnaround time of the rapid testing was high, with 78% reporting it was ‘the right timing’. Only 19% reported it was ‘not fast enough’, while 3% perceived it as being ‘too fast’.

The majority of health professionals reported that TFGT changed their protocol for the clinical management of breast cancer: for 81% in all or at least some cases, while 19% reported no changes. Most reported open-ended responses to this item included that TFGT had led, in all or some cases: 1) to better decision-making about breast cancer surgery (bilateral mastectomy versus breast-conserving therapy with radiotherapy), n=15; 2) delayed decisions about surgery options, n=3; and 3) additional or expedited appointments, n=3.

Eighty-three percent of health professionals reported ‘strongly agreeing’ or ‘agreeing’ that referral of patients for TFGT around the time of diagnosis was the ‘right time’, in terms of clinical management of patients. Furthermore, 86% agreed or
strongly agreed that it was ‘helpful for planning patient surgery and treatment’. Of all health professionals referral of ‘patients for TFGT around the time of diagnosis’ was perceived as ‘an additional burden for their practice’ by 34% and for ‘themselves and their staff’ by 37% in terms of clinical management; 47% and 60% of genetics health professionals endorsed each of the two items respectively, while 25% and 20% of non-genetics health professionals endorsed them.

Table 1 shows the numbers and percentages of health professionals endorsing six potential advantages and five potential disadvantages of TFGT. The most frequently endorsed advantages were the ‘rapid turnaround time for genetic testing results’ (86%) and the ‘ability to offer genetic testing to high-risk patients’ (72%). Two health professionals added an open ended response, namely 1) that it helped treating doctors to see more value in genetics as part of the treatment of breast cancer and 2) that health professionals had more to offer to their patients. The most frequently endorsed disadvantages were that TFGT involved ‘more time and effort than standard care’ (42%) and that ‘inconclusive genetic testing results were confusing in high-risk patients’ (22%). Open-ended responses regarding the perceived disadvantages included: 1) non-genetic health professionals felt that counselling was no longer needed, 2) inappropriate triage and costs which led to testing to discover previously known mutations, 3) lower rapport in patients receiving the educational pamphlet (intervention group) and 4) waiting time for rapid testing within study trial (all responses were mentioned once).

[Insert Table 1 about here]
Health professionals’ perceptions of their patients’ experiences in the TFGT breast cancer trial

One item asked health professionals to indicate their perception of the extent to which patients benefited from participating in the trial (five statements, more than one statement could be selected). Most participants thought that patients ‘benefited from participating’ (81%) and ‘cope well with the added stress, time and effort of participating’ (56%). Furthermore, 44% also thought that patients ‘found the experience stressful but beneficial’. Only one genetic health professional thought that patients ‘were not able to cope with the added stress, time and effort of participating’ (3%) and ‘did not benefit from participating’ (3%).

Most health professionals (64%) thought that ‘participation in the TFGT trial’ had ‘some impact’ in the ‘overall context of their patients’ breast cancer diagnosis and treatment’, while 31% thought it had a ‘significant impact’, and 6% that it had ‘no impact’. Forty-two percent thought that TFGT had impacted on their ‘patients’ decision-making about treatment’, 42% thought it had impacted in at least some cases, while 17% thought it had ‘no impact’. The majority of health professionals (94%) perceived participation in the TFGT overall as a worthwhile experience for their patients.

Health professionals’ perceptions of how TFGT might best be integrated into future standard care

Figure 1 shows the improvements in terms of TFGT implementation that were deemed necessary according to the health professionals for TFGT to be integrated successfully into standard care. Of note 64% of participants ‘agreed’ or ‘strongly
agreed’ that access to genetic services to discuss TFGT results and education and services about TFGT required improvements.

As can be seen in Figures 2a and 2b, most health professionals (44%) believed that a 10-20% mutation carrier risk would make TFGT worthwhile, while most health professionals (39%) believed that an acceptable level of cost for TFGT to be integrated into standard care was under $500Australian dollars (which is approximately 519 USD or 393 euro).

Table 2 shows health professionals’ perceptions of the best clinician to implement four different aspects of TFGT. Compared to genetics health professionals (73%), non-genetics health professionals reported surgeons to be the best clinician to ‘make the initial offer of TFGT to the patient’ (90%). Also, compared to genetics health professionals (13%), non-genetics health professionals (43%) were more likely to report surgeons to be the best clinician to ‘provide the necessary information to help the patient make a decision about TFGT’.

Forty-four percent of health professionals believed that the best time point to offer TFGT was at initial diagnosis, while 19% believed that it was better to wait for
full pathology results (i.e. after wide local excision and axillary assessment). Eleven percent believed that the best time to offer TFGT would be after surgery but before adjuvant chemotherapy, while 3% believed that during chemotherapy would be the best time. Twenty-two percent gave an open-ended response, categorized as: definitely before radiotherapy (n=3), depends on patient (n=2), by the surgeon (n=1), both when full pathology results available and before radiotherapy (n=1), and both when full pathology results available and at initial diagnosis (n=1).

A large majority (69%) believed that there are barriers that will prevent TFGT from being integrated into standard care. All but one (93%) genetics health professionals perceived barriers, compared to 52% of non-genetics health professionals. The most frequently mentioned barriers were lack of funding or unwillingness to allocate funds to provide TFGT (61%) and the costs of rapid genetic testing (58%). Other barriers mentioned were the lack of influential clinicians, health professionals, consumers or other leaders to lobby for integration of TFGT (31%); the inability to incorporate TFGT into local health policy and planning (22%); and insufficient data or evidence to demonstrate the value of TFGT (11%).

**Discussion**

To the best of our knowledge, this is the first study to document the experiences of health professionals with the implementation of TFGT. To summarize, most health professionals found participation in the TFGT trial worthwhile for both themselves and their patients. However, they also identified barriers that needed to be overcome to achieve successful integration of TFGT into standard care for high risk patients. In particular, the majority of participants thought that improvements were needed in access to genetic services to discuss TFGT results, and in education about
genetic testing and services. These perceived barriers suggest that health professionals have concerns that the current climate of cost constraints will not allow successful implementation of TFGT. Consistent with this, we also found that most health professionals believed that an acceptable level of cost for TFGT to be integrated into standard care was under $AUD 500 per test, compared to the approximate actual cost of testing in the trial of $AUD 2,000 per test.

In recent years, the timeframe for turnover of genetic testing has become shorter. Currently, BRCA1 and BRCA2 mutation testing can be made available rapidly, within 1-2 weeks if required. It is expected that rapid genetic testing will increasingly become part of routine clinical care (15), and be offered to high risk women shortly after a new diagnosis of breast cancer. It is likely that cost constraints will be less of a barrier to implementation of TFGT in the future. The explosion in genetic knowledge, testing capability and community awareness and acceptability of genetic testing means that the offer of testing by the managing clinician with a brief educational intervention is likely to be the norm (16).

Since we sought information from the clinician craft groups it is not surprising that each group identified their group as the important provider of information. With better education of all clinicians in genetic medicine, genetic specialists are likely to act more as consultants. Genetic services embedded in oncology may alleviate this problem. More complex cases (i.e. complex family history of cancer, psychological comorbidities) might then be handled by the clinical geneticists or genetic counselor as they have more time to explain genetic test results and, as our result suggest, might be better able to pick us anxiety and distress. The results here may reflect the diversity of cancer genetic services in Australia as cancer genetic services developed along different pathways.
As in our previous study (13), we found that non-genetic health professionals were more likely to believe that surgeons should make the initial offer of TFGT, compared to genetic health professionals. Also, non-genetic health professionals more often reported surgeons to be the best health professional to provide the necessary information to help the patient make a decision about TFGT. In our trial, the treating surgeon was responsible for inviting eligible patients to participate. Therefore, understandably, non-genetic health professionals in the current trial were more likely to report surgeons to be the person of choice for delivering the information. The surgeon is likely in the future to play an important role in the delivery of brief initial information about TFGT. However, if patients are not informed by the surgeon, patients may be informed by others, such as their medical oncologist, radiation oncologist or breast cancer nurse. In addition, clinical geneticists and genetic counsellors in this trial were involved in pre-test counselling in the intervention group as well as post-test counselling in both intervention and standard care group. Traditionally, genetic health professionals take care of information provision about genetic aspects and therefore may have a different opinion towards who is best equipped to deliver this information, regardless of trial set-up. Possibly the outcome of genetic testing (positive, negative, inconclusive test result or a UV (unclassified variant)) may also influence the perception of health professionals about who is best equipped to manage the patient. In our survey we did not distinguish between different outcomes of genetic testing and the majority of patients received a ‘no mutation’ report. The amount of information believed to be important in order to obtain informed consent is likely to differ between groups impacting on the above figures.
Concerns regarding time constraints may play a role as well. In the 2005 study of Ardern-Jones, it was argued that a lack of time largely explained why surgeons might not discuss all aspects or consequences of genetic testing (1). Future studies could investigate if it is more cost-effective to include a genetic counselling service in the clinical pathway than expecting surgeons and medical oncologists to fulfil a role in the counselling themselves (5).

In the attitudinal study of Ardern-Jones, information overload came up as a concern (1). However, health professionals in our study trial reported that patients seemed to cope well with the added stress, time and effort of participating or found the experience stressful but beneficial.

Two limitations of this study should be noted. First, views were collected after completion of the trial and recall bias may therefore limit the interpretation of the results. However, this is the first study which investigated the views of health professionals actually involved in offering TFGT. Second, there was an omission in our questionnaire, leading to the clinical geneticists missing as an option in our question on who would be the best professional to offer TFGT. Inclusion of clinical geneticists as an option could have led to different answers.

To conclude, TFGT seems to be highly acceptable to health professionals involved in delivering TFGT in the trial. With costs expected to become lower in the future, financial barriers will be overcome. Further research is needed to determine the best health professional to initially offer TFGT and explain the implications of TFGT although this is likely to vary with local circumstances. What is essential is that whoever makes the initial offer and/or organises the genetic test that there is a foolproof pathway for all patients to receive timely formal post-test genetic counselling including interpretation of the test result with respect to the tested woman
and her family’s future risk of cancer. We expect TFGT to become part of standard clinical care for high risk patients in the near future.

**Acknowledgements**

This study was funded as part of a Priority-Driven Collaborative Research Scheme grant that was jointly supported by Cancer Australia, Cancer Council and the National Breast Cancer Foundation (ID 630405). Bettina Meiser is supported by a Career Development Fellowship Award from the National Health and Medical Research Council Australia and a Cancer Institute New South Wales Career Development Fellowship. Kirsten Douma is supported by a Fellowship Award from the Dutch Cancer Society (UVA 2011-4918). We thank the health professionals who participated in this study. We gratefully acknowledge the support and endorsement of the Psycho-oncology Cooperative Research Group (PoCoG) for this project.

**Conflict of interest:** No conflict of interest are reported.
References


Legends

Figure 1: Improvements needed to enable integration of TFGT into future standard care
Figure 2a: What level of risk of carrying a breast cancer gene fault would you need to feel that TFGT is worthwhile?
Figure 2b: What costs would be acceptable for TFGT to be integrated into standard care in the future?

Table 1: Health professionals’s view on six potential advantages and five potential disadvantages of TFGT (n=36)
Table 2: Health professionals’ view on the best person to offer TFGT to the patient
Figure 1: Improvements needed to enable integration of TFGT into future standard care

- Turnaround time genetic testing results
- Access to services offering TFGT
- Information provided to patients about TFGT
- Access to genetics services to discuss TFGT results
- Education for staff and services about TFGT

Choose

- (Strongly) agree
- Neither agree nor disagree
- (Strongly) Disagree
Figure 2a: Perceived minimum mutation carrier risk to make TFGT worthwhile

Figure 2b: Perceived acceptable cost of genetic testing and counselling for TFGT to be integrated into future standard care
Table 1: Health professionals’ view on six potential advantages and five disadvantages of TFGT (n=36)

<table>
<thead>
<tr>
<th></th>
<th>Non-genetic health professionals N (%)</th>
<th>Genetic health professionals N (%)</th>
<th>Total N (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Advantages</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Rapid turnaround time for genetic test results</td>
<td>19 (90%)</td>
<td>12 (80%)</td>
<td>31 (86%)</td>
</tr>
<tr>
<td>Ability to offer genetic testing to high risk patients</td>
<td>15 (71%)</td>
<td>11 (73%)</td>
<td>26 (72%)</td>
</tr>
<tr>
<td>Being involved in a clinical trial</td>
<td>13 (62%)</td>
<td>9 (60%)</td>
<td>22 (61%)</td>
</tr>
<tr>
<td>Working collaboratively with research and clinical staff</td>
<td>10 (48%)</td>
<td>9 (60%)</td>
<td>19 (53%)</td>
</tr>
<tr>
<td>Information/education/resources provided to participants</td>
<td>8 (38%)</td>
<td>6 (40%)</td>
<td>14 (39%)</td>
</tr>
<tr>
<td>Patient interest and enthusiasm for being involved in the trial</td>
<td>6 (29%)</td>
<td>9 (60%)</td>
<td>15 (42%)</td>
</tr>
<tr>
<td><strong>Disadvantages</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>More time/effort involved compared to standard care</td>
<td>9 (43%)</td>
<td>6 (40%)</td>
<td>15 (42%)</td>
</tr>
<tr>
<td>Managing extra stress/anxiety of patients caused by participating in trial</td>
<td>0 (0%)</td>
<td>4 (27%)</td>
<td>4 (11%)</td>
</tr>
<tr>
<td>Inconclusive genetic testing results confusing in high risk patients</td>
<td>2 (10%)</td>
<td>6 (40%)</td>
<td>8 (22%)</td>
</tr>
<tr>
<td>Managing patient stress/anxiety caused by genetic testing results</td>
<td>1 (5%)</td>
<td>3 (20%)</td>
<td>4 (11%)</td>
</tr>
<tr>
<td>Patient uncertainty waiting for genetic testing results</td>
<td>3 (14%)</td>
<td>3 (20%)</td>
<td>6 (17%)</td>
</tr>
</tbody>
</table>
Table 2: Health professionals' view on the best person to offer TFGT to the patient

<table>
<thead>
<tr>
<th>Professional group responding*</th>
<th>Surgeon N (%)</th>
<th>Medical oncologist N (%)</th>
<th>Radiation oncologist N (%)</th>
<th>Specialist in genetics N (%)</th>
<th>Breast cancer nurse N (%)</th>
<th>Genetic counsellor N (%)</th>
<th>Clinical trial nurse N (%)</th>
<th>Genetic counsellor embedded in breast cancer service N (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Make the initial offer to patient</td>
<td>NG (N=21)</td>
<td>19 (90)</td>
<td>4 (19)</td>
<td>2 (10)</td>
<td>3 (14)</td>
<td>2 (10)</td>
<td>2 (10)</td>
<td>0 (0)</td>
</tr>
<tr>
<td></td>
<td>G (N=15)</td>
<td>11 (73)</td>
<td>3 (20)</td>
<td>0 (0)</td>
<td>2 (13)</td>
<td>1 (7)</td>
<td>3 (20)</td>
<td>0 (0)</td>
</tr>
<tr>
<td>Provide the necessary information to help the patient make a decision about TFGT</td>
<td>NG (N=21)</td>
<td>9 (43)</td>
<td>4 (19)</td>
<td>2 (10)</td>
<td>7 (33)</td>
<td>8 (38)</td>
<td>11 (52)</td>
<td>4 (19)</td>
</tr>
<tr>
<td></td>
<td>G (N=15)</td>
<td>2 (13)</td>
<td>3 (14)</td>
<td>0 (0)</td>
<td>13 (62)</td>
<td>0 (0)</td>
<td>7 (33)</td>
<td>0 (0)</td>
</tr>
<tr>
<td>Give, discuss and explain discuss results of genetic testing</td>
<td>NG (N=21)</td>
<td>2 (10)</td>
<td>3 (14)</td>
<td>0 (0)</td>
<td>8 (53)</td>
<td>0 (0)</td>
<td>9 (60)</td>
<td>0 (0)</td>
</tr>
<tr>
<td></td>
<td>G (N=15)</td>
<td>0 (0)</td>
<td>0 (0)</td>
<td>0 (0)</td>
<td>0 (0)</td>
<td>3 (20)</td>
<td>1 (7)</td>
<td>10 (67)</td>
</tr>
</tbody>
</table>

Legend: *More than one answer possible; hence percentages in each row add up to more than 100%. **NG=non-genetics health professionals (surgeons, oncologists, breast care nurses)
*G=genetics health professionals (clinical geneticists, genetic counsellors, oncologists with specialist training in hereditary cancer)