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13. Abstract ***(Maximum 200 Words)*** *(abstract should contain no proprietary or confidential information)*

The proposed study is a prospective longitudinal examination of the impact of genetic testing for breast-ovarian cancer susceptibility on the marital relationships of women at risk as well as the impact upon the quality of life of their husbands. This study is a companion proposal to an ongoing, DOD-funded prospective study that is evaluating the outcomes of genetic testing for breast-ovarian cancer susceptibility on individuals from hereditary breast cancer families. The proposed study extends the ongoing DOD-funded study to examine the impact of genetic testing upon the marital relationship and the psychosocial impact on the spouse. Specific aims of the study are: 1) to evaluate the short- and long-term impact of BRCA 1/2 testing on psychological distress (both general and cancer-specific) of spouses of participants in genetic testing programs; 2) to evaluate the short- and long-term impact of BRCA 1/2 testing on the marital relationships of participants and spouses, and examine whether marital satisfaction is an early predictor of psychological morbidity among participants in genetic testing programs and their spouses; 3) to examine the association between spouse responses during the testing process and carriers' distress post-notification. Women and their husbands will complete measures of general and cancer-specific distress, marital satisfaction, and marital strain imposed by the testing process.

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INTRODUCTION

The *Impact of BRCA1/2 Testing on Marital Relationships* is a prospective longitudinal study designed to examine the impact of genetic testing for breast-ovarian cancer susceptibility on the marital relationships of women at risk as well as the impact upon the quality of life of their husbands. This study is a companion proposal to an ongoing, DOD-funded prospective study that is evaluating the outcomes of genetic testing for breast-ovarian cancer susceptibility on women from hereditary breast cancer families (C. Lerman, Principal Investigator, Georgetown University Medical Center). This second study extends the ongoing DOD-funded study to examine the impact of genetic testing upon the marital relationship and the psychosocial impact on the spouse. Specific aims of this study are: 1) to evaluate the short- and long-term impact of BRCA1/2 testing on psychological distress (both general and cancer-specific) of husbands of participants in genetic testing programs; 2) to evaluate the short- and long-term impact of BRCA1/2 testing on the marital relationships of participants and husbands, and examine whether marital satisfaction is an early predictor of psychological morbidity among participants in genetic testing programs and their spouses; 3) to examine the association between spouse responses during the testing process and carriers' distress post-notification.

Background and Study Rationale

Recent molecular studies have led to the identification of a major breast-ovarian cancer susceptibility gene, called BRCA1 (Miki et al., 1994). About 5-10% of all breast cancer cases are attributed to BRCA1 mutations. Healthy women who have inherited BRCA1 mutations have 80-90% lifetime risk of breast cancer and 40-65% risks of ovarian cancer (Easton et al., 1993). Among women who are affected with breast cancer, those with BRCA1 mutations are believed to have a 38% 10-year risk and a 65% cumulative risk of second primary breast cancers (Easton et al., 1995). A second susceptibility gene (BRCA2) is estimated to account for an additional 5% of breast cancer cases (Wooster et al., 1995) and is also associated with an elevated risk of ovarian cancer (Berman et al., 1996; Thorlacius et al., 1996). The prevalence of mutations in BRCA1 and BRCA2 is higher in certain subgroups of breast cancer patients, such as Jewish women, younger women and those with family histories of cancer.

Evaluations of the psychosocial impact of BRCA1/2 testing indicate that, although BRCA1/2 testing may not generate significant psychological morbidity (Lerman et al., 1996), a subset of gene mutation carriers may be vulnerable to test-related psychological distress (Croyle et al., 1997). As yet, nothing is known about the impact of BRCA1/2 testing on husbands of testing participants. Spouses may be vulnerable to psychological distress for several reasons. First, if the couple has children, the husband may worry about the threat of a possible altered breast cancer gene passed on to the children. If the couple is still planning on having children, the husband may have concerns about future childbearing. Indeed, our prior research suggests that concerns about implications for altered breast cancer gene passed on to children are important to high-risk women (Lerman et al., 1995) and that testing may impact on reproductive plans (Lerman et al., 1994).

Second, a husband may worry about the later development of cancer in his wife. The expectation of caregiving to an ill spouse, as well as worry about possible loss of the wife to cancer may each cause distress. Third, if the wife is distressed by the risk notification, her distress is likely to be conveyed to her spouse and is likely to lead to the husband becoming distressed. Indeed, studies of cancer patients and their spouses have suggested that spousal distress levels are highly correlated (Northouse, 1988).

In addition to impacting husbands' distress, genetic testing may place strain on the marital relationship. Our pilot data indicate that most couples discuss decisions (e.g., whether or not to undergo testing). Difficulty in communication during these discussions can result in less satisfaction with the marital relationship for both partners. Our prior research among cancer patients suggests that, if the patient feels constrained in his or her

ability to talk with the spouse about emotional concerns, this leads to decreased marital satisfaction and psychological distress for patients (Manne et al., 1997; Manne et al., 1997). A second source of marital strain may be the support-related interactions between women and their spouses. Individuals typically seek support from their spouses when they are distressed and unsupportive responses by spouses are a main determinant of marital dissatisfaction (Gottman et al., 1989). If genetic testing participants do not receive the expected spousal support, marital strain is likely. In addition, couples who begin the testing process with marital problems may be particularly vulnerable to increased marital strain when they receive notification of a genetic mutation. Most of the psychological literature dealing with families at high risk for breast-ovarian cancer focuses on either the affected individual or the person genetically at risk (Lerman et al., 1996; Croyle et al., 1997). Almost no attention has been paid to the spouse of the individual at risk or the spouse's response to notification of carrier status. There are a limited number of studies which examine the psychological impact on spouses of predictive testing programs for Huntington's disease (HD) which indicate that partners of HD carriers experience marital distress (Codori et al., 1994; Quaid et al., 1995; Tibben et al., 1993). Tibben et al. (1997) found that partners had similar patterns of psychological distress over a 6-month follow up compared to tested individuals. Both carriers and their partners evidenced distress returning to pretest levels over the 3 year follow up. However, among noncarriers, different patterns were found for carriers and their partners. Whereas noncarriers' partners had significantly lower levels of intrusive thoughts and avoidance at the 3 year follow up, the levels of intrusive and avoidant thoughts were at pre-test levels for noncarriers themselves. Partners of carriers who had children were more hopeless and distressed than partners without children, illustrating the important role of worries about children. Given that the illness course of HD is difficult and disease prevention is not possible, it is not known whether similar psychological responses occur among partners of BRCA carriers.

Significance of the Study

As yet, the impact of genetic testing for breast cancer on spouses or on the marital relationship has not been studied. This study will be the first to examine psychological outcomes for spouses. In addition, prior work has not examined the role of the spouse's support/lack of support on the participant's psychological responses to the genetic testing experiences. Our studies of breast cancer patients indicate that women who experience many breast cancer worries and feel constrained in their ability to talk to their spouse are more likely to have emotional distress during their treatment. The proposed study will examine this possibility among high risk omen who receive positive results for mutations in BRCA1/2.

This research would make several important contributions to the empirical literature as well as have implications for genetic testing programs. First, although it is well-known that carrier notification has implications for the whole family, the majority of studies to date have examined the impact at an individual level, neglecting effects on family members. This study would quantify the impact on the spouse, and identify those spouses who are vulnerable to a poor psychological outcome after testing. Distressed spouses may benefit from adjunctive psychological support during the testing process. Second, the results may have implications for genetic testing programs. If disclosure of results causes marital strain for some participants, then participants might benefit from the inclusion of spouses in disclosure sessions or training in more effective methods of facilitating disclosure of results. Identification of couples "at risk" for marital and psychological strain during this process can be facilitated. Third, those participants with low levels of spousal support might be targeted for adjunctive therapies that bolster social support. This information would help providers anticipate and more effectively deal with problems that may arise in clinical genetics programs.

In addition, this research would have important implications for the way in which genetic counseling and testing programs are currently being conducted. If disclosure of results causes strain for some participants, then participants might benefit from the inclusion of spouses in disclosure sessions or training in more effective methods of facilitating disclosure of results to family members. If mutation carriers who have more distressed marriages at the onset of the testing process or carriers who perceive more constraints in their ability to talk with their husbands about concerns related to breast cancer are particularly vulnerable to poor psychological

outcomes, these participants can be identified early and these women can be offered adjunctive therapies that bolster social support from other sources, or offered marital counseling. The information provided by this study would assist genetic testing providers to anticipate and more effectively deal with problems that may arise in clinical genetics programs.

Preliminary Studies

Lerman et al. (1996) examined 279 members of breast-ovarian families and found that noncarriers of BRCA1 mutations showed significant decreases in depression compared to carriers and decliners of testing one month post-notification (1996). There were no significant changes in carriers or decliners. These results indicate that, at least in the short term, the majority of high risk individuals do not evidence significant psychological distress. However, there was variability in the distress measure, indicating that education or other psychological factors might contribute to differences in psychological impact of testing. This study also did not identify individual differences in responses to testing, including the impact on family relationships.

Manne conducted a pilot study of 20 high risk women participating in the genetic testing program for breast-ovarian cancer at Memorial Sloan-Kettering Cancer Center. Women were administered questionnaires pre-genetic counseling, one month post-genetic counseling and one month post-test notification (1/14 tested positive). Pre-counseling: 90% of women discussed the decision to seek testing with their spouses and sought spouse advice. On average, spousal advice was rated as having "somewhat" of a role in the testing decision. Most women planned to disclose results to their husbands (90%). On average, participants anticipated a little difficulty in sharing results and felt husbands would be "somewhat" supportive during the discussion of test results. Post-counseling results indicated that most participants discussed the results of the counseling session with their husbands. On average, they rated their spouses as "somewhat" supportive and felt the process had placed "a little" strain on the marital relationship. A subsample of 20% of participants reported that their spouses had avoided discussing the issue and reported that the process placed some strain on the relationship. One month post-notification: only 1/14 participants were carriers (too small for statistical comparisons). All but one of the women had disclosed results to their spouses. Whereas marital strain imposed by testing was relatively low in the majority, 30% stated their spouses "somewhat avoided" discussing the testing and half rated their spouses as "somewhat supportive" (3 on a 5 point Likert scale).

BODY

Technical Objectives

We are conducting a prospective study to evaluate the impact of genetic testing for breast-ovarian cancer susceptibility on the marital relationships of women at risk as well as the impact upon the quality of life of their husbands. This study is a companion proposal to an ongoing, DOD-funded prospective study that is evaluating the outcomes of genetic testing for breast-ovarian cancer susceptibility on women from hereditary breast cancer families (M. Schwartz. Principal Investigator, Georgetown University Medical Center). The proposed study extends the ongoing DOD-funded study to examine the impact of genetic testing upon the patient's perceptions of the marital relationship and the psychosocial impact on the spouse.

Aim 1: To evaluate the short- and long-term impact of BRCA1/2 testing on psychological distress (both general and cancer-specific) of husbands of participants in genetic testing programs. At 1- and 6-months post-notification, husbands of women who have a confirmed BRCA1/2 mutation will have increased psychological distress (general and cancer-specific) compared with husbands of non-carriers (NC) and test decliners (TD). At 12 months, there will be no differences between the three groups.

Aim 2: To evaluate the short- and long-term impact of BRCA1/2 testing on the marital relationships of participants and husbands, and examine whether marital satisfaction is an early predictor of psychological

morbidity among participants in genetic testing programs and their spouses. It is hypothesized that, at 1- and 6-months post-notification, husbands of women who have a confirmed BRCA1/2 mutation (Mc) will have decreased marital satisfaction compared with husbands of non-carriers (Nc) and test decliners (Td). At 12 months, there will be no differences between the three groups. It is hypothesized that, for participants with high levels of marital satisfaction at baseline, marital satisfaction will not change significantly from pre- to post-notification (Mc, Nc, Td). For participants with low levels of marital satisfaction at baseline, carriers' marital satisfaction will decrease over the one year follow-up whereas noncarriers' and decliners' marital satisfaction will not change over the 1 year follow-up. Similar predictions are made for husbands.

Aim 3: To examine the association between spouse responses during the testing process and carriers' distress post-notification. Carrier women who evidence high levels of cancer-related worries and experience more constraints in their ability to talk to their spouse about the testing experience will evidence more psychological distress and lower marital satisfaction at 1-, 6- and 12-months post-notification.

Methods

Overview of Study Design

Parent DOD study (M. Schwartz, Principal Investigator). The parent study is ongoing at Georgetown University Medical Center. All women recruited for the parent study are recruited from this study site. In this prospective longitudinal study, eligible women are invited to participate in a baseline telephone interview. Subsequently, they are invited to participate in a Pre-Test education session and are offered a test for the BRCA1 mutation known to be segregating in their family. The results of this test are presented at an individual genetic counseling session. All women receive follow-up phone interviews at 1-, 6-, and 12-months post-disclosure. Persons who agree to participate in the study but decline Pre-test education and/or mutation status determination receive the same telephone interviews. Analyses compare mutation carriers, noncarriers and participants who decline testing.

Participants

Eligibility criteria

Familial risk subjects. Persons eligible for this study are married individuals, ages 18 and older, who are members of HBOC families in which as disease conferring mutation has been identified, and their spouses. We estimate that about 30% of the sample will be affected (statistical analyses will control for status-affected vs. at-risk). Subjects are ineligible for this study if either they have a psychiatric or cognitive disorder which precludes informed consent.

Based on current figures for accrual for the ongoing study, 5 women per week will be eligible for participation. Study accrual will span two and one half years. Seventy percent of the pool of 650 women will be married (N= 455). Of these 455, current figures from the ongoing study suggest that 30% (137) will decline mutation status testing. If 318 women elect to receive test results, about 145 (32%) should be mutation carriers and 172 (38%) noncarriers (there are more non-carriers since some subjects will be at 25% risk). Ten percent of participants drop out of the study by the one year follow-up, with a final sample size of 410: N, carrier group=130, N, noncarrier group=152, N, decline testing=130. Women will be eligible for the study if their spouse declines participation (this is relevant to sample size for Aim 3). From the PI's ongoing study of couples with cancer, it is anticipated that 10% of spouses will decline participation. Thus the final sample size of husbands is 370 (of which 110 are carrier couples). Given our current sample, we expect that 65% of subjects will be white, 25% African American, 5% Hispanic, and 5% Asian/Pacific Islander or Native American.

Procedures

All study procedures for familial risk subjects are conducted at Georgetown University Medical Center. After informed consent is received from the female participant and consent is given to contact the participant's spouse, the spouse's name, address and telephone number will be provided (by telephone) to the Research Study Assistant at Fox Chase Cancer Center by the Research Study Assistant at Georgetown. All study procedure activities for spouses will be conducted at Fox Chase Cancer Center.

Identification of subjects. Procedures for identifying eligible HBOC families are described in detail in the funded DOD parent grant. We will provide an abbreviated description of study procedures and focus more on spousal recruitment procedures.

Recruitment of participants. Procedures are being used successfully in the ongoing study that forms the basis for this proposal. Informed consent procedures are consistent with the guidelines of the NIH/National Center for Human Genome Research (NCHGR) cancer Studies Consortium.

Recruitment of spouses. The introductory letter will include a description of the desire for spouse participation and a rationale for the inclusion of spouses in the study. When women are contacted for oral consent for the baseline telephone interview, permission to contact the spouses will be obtained. It will be stressed that permission to contact spouses is not a requirement for participation in the individual portion of the study. A letter will be sent to spouses immediately after permission is given to contact them. Written informed consent for the telephone interviews with the spouses will be obtained.

Assessment Procedures for Familial Risk Participants

Baseline Telephone Interview: Telephone interviews are used successfully in ongoing data collection. A subset of the measures already being administered in the parent DOD-funded study will be used for data analyses in the current study. These measures are: cancer-specific distress (RIES), general distress (Hopkins Symptom Checklist-25), and general family relationship quality (Family Relationship Inventory). The following additional measures will be administered (see measures for complete description): spouse's support and encouragement for genetic testing, whether or not decision to seek testing was discussed with the husband, plans to disclose test results to the spouse, degree of strain/positive impact of testing process on marital relationship, degree of desire to talk about genetic testing, actual talking about genetic testing, perceived negative behaviors engaged in by spouse, protective buffering, closeness of the marital relationship, and marital satisfaction. Participants who decline testing will be asked to fill out a subset of the measures that are relevant to them (distress, marital satisfaction, family relationship quality).

At the end of the interview, participants are invited to attend a Pre-Test Education session. Those who decline are asked if we may contact them for follow-up interviews, and contact their spouses for potential recruitment for the spouse part of the study.

In addition to the information already being collected (cancer-specific and general distress), the following will be administered: plans to disclose test results to the spouse, strain of testing process on marital relationship, perceived constraints in talking to the spouse, and marital satisfaction.

A Pre-Test Standard Education Session will be conducted within the next four weeks among consenting subjects. Written consent is obtained from all subjects prior to the education session. A genetic counselor conducts all sessions, under the supervision of a medical oncologist and Dr. Lerman.

Determination of Carrier Status, Genetic Counseling/Disclosure of Genetic Test Results, Cancer Prevention/Surveillance Recommendations. Mutation status tests and counseling are offered to all high risk

individuals. At the patient's discretion, a spouse or companion may be present at this meeting (controlled for in statistical analysis).

Follow-up Genetic Counseling is conducted by telephone about two weeks after disclosure of mutation status (only for those subjects who received test results).

Follow-up Telephone Interviews are conducted at 1-, 6- and 12-months after the individual genetic counseling session for subjects who received results of mutation testing. Subjects who declined to be tested will be contacted for follow-up at these time points after the Pre-Test Education date of their index family member (proband). Telephone interviews are conducted (by blinded interviewers) to reassess measures included in the ongoing study.

Data collection procedures: Spouses. After spouses give written consent for the telephone interview, they will be administered surveys by phone at the same times as the wives are administered surveys: baseline, 1-, 6- and 12-months after the individual genetic counseling session for spouses of subjects who received the test results.

Telephone interviews will be supervised by Dr. Audrain and Schwartz (women) and Dr. Manne (spouses). Telephone interviews are used successfully in ongoing data collection. At the end of the interview, women are invited to attend a Pre-Test Education session. Those who decline are asked if we may contact them for follow-up interviews.

Measures given to both partners, all time points: 1) Cancer-Specific Distress: The Impact of Events Scale (IES) is a 21-item scale that has intrusion and avoidance subscales; 2) Hopkins Symptom Checklist-25: a 25-item Likert scale indicating severity of anxiety and depression; 3) Dyadic Adjustment Scale: widely-used 32-item scale assessing marital satisfaction (Kagan et al., 1991). Subscales include cohesion, satisfaction, affection and consensus; 4) Marital Strain: 2 items assessing marital strain during testing process. Additional measures for women: 1) Baseline: a) whether decision to seek genetic testing was discussed with spouse; b) whether subjects plan to disclose test results to spouse; c) constraints in talking with husband about breast cancer and testing (5 items; adapted from Lepore's (Lepore et al., 1996) scale); 2) Post-notification: a) whether or not test results were disclosed; b) spouse supportive/unsupportive responses during discussion; c) if no disclosure was made, whether or not disclosure is planned; d) constraints. Additional measures for husbands: 1) Baseline: a) whether decision to test was discussed; 2) Post-notification: a) whether test results were disclosed; 3) All time points: Cancer-specific distress/concerns (in addition to IES): Worries about testing effects on: a) children; b) childbearing decisions; c) worry about possible cancer diagnosis; d) worry about caregiving responsibilities should the wife be diagnosed.

Data Analysis: **Hypothesis 1:** The two dependent measures (husband IES, HSCL) will be examined individually (i.e., univariate analyses) and together (multivariate analyses) using multifactor fixed effect ANOVA and ANCOVA with blocking on family (women are from hereditary families). The 1-, 6-, and 12-month post-notification responses will first be analyzed separately with baseline response used as a covariate. The two dependent variables will be analyzed together using repeated measures ANOVA, with the between groups factor as test group (Mc, Nc, Td). The independent variables include: (1) whether the woman is affected and (2) whether the husband was present during counseling and disclosure of test results. We will also explore the influence of other relevant sociodemographic variables and interactions (e.g. husband education, ethnicity). These tests of interaction effects will identify variables which modify the impact of testing among husbands of carriers, noncarriers, and test decliners. **Hypothesis 2:** The analysis of DAS scores of husbands and wives will be analyzed separately using the same ANOVA and ANCOVA approaches outlined above for husband distress. For the second question, we will examine the influence of marital satisfaction at baseline on post-notification marital satisfaction of women and husbands. High and low marital satisfaction will be determined by a median split on the baseline DAS variable. A repeated measures MANOVA will be conducted separately for the two indicators of marital satisfaction (general marital satisfaction and marital strain). Baseline general marital

satisfaction will be entered into the analysis. We will examine differences in marital satisfaction over time between the three groups (Mc, Nc, Td) using ANOVA approaches outlined above. It is predicted that carriers and husbands with low marital satisfaction at baseline will evidence more marital dissatisfaction post-notification than carriers with high marital satisfaction or noncarriers and test decliners with low or high marital satisfaction. **Hypothesis 3:** This analysis will be conducted on women who are carriers. We will use separate regression analyses with women's psychological distress and marital satisfaction at 1-, 6- and 12-months post-notification as dependent variables. We enter first into the equation sociodemographic variables which predict distress and marital satisfaction. Next, we will enter: 1) baseline distress, 2) intrusive thoughts about cancer, 3) constraints in talking with the husband, 4) the interaction term between intrusive thoughts and constraints (centered). It is anticipated that the interaction term will be significant. **Power Analysis:** The design of the study is essentially one of clustered sampling, since study subjects are identified on the basis of family membership. Outcome measures will be considered at the four time points. Between participant factors will include test result (carrier, noncarrier, decliners). An interaction effect would reveal a different course of psychological responses over time.

Preliminary Results

We will report changes in distress and marital dynamics across the 6 month-post disclosure time period. Test results were classified as "positive" if a deleterious, risk-conferring mutation was identified in BRCA 1 or 2 (N = 33 at 1 year follow up). Results were classified as "uninformative" if probands tested negative for a deleterious mutation in the genes, or if an ambiguous test result was obtained (e.g., a genetic variance of uncertain significance) (N= 69 at one year follow up). In both of these cases, the possibility of hereditary breast cancer could not be definitely ruled out. "Definitive negative" results applied only to relatives who tested negative for the mutation in their family (N = 13 at one year follow up).

Sample

The mean age of the spouses was 53 years. 94% were Caucasian. Spouses had been married 1 to 55 years (median time=22 years). The mean age of genetic testing participants was 50 years. 97% were caucasian.

Baseline to 6-month post-disclosure: General Psychological Distress, Cancer-Specific Psychological Distress, General Marital Satisfaction, and Marital Strain Associated with Testing Process

Means and standard errors for the main variables of interest are reported in the table below. Participant and partner scores are reported separately. **Lower** scores for cancer-specific IES, psychological distress, and state anxiety indicate better psychological profiles. **Higher** scores for marital adjustment indicates a greater satisfaction with the marital relationship.

	Participant			Spouse		
	Carrier	Non-Carrier	Uninformative	Carrier	Non-Carrier	Uninformative
HSCL total						
Baseline	40.70 (14.35)	38.77 (12.68)	37.65 (9.93)	32.17 (4.20)	33.00 (4.94)	34.58 (7.99)
1 Month	38.77 (11.07)	34.77 (11.52)	34.49 (8.57)	33.77 (6.95)	32.60 (4.56)	34.26 (7.44)
6 Month	35.99 (12.00)	34.46 (8.58)	34.79 (8.66)	34.11 (8.44)	34.80 (7.66)	32.59 (7.08)
State Anxiety						
Baseline				10.39 (9.21)	6.33 (8.16)	10.84 (10.9)
1 Month				10.28 (9.97)	11.16 (10.51)	9.96 (10.19)
6 month				9.05 (10.93)	13.17 (15.11)	9.00 (9.04)
IES Total						
Baseline	***20.57 (17.76)***	***19.92 (18.45)***	***21.33 (16.63)***	20.00 (22.15)	8.00 (9.89)	28.36 (22.40)
1 month	***21.57 (21.23)***	***13.62 (21.35)***	***12.69 (15.59)***	20.57 (21.86)	8.00 (11.32)	15.42 (19.78)
6 month	***23.29 (23.24)***	***14.07(15.57)***	***12.82 (17.17)***	10.71 (20.75)	6.00 (5.65)	11.73 (14.79)
Marital Satisfaction						
Baseline	113.2 (18.92)	116.2 (12.34)	118.2 (17.61)	124.9 (16.2)	125.0 (9.8)	119.9 (9.8)
1 month	111.9 (27.23)	114.8 (14.5)	116.5 (14.3)	127.7 (14.9)	120.6 (7.8)	117.6 (8.5)
6 month	110.6 (22.1)	117.1 (14.8)	114.8 (18.0)	125.8 (17.4)	125.8 (9.73)	112.7 (9.55)
Marital Strain						
Baseline	.42 (.90)	.10 (.32)	.11 (.40)	*.26 (.45)*	*1.17 (1.6)*	*.25 (.77)*
1 Month	.18 (.53)	.00 (.00)	.22 (.64)	*.37 (.76)*	*0.00 (0)*	*.22 (.68)*
6 month	.35 (.79)	.00 (.00)	.19 (.75)	*.26(.65)*	*0.00 (.00)*	*.14 (.68)*

Note. Bold and italics indicate a significant Group X Time interaction effect. Italics indicate significant trend (p= .06).

To date, our findings suggest that testing participants who receive negative or indeterminate results report decreases in IES scores over the six month period after disclosure of test results, while participants notified that they are carriers of the BRCA 1 or BRCA 2 gene do not show a significant decrease in IES scores over the same time period. Partners evidence no significant changes in either general psychological distress or cancer-specific distress (IES). While general marital satisfaction evidences no changes for either participants or spouses, cancer-specific marital strain decreases among spouses of unaffected carrier participants, while it is stable among spouses of carriers and spouses of participants given indeterminate testing results.

Statement of Work

Task 1 -- Month 1
Refine measures and train interviewers, plan communication between two sites, Georgetown and Fox Chase.

a. The measures have been finalized.
b. Questionnaires have been Xeroxed.
c. Resident Assistants have been trained to conduct the interviews.
d. The procedures for sharing information between Georgetown and Fox Chase have been developed and tested.

Task 2 -- Months 2-29
Subject Recruitment and Data Collection as of June 1, 2000

a. 434 eligible individuals have been approached at Georgetown University for interest in participating in the study. 291 (67%) of these women have given consent for the study. 271 spouses have been approached at FCCC for interest in the study. 191 (70%) gave informed consent.

b. 196 genetic testing participants have completed baselines surveys, 153 have completed one-month, 133 have completed 6-month, and 101 have completed one year follow ups. 165 spouses have completed baselines, 127 have completed one month, 95 have completed 6 month, and 85 have completed one year follow-ups.
c. Interviews have been supervised by Drs. Manne (FCCC) and Audrain (GUMC) on a weekly basis.

Task 3 -- Months 1-3
Data screens set up; data entry begun at Fox Chase

a. Data at GUMC are collected using Computer Assisted Telephone Interviewing (CATI) and screens have been established at that site for this purpose.
b. Data at FCCC are not collected using CATI. Data entry screens have been established.
c. Data entry has been ongoing for several months at Fox Chase Cancer Center.

Task 4 -- Months 29-36
Completion of follow-up interviews

a. Follow-up interviews will be completed for accrued patients and spouses.

Task 5 -- Months 30-48
Data analyses and publications

a. Encrypted data is being transferred on an ongoing basis by email from GUMC to FCCC.
b. Data analyses are being been conducted to test the impact of testing and declining upon partners' marital satisfaction, marital strain, and psychological distress of husbands.
c. Complete all post-disclosure follow up surveys for participants (GUMC) and spouses (FCCC).
d. Complete three manuscripts from the study data. Paper one will focus on the baseline data; paper two will focus on the one month follow-up data; paper 3 will focus on the 12 month follow-up data, if there are sufficient numbers of spouses in each test outcome group to conduct between-group comparisons.

KEY RESEARCH ACCOMPLISHMENTS

As we are still collecting data and the findings reported above should be considered preliminary, there are no key research accomplishments yet.

REPORTABLE OUTCOMES

The one-month follow-up data were presented at the Society of Behavioral Medicine meeting in Seattle,Washington, in March 2001. We plan on publishing three manuscripts from this data set.

CONCLUSIONS

Our baseline data (reported in our last progress report) suggested that the degree to which couples talk about, and feel comfortable talking about, their feelings and concerns about genetic testing are associated with psychological distress for both participants in these programs and their spouses. Spouse support and encouragement for the genetic testing decision is also associated with less anxiety on the part of participants. Our six-month follow-up data indicated that cancer-related distress decreased among non-carriers and participants given indeterminate status results, while it remained stable in mutation carriers. There were no differences in distress among spouses of participants in the testing-outcome groups. Genetic testing-related

marital strain decreases among spouses of non-carriers, while it is stable among spouses of carriers and spouses of participants given indeterminate testing results.

We are going to use our extension to collect follow-up data (1, 6 and 12 month follow up data) on participants and spouses, and to complete manuscript write-up. Because there were fewer participants in the study than anticipated, particularly in the post-disclosure "true negative" group, we are extending out accrual time line and thus extending our follow-up time line. However, as of June 1, 2001, we will no longer be accruing new participants into the study and will only be obtaining follow ups.

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APPENDICES

POSTER PRESENTATION

PSYCHOLOGICAL AND MARITAL IMPACT OF BRCA 1 / 2 TEST DISCLOSURE ON PARTICIPANTS AND SPOUSES

Sharon Manne, Ph.D., Fox Chase Cancer Center, Janet Audrain, Ph.D., Caryn Lerman, Ph.D., Georgetown University Medical Center, and Jessica Ray, B.S., Fox Chase Cancer Center

This study examined the psychological and marital relationship impact of BRCA 1 / 2 testing on participants in a genetic testing program and their spouses. 132 individuals from hereditary breast-ovarian cancer families were divided into affected probands (N = 96) and unaffected relatives (N= 36) and their spouses. Participants completed surveys prior to undergoing a pre-test education session and at one month after test disclosure. Surveys examined general and cancer-specific distress, general and test-specific marital satisfaction, and spouse support surrounding testing.

Of the 96 probands, 31% (N = 30) received positive BRCA 1/ 2 test results and 69% (N= 66) received uninformative test results. Among the 36 relatives, 47% (N= 17) received positive test results and 53% (N = 19) received definitive negative test results. Among affected probands and their spouses, there were no significant differences in distress and marital outcomes. Among unaffected relatives, those relatives receiving negative results exhibited decreases in cancer-specific distress, while those receiving positive results exhibited increases. Spouses of unaffected relatives did not exhibit differences in general or cancer-specific distress. However, spouses of unaffected relatives receiving negative results showed significant decreases in unsupportive responses, while spouses of those receiving positive results exhibited little change.

These results indicate that genetic testing has little psychological or marital impact on participants and spouses who begin the testing process affected by cancer. However, unaffected relatives who receive a positive test result may be adversely impacted, especially if their spouses respond in an unsupportive manner.

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