BRCA1 and BRCA2 DIAGNOSIS AND TREATMENT

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DISCLAIMER: Please recognize that I am not a Medical Doctor. I have been an avid student researching and studying prostate cancer as a survivor and continuing patient since 1992. I have dedicated my retirement years to continued research and study in order to serve as an advocate for prostate cancer awareness, and, from a activist patient's viewpoint, to voluntarily help patients, caregivers, and others interested develop an understanding of prostate cancer, its treatment options, and the treatment of the side effects that often accompany treatment. There is absolutely no charge for my mentoring – I provide this free service as one who has been there and hoping to make your journey one with better understanding and knowledge than was available to me when I was diagnosed so many years ago. Readers of this paper must understand that the comments or recommendations I make are not intended to be the procedure to blindly follow; rather, they are to be reviewed as my opinion, then used for further personal research, study, and subsequent discussion with the medical professional/physician providing your prostate cancer care.

BRCA1 and *BRCA2* gene mutations and their effect on (in our case) prostate cancer, are not normally understood or tested by the medical profession diagnosing and treating prostate cancer since the *BRCA* gene test is most often only offered to people who are likely to have an inherited mutation, based on personal or family history. Interesting is that the Ashkenazi Jewish population has been found to have two common mutations in the BRCA1 gene (185delAG and 5382insC) and one common mutation in BRCA2 gene (6174delT). It is believed that these three mutations account for 26% of the mutations for breast and/or ovarian cancers in the Ashkenazi Jewish population. An incidence of 2-3% for one of these three common mutations has been identified in the general Ashkenazi Jewish population http://dnatesting.uchicago.edu/sites/default/files/BRCA_7.pdf

Testing to determine if one is positive for either mutation is expensive and can run from hundreds to even thousands of dollars, though in the reference above the expense for the test with that laboratory is $425.00 or likely still near that amount. Health insurers may be hesitant in covering the expense unless there is already known evidence that these gene mutations have occurred in other family members. Thus, if this an inherent trait in your family, this should be brought to the attention

of your health insurer requesting approval of coverage for the test. (See: http://www.breastcancer.org/symptoms/testing/genetic/facility_cost. An importance in knowing, however, is for men with a positive *BRCA2* gene mutation who are diagnosed with prostate cancer, treatment should be early and aggressive because their tumor is more likely to spread than the tumors of men who are *BRCA-2* negative. Active monitoring of any type is probably not a good option for *BRCA2*-positive patients.

It would likely be reasonable to at least discuss *BRCA1* and *BRCA2* testing with your treating physician, checking your family history to determine if either *BRCA1* or *BRCA2* mutations were diagnosed in family members, and checking with your health insurer to see if the testing would be covered.

BRCA1 and *BRCA2* are human genes that belong to a class of genes known as tumor suppressors.

In normal cells, *BRCA1* and *BRCA2* help ensure the stability of the cell's genetic material (DNA) and help prevent uncontrolled cell growth. Mutation of these genes has been linked to the development of hereditary breast and ovarian cancer (and also prostate cancer).

The names *BRCA1* and *BRCA2* stand for **br**east **ca**ncer susceptibility gene **1** and **br**east**ca**ncer susceptibility gene **2**, respectively (but also apply to prostate and other cancers).

Men with harmful *BRCA1* mutations also have an increased risk of breast cancer and, possibly, of pancreatic cancer, testicular cancer, and early-onset prostate cancer. However, male breast cancer, pancreatic cancer, and prostate cancer appear to be more strongly associated with *BRCA2* gene mutations.

A positive genetic test result may have important health and social implications for family members, including future generations. Unlike most other medical tests, genetic tests can reveal information not only about the person being tested but also about that person's relatives. Both men and women who inherit harmful *BRCA1* or *BRCA2* mutations, whether they develop cancer themselves or not, may pass the mutations on to their sons and daughters. However, **not all** children of people who have a harmful mutation will inherit the mutation.

Research papers regarding *BRCA1* and *BRCA2* gene mutations:

Prostate cancer-specific mortality and diagnosis with *BRCA1/2*-positive disease
http://tinyurl.com/cpcmc6m

BRCA1 and *BRCA2*: Cancer Risk and Genetic Testing
http://www.cancer.gov/cancertopics/factsheet/Risk/BRCA

http://inthefamily.kartemquin.com/content/getting-tested

Breakdown of *BRCA* (regards breast cancer but also applicable to prostate cancer)
http://breakdownofbrca.blogspot.com/2012/05/brca-fast-facts.html

Poly (ADP-ribose) polymerase (PARP) inhibitors for the treatment of advanced germline*BRCA2* mutant prostate cancer
http://annonc.oxfordjournals.org/content/early/2013/03/21/annonc.mdt074.extract#