Portsmouth Regional Hospital
Cancer Care Center

# Cancer Genetics-by Dr. Prashant Shankar, Medical Oncologist

The etiology of cancer is multifactorial, with genetic, environmental, medical, and lifestyle factors interacting to produce a given malignancy. Knowledge of cancer genetics is rapidly improving our understanding of cancer biology, helping to identify at-risk individuals, furthering the ability to characterize malignancies, establishing treatment tailored to the molecular fingerprint of the disease, and leading to the development of new therapeutic modalities. As a consequence, this expanding knowledge base has implications for all aspects of cancer management, including prevention, screening, and treatment.

Genetic information provides a means to identify people who have an increased risk of cancer. Sources of genetic information include biologic samples of DNA, information derived from a person's family history of disease, findings from physical examinations, and medical records. DNA-based information can be gathered, stored, and analyzed at any time during an individual's life span, from before conception to after death. Family history may identify people with a modest to moderately increased risk of cancer or may serve as the first step in the identification of an inherited cancer predisposition that confers a very high lifetime risk of cancer. For an increasing number of diseases, DNA-based testing can be used to identify a specific mutation as the cause of inherited risk and to determine whether family members have inherited the disease-related mutation.

Correctly recognizing and identifying individuals and families at increased risk of developing cancer is one of countless important roles for primary care and other health care providers. Once identified, these individuals can then be appropriately referred for genetic counseling, risk assessment, consideration of genetic testing, and development of a management plan. When medical and family histories reveal cardinal clues to the presence of an underlying familial or genetic cancer susceptibility disorder, further evaluation may be warranted.

We as an institution do offer testing for hereditary breast and ovarian cancer syndromes as well as testing for certain kinds of inherited colon cancer syndromes. We are working to get a comprehensive program in place that will utilize the expertise and services of a genetic counselor who will work in conjunction with our medical oncology team.