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CANCERCARE, P.C.

Specializing in Cancer and Blood Disorders

New Genetics Program Boosts Patient Care Outcomes

By Sara Browning



Dr. James Knost, Medical Director of the Genetics Program

Illinois CancerCare, PC is raising the bar for patients at an increased risk for developing hereditary cancer through a genetics program designed to provide comprehensive, compassionate care in the diagnosis, treatment, and prevention of cancer family syndromes.

Providing state-of-the-art treatments for patients with cancer and blood diseases has been made easier for physicians at Illinois Can-

cerCare, PC with the introduction of a genetics program for patients at risk of developing cancer family syndromes. Such syndromes cause individuals to have an increased risk of developing one or more types of cancer due to their genetic makeup.

Founded in 1977 by Dr. Stephen Cullinan in Peoria, Illinois CancerCare, presently one of the largest private oncology practices in



**Nancy Donini, RN, OCN, Nurse Coordinator
of the Genetics Program**

the nation, has continuously provided research and treatment for genetic diseases and syndromes.

“At Illinois CancerCare there has always been a program for genetic testing with each physician within their practice,” says Dr. James Knost, MD, Medical Director for the Genetics Program. “The difference with this program is that we felt a designated clinic with a physician in charge of it would help us to better handle cancer genetics in our community.”

Genetic Testing for HBOC

When it comes to diagnosing and treating various cancer family syndromes, genetic testing at Illinois CancerCare has saved the lives of countless patients and has also aided physicians in cancer prevention, alerting them to “red flags” that may signal the potential for the onset of various cancer family syndromes.

Genetic testing begins with an initial patient consultation. “We generally talk to patients about their general health and background,” says Dr. Knost. “Then we assess the family history of parents, siblings, and relatives in order to fill in a family tree and look for patterns in genetic makeup. Genetic testing may change the workup and management of the patient.”

The genetics program will assist patients in the fight against Hereditary Breast and Ovarian Cancer (HBOC) Syndrome, Lynch Syndrome, and other genetic cancers. “The genetic basis of HBOC is an inherited mutation in either the BRCA1 or BRCA2 genes. Normally, the proteins produced by these genes prevent cells from becoming cancerous by aiding in the repair of mutations on other genes through a process called double-stranded DNA repair. An inherited mutation in either of these genes increases the probability of cancer.”

Dr. Knost highly recommends BRACAnalysis® genetic testing to his patients to aid in the diagnosis, treatment, and prevention of HBOC. “Undergoing BRACAnalysis® testing enables family members who carry either BRCA1 or BRCA2 to take preventative measures. For example, women at risk can have mammograms once a year and MRIs once a year. In males, BRCA2 puts them at increased risk for breast and prostate cancer. Males are screened for prostate cancer beginning at age forty.”

Combating Lynch Syndrome

Genetic testing has also proven beneficial in the diagnosis, treatment and prevention of Lynch Syndrome, a cancer family syndrome also known as Hereditary Nonpolyposis Colorectal Cancer (HNPCC). Lynch Syndrome results from a genetic mutation in one



of the mismatch repair (MMR) genes. Under normal circumstances, MMR genes produce proteins that identify and correct base-pairing mismatches that can occur during DNA replication.

Germline mutations in MLH1, MSH2, MSH6, and PMS-2 account for the majority of detected mutations in families with Lynch Syndrome. Says Dr. Knost: "When these genes become mutated, the genetic mistakes that occur can predispose patients to colon cancer before the age of fifty."

Genetic testing for Lynch Syndrome is a critical step in changing hereditary cancer outcomes. Warning signs in a person's personal and family history may indicate a person's increased risk for Lynch Syndrome and help identify family members for testing.

If genetic testing uncovers a patient at risk for Lynch Syndrome, cancer may be managed through increased surveillance, primarily a colonoscopy every one or two years beginning between the age of twenty and twenty-five. Family members diagnosed with endometrial or ovarian cancer might consider discussing screening options with a gynecologic oncologist. Hereditary Pancreatic cancer, Hereditary Melanoma Syndrome and Adenomatous Polyposis Syndrome are also common cancer family syndromes.

Dr. Knost says Illinois CancerCare's new genetics program has increased the number of hereditary cancer syndromes physicians can define. This is due to new technology, such as advances in DNA sequencing.

Says Dr. Knost: "Next generation sequencing allows the entire genome to be read for less than one thousand dollars. The original 'genome projects' took seven years and cost three billion dollars."

First-Hand Experience

Former Illinois CancerCare patient Liz Pisano has experienced firsthand the benefits of the new genetics program. Diagnosed with colon cancer in January 2007 and then a brain tumor in May of that same year, Liz and her physician, Dr. Knost, put together a genetic makeup that uncovered a specific gene mutation in her family's history.

"Genetic testing helped Dr. Knost to discover that I inherited one mutated gene from my dad and one mutated gene from my mom," says Liz. "When both of these genes are inherited together, they cause cancer."

According to Liz, inheriting both genes is "extremely rare." In terms of her family history, Liz says: "My genetic case brought a lot to life. My grandfather had leukemia, and my grandmother was believed to have passed away from ovarian cancer. My older brother passed away from colon cancer at twenty-one years of age."

Liz's mother suffered from breast cancer but recovered following surgery. "My mom has a rare blood disorder," says Liz. "They did some blood work on me and sent it to the lab along with my mom's and my younger brother's blood work to find out if there were any similar mutations."

Genetic blood tests revealed pre-cancerous cells in both Liz's and her mother's uterus. She and her mother underwent a hysterectomy. "Knowing that I had to have the hysterectomy was a huge benefit of my genetic testing," says Liz.

Liz's brain tumor warranted a slim chance for survival. "People with my type of brain tumor rarely survive five years after diagnosis. I know genetic testing really played a role in saving my life."

Dr. Knost says the new genetics program is "long overdue" in Central Illinois. "The Illinois Cancer Foundation in conjunction with Illinois CancerCare will screen patients that have HBOC and Lynch Syndromes and other cancer family syndromes. If we identify mismatched repair abnormalities, we can perform additional testing to define these families in our community. The Foundation provides



Elizabeth "Liz" Pisano with her younger brother, Jake, and her older brother Aaron, who passed away from colon cancer at age 21



Liz Pisano and her husband, Eric

grant support to cover the cost of the genetics software, and will also provide financial resources to aid family members with financial hardship, should they desire to have testing. In 2014, we would like to expand this to surrounding communities as our way of helping patients and families prevent cancer in the future."

Dr. James Knost, MD, graduated from Louisiana State University in Baton Rouge, Louisiana, and attended Louisiana State Medical Center in New Orleans, Louisiana. He completed his internship and residency in internal medicine at Vanderbilt University Hospital in Nashville, Tennessee and completed a medical oncology fellowship at Vanderbilt. He is Board-certified in Internal Medicine and Medical Oncology.

For more information on Illinois CancerCare, PC, visit www.illinoiscancercare.com. For information on the benefits of its genetics program, visit www.myriadtest.com. Illinois CancerCare is located at 8940 Wood Sage Road, Peoria, IL 61615.