Brigham and Women's Hospital Opens Preventive Genomics Clinic

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Brigham and Women's Hospital has launched the Preventive Genomics Clinic, a facility designed to provide comprehensive DNA sequencing, interpretation and reporting of disease-associated genes. [Eva Katalin Kondoros / Getty Images]

Brigham and Women's Hospital has launched the Preventive Genomics Clinic, a facility designed to provide comprehensive DNA sequencing, interpretation and reporting of disease-associated genes.

The clinic is intended to help healthy adults and their children understand and reduce their risk of future disease, according to Brigham & Women's, which said it is the first academically-affiliated institution to provide the services being offered by the clinic.

The hospital said the new clinic differs from other consumer-oriented laboratory offerings by requiring individuals to be evaluated in-person by genetics specialists before testing is ordered; helping individuals order tests from labs that are most appropriate for their medical needs; and ensuring that all medical and laboratory reports are placed in the medical record and shared with the individuals and their other providers, in order to be integrated into their day-to-day health care.

During an initial appointment, Brigham and Women's said, a board-certified medical geneticist and genetic counselor will collect a personal and family history and conduct a detailed physical examination to evaluate the individual and that person's family for specific genetic risks that should be pursued with diagnostic genetic tests.

If no such risks are detected, the individual will be informed about the limitations of preventive genomics and potential for privacy breaches and discrimination, then be invited to choose from a menu of gene panels ranging from a few hundred to a few thousand genes, offered by several different academic and consumer-focused commercial labs. The most comprehensive of these choices will include whole genome sequencing at the Broad Institute of MIT and Harvard, with interpretation and reporting of approximately 3,700 disease-associated genes through the Laboratory for Molecular Medicine within the Partners Personalized Medicine Program.

After receiving their clinical findings, patients will be referred to specialists as needed, and all will be offered the opportunity to enroll in an NIH-funded follow-up study, in which a research team will track key outcomes for years, Brigham and Women's said.

"A Clinical Context"

"For over two decades, our NIH-funded, randomized trials in translational genomics have generated consistent evidence that there are more potential medical benefits and fewer risks than previously considered," Robert C. Green, MD, MPH, a medical geneticist in the Division of Genetics at the Brigham, professor of Medicine at Harvard Medical School and director of the new Preventive Genomics Clinic, said in a statement. "It is time for this technology to be offered in a clinical context, under the care of genetics experts, to individuals who wish to be proactive about their health."

The clinic's genetic testing services are not typically covered by health insurance. The hospital said Green and colleagues are negotiating with several laboratory vendors and raising philanthropic funds to provide free or lower cost services where needed, particularly for members of minority groups who have historically been underrepresented in genomics.

Early offerings within the clinic will focus upon disease risks for single gene disorders, particularly hereditary cancers and hereditary heart problems, reproductive risks for those planning parenthood, and genetic markers to help avoid medication side effects. The clinic will soon add polygenic risk scores to help identify persons at high risk for common conditions such as heart disease, diabetes and atrial fibrillation, Brigham and Women's said.

Green was the lead author on the 2013 statement from the American College of Medical Genetics and Genomics recommending that physicians offer any adult or child who is sequenced for a specific diagnosis the opportunity to receive additional limited genomic information for preventive purposes. He later led the first federally funded trials to rigorously measure the medical, behavioral and economic impact of comprehensive genome sequencing in adults (the MedSeq Project), newborn infants (the BabySeq Project), and active duty military personnel (the MilSeq Project).

At present, Green is advising the NIH's All of Us Research Program—designed to glean health and wellness data from 1 million or more Americans—and the Google/Verily Baseline Project.

In addition to Green, Brigham and Women's said, individuals who visit the clinic will be seen by several medical geneticists, including Joel Krier, MD, and Saud Aldubayan, MD; along with primary care physician Ben Kerman, MD, MS; and genetic counselors Bethany Zettler, MS, CGC, Carrie Blout, MS, CGC, Tala Berro, MS, CGC, and Elizabeth Fieg, MS, CGC.

New Companion Clinic

Persons who have questions about their genetic responses to specific medications can be seen in the Pharmacogenomics Clinic, a new companion clinic at Brigham directed by Fieg, Krier, and Roseann Gammal, PharmD.

The Preventive Genomics Clinic has an Advisory Board whose announced members to date include:

- Katrina Armstrong, MD, MSCE, physician-in-chief of the Department of Medicine at Massachusetts General Hospital;
- George Church, PhD, Founding Core Faculty & Lead, Synthetic Biology Wyss Institute at Harvard University; Professor of Genetics, Harvard Medical School; Professor of Health Sciences and Technology, Harvard and MIT;
- Judy Garber, MD, MPH, Director of the Center for Cancer Genetics and Prevention at Dana-Farber Cancer Institute; rofessor of Medicine, Harvard Medical School
- Leroy Hood, MD, PhD, SVP and Chief Science Officer, Providence St. Joseph Health; Chief Strategy Officer, Co-founder and Professor, Institute for Systems Biology;
- David Ledbetter, PhD, EVP and CSO at Geisinger.
- Calum MacRae, MD, PhD, Vice Chair for Scientific Innovation at Brigham and Women's, with appointments at Harvard Medical School, the Harvard Stem Cell Institute, and the Broad Institute.
- Christopher Mason, PhD, Director, WorldQuant Initiative for Quantitative Prediction Physiology and Biophysics/Feil Family Brain and Mind Institute/Institute for Computational Biomedicine, Weill Cornell Medicine
- David Miller, MD, PhD, Director, Neurofibromatosis Program, Boston Children's Hospital; Assistant Professor, Harvard Medical School
- Mike Snyder, PhD, Stanford W. Ascherman Professor and Chair, Department of Genetics Director, Center for Genomics and Personalized Medicine, Stanford University.
- Sapna Syngal, MD, MPH, Director, Gastroenterology, DFCI/BWH Cancer Center, Medical Oncology, and Director, GI Cancer Genetics and Prevention Program, Medical Oncology, both at Dana-Farber Cancer Institute; Professor, Medicine, Harvard Medical School; Associate Physician, Medicine, Brigham And Women's Hospital
- Eli VanAllen, MD, Associate Member at the Broad Institute and an Assistant Professor at Dana-Farber Cancer Institute and Harvard Medical School.
- Scott Weiss, MD, Director of Respiratory, Environmental, and Genetic Epidemiology at the Channing Laboratory, and Professor of Medicine at Harvard Medical School; Scientific Director of Partners HealthCare Personalized Medicine, where he is Director of the Partners Center for Personalized Genetic Medicine.