CENTER FOR INHERITED HEART DISEASE

NEWSLETTER

Greetings!

Welcome to our first ever newsletter for the Center for Inherited Heart Disease (CIHD) at the Johns Hopkins Hospital! Our goal with this newsletter is to keep you informed about all of the services we offer, program updates, patient seminars/webinars, and to provide information about our research and how you can get involved. We would love to engage more with the patients we service and hope this newsletter will serve as a bridge towards that goal. Our plan is to send this newsletter out twice a year, Fall/Winter and Spring/Summer. We hope you enjoy!

ABOUT US

The Johns Hopkins Center for Inherited Heart Disease (CIHD) strives to identify genetic conditions and slow their progression through family-centered preventative care and advanced treatment for patients.

CONTACT INFORMATION

To schedule a genetic counseling appointment, please call Christal Holmes-Igwebike at 410-502-2578 or email cardiacgenetics@jhmi.edu.

To learn more about research opportunities with the Center for Inherited Heart Disease, please see page 11.

Clinical Services

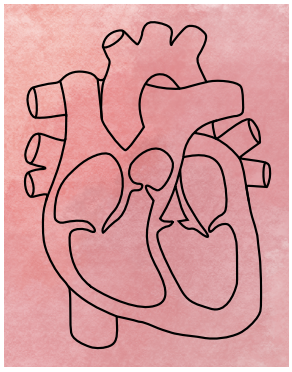
- Cardiac Genetic Counseling & Testing
- Referral to Specialty Providers

Research

- Cardiac Genetics Research
- Research Collaboration

What is genetic counseling?

Genetic counseling is the process of helping people understand and adapt to the medical, psychological and familial implications of genetic contributions to disease.



Who should see a cardiac genetic counselor?

Your doctor may refer you for a genetic counseling visit if you have a personal and/or family history suggestive of an inherited heart condition. Listed below are common reasons for a referral to a cardiac genetic counselor:

How can genetic testing help you?

The cells in our bodies contain an instruction guide called DNA. Our DNA provides instructions for the structure and function of all of our organs, including the heart. For people who are born with a pathogenic variant (or mutation) in one or more of the genes associated with the heart structure and/or function, it can lead to an inherited heart condition.

Genetic testing can help identify a pathogenic variant that explains your personal and/or family history of a specific heart condition. If a genetic cause is identified in you, your cardiac management and care may be tailored to your specific heart condition. Additionally, we will then be able to offer genetic testing to family members to identify who may be at risk and ultimately minimize their risk through appropriate screening, management, and care with a cardiologist.

Will my insurance cover the cost of genetic testing?

Insurance coverage of genetic testing varies from person to person, based on several factors, including:

- Policy
- Deductible
- Benefits
- Network
- Prior Authorization

The cost of genetic testing will be discussed at the time of your genetic counseling visit. However, many clinical genetic testing laboratories offer competitive, affordable self-pay or payment plan options.

If a pathogenic variant (mutation) has previously been identified in you or a family member, genetic testing is recommended for closely-related relatives. Call or email us to set up a genetic counseling appointment.

Phone: 410-502-2578
Email: CardiacGenetics@jhmi.edu

TELEHEATH VISITS AVAILABLE

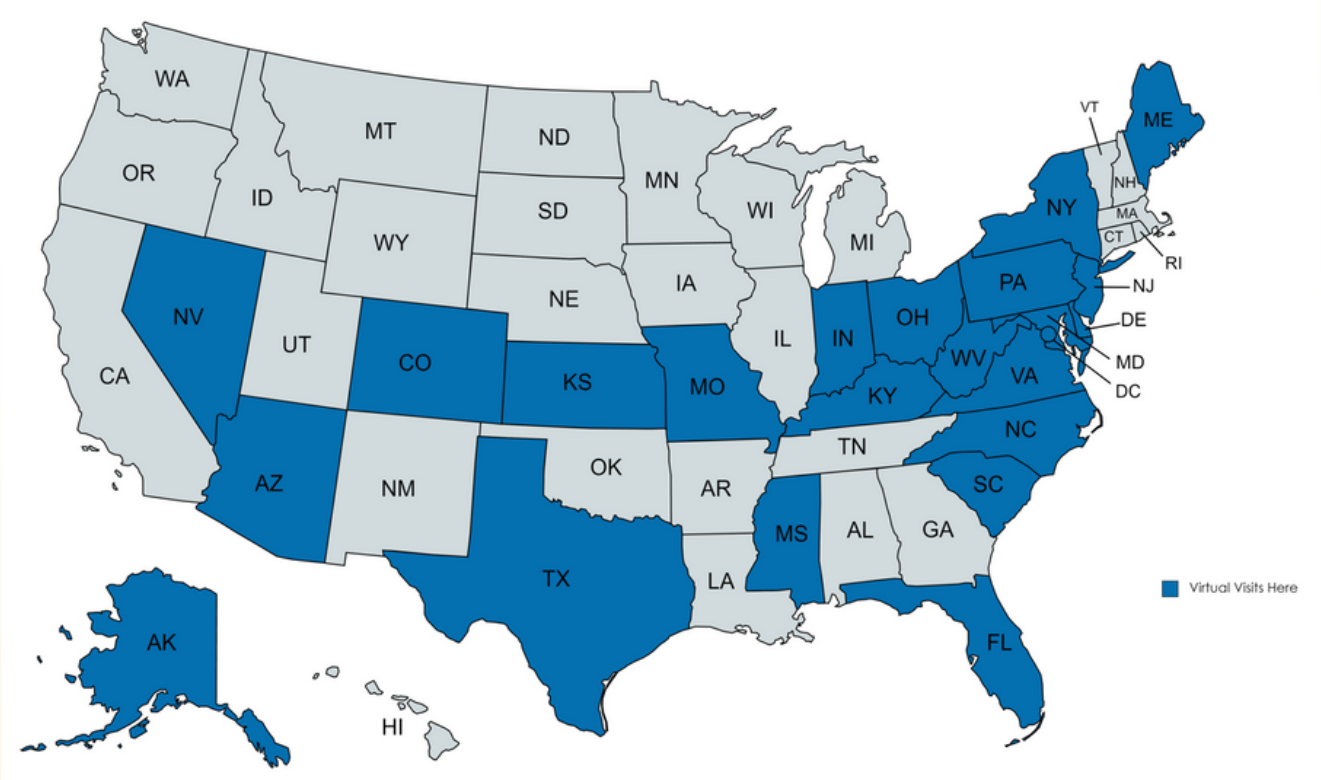
Our genetic counselors have licensure in a number of different states outside of the Maryland/DC area and can schedule telehealth visits with you and/or your family members. States where we can see patients for virtual genetic counseling visits include:

- Alaska
- Arizona
- Colorado
- Delaware
- Florida
- Indiana
- Kansas
- Kentucky
- Maine
- Maryland
- Mississippi
- Missouri
- Nevada
- New Jersey
- New York
- North Carolina
- Ohio
- Pennsylvania
- South Carolina
- Texas
- Virginia
- Washington, DC
- West Virginia

Call us to schedule a virtual visit!

Phone: 410-502-2578

Even if your family is in a state not listed, we have colleagues that we can connect you to, so let us know!



GENETIC COUNSELORS HELP TO SUPPORT MULTIPLE SPECIALTY CLINICS FOR FAMILY-CENTERED CARE

Adult Dilated Cardiomyopathy (DCM)/Familial Cardiomyopathy
Lili Barouch, MD (Columbia)
Nisha Gilotra, MD
Steven Hsu, MD
Edward Kasper, MD
Emmanouil Tampakakis, MD

Adult Hypertrophic Cardiomyopathy (HCM)
Lili Barouch, MD (Columbia)
Virginia Hahn, MD
Jose Madrazo, MD
Edward Kasper, MD

Pediatric Cardiomyopathies (HCM/DCM)
Carmel Bogle, MD
William Ravekes, MD (heart transplant)

Adult Arrhythmogenic Right Ventricular Cardiomyopathy (ARVC)
Hugh Calkins, MD
Nisha Gilotra, MD

Pediatric Channelopathies/Sudden Death/ARVC
Caridad de la Uz, MD
Kate Porter, MSN, CPNP

Pediatric Muscular Dystrophy and Barth Syndrome
Reid Thompson, MD

Muscular Dystrophies/Myotonic Dystrophy/Mitochondrial Cardiomyopathies
Andreas Barth, MD, PhD
Olurotimi Mesubi, MBBS, MPH

Adult Channelopathies/Ventricular Fibrillation
Andreas Barth, MD, PhD
Olurotimi Mesubi, MBBS, MPH

Adult Amyloidosis
Joban Vaishnav, MD

Adult Lipid Disorders
Steven Jones, MD
Thorsten Leucker, MD
Seth Martin, MD

Pediatric Lipid Disorders
Kathy Byrne, NP
Shelby Kutty, MD

Adult Complicated Hypertension
Oscar Cingolani, MD

Adult Congenital Heart Disease
Ari Cedars, MD
Stacy Fisher, MD

MEET THE TEAM

Andreas S Barth, MD, PhD
Director

I am a cardiac electrophysiologist and treat patients with heart rhythm disorders. I did my clinical training in Munich, Germany and at the Johns Hopkins University where I am the Medical Director of the Center for Inherited Heart Diseases. Clinically, my main focus are inherited arrhythmia syndromes and channelopathies, including long QT syndrome, Brugada syndrome, CPVT and arrhythmogenic cardiomyopathies. I also provide care to patients with muscular dystrophies and mitochondrial disorders at a multidisciplinary clinic at Kennedy Krieger Institute in Baltimore, MD. My research lab focuses on the molecular mechanisms of sudden cardiac death which are often linked to pores (called ion channels) in the cell membrane of heart muscle cells not working properly. Additionally, I perform clinical research and am the principal investigator on a multi-institutional grant funded by the Department of Defense, examining arrhythmias in patients with Duchenne Muscular Dystrophy. In my free time, I spend time with my wife and two daughters. I enjoy hiking, skiing, playing soccer and traveling.

Emily Brown, MGC, CGC
Genetic Counselor

I am a genetic counselor in the Center for Inherited Heart Disease, and I specialize in hereditary dyslipidemias and cardiac amyloidosis. However, I also see patients with other nonischemic cardiomyopathies. My research interests focus on increasing the identification of hereditary cardiac conditions. I have presented both nationally and internationally on these topics, and I have collaborated on clinical trials here at Johns Hopkins. I am thrilled that there are now therapies for transthyretin amyloidosis!

MEET THE TEAM

Cynthia A James, ScM, PhD, CGC
Genetic Counselor, Director of Research

I've spent my career at Johns Hopkins, first as a PhD student in Human Genetics, next as a genetic counseling student, and finally as a genetic counselor researcher with CIHD and our ARVC program. Today I am an Associate Professor of Medicine and Genetic Medicine and the Research Director of the Johns Hopkins Center for Inherited Heart Diseases and the Johns Hopkins ARVC Precision Medicine Center of Excellence. My research focuses on: 1) investigating the interplay of genes and environmental factors on patients' outcomes, 2) defining the genetic architecture of inherited cardiomyopathies, and 3) improving cardiovascular genetic counseling outcomes. We are currently engaged in a 3-arm randomized clinical trial testing two complementary approaches to shifting the primary adult cardiovascular genetic counseling appointment post-test (see RESEQUENCE-GC section). I value partnership with patients and families in our research – not only as research participants but also as advisors and experts on living with inherited heart diseases.

Rebecca McClellan, MGC, CGC
Genetic Counselor

I am a genetic counselor who splits my time between the Johns Hopkins Center for Inherited Heart Disease and the Metabolism Clinic at Kennedy Krieger Institute. In my role with the Center for Inherited Heart Disease, I work primarily with adult and pediatric patients with inherited arrhythmia conditions, hypertrophic cardiomyopathy, congenital heart defects, and families impacted by sudden cardiac arrest and death. At Kennedy Krieger I work primarily with patients and families with mitochondrial and other rare metabolic conditions such as Barth syndrome and Smith-Lemli-Opitz syndrome. I have a special interest and dedication to family-centered care and ethics awareness. I also actively work to enhance family support resources by working closely with organizations such as the Barth Syndrome Foundation and SADS Foundation, and serve on the medical advisory board of Remember the Girls, a support organization focused on carrier issues, and the Timothy Syndrome Foundation.

MEET THE TEAM

Brittney Murray, MS, CGC
Genetic Counseling Manager

I did my human genetics and genetic counseling training at the University of Michigan, and have specialized in cardiogenetics ever since! Starting at Hopkins in the ARVC program 13 years ago, since then I have also managed the Center for Inherited Heart Disease since 2016. My primary clinical focus is families with arrhythmias and cardiomyopathy. I am also passionate about genetic counseling access, and have led the Cardio Special Interest Group of the National Society of Genetic Counselors, and published on outcomes of genetic counseling and how genetics impacts the care of arrhythmic cardiomyopathy families. Even prior to the COVID-19 pandemic I established the first telemedicine genetic counseling clinic at Johns Hopkins to improve access to specialized care. When I'm not at the hospital, I also enjoy hiking with my two young boys and beloved dog, and Ohio State football!

Bryana Rivers, MS, CGC
Genetic Counselor

I am the newest cardiac genetic counselor at the Center for Inherited Heart Disease. However, I am not new to Johns Hopkins. Prior to getting my Masters in Medical Genetics at the University of Cincinnati, I was the very first genetic counselor assistant for the Johns Hopkins ARVC Program. Now, as a genetic counselor, I primarily see HCM patients, but I occasionally see patients for other indications of cardiomyopathy and/or arrhythmia. When I'm not seeing patients, the other half of my job is as a research genetic counselor with a focus on cardiac genetics and genetic counseling.

Crystal Tichnell, MGC, RN
Nurse and Research Coordinator

I started my career at Johns Hopkins in 1999 as a research assistant in Psychiatry, studying the genetic basis of schizophrenia and bipolar disorders. Shortly thereafter, I completed my genetic counseling training at the University of Maryland, Baltimore and joined the Arrhythmogenic Right Ventricular Cardiomyopathy (ARVC) team at Johns Hopkins in 2002. More recently, I returned to school and received my RN degree as our program is becoming more involved in clinical trials. I see all ARVC patients in follow up with one of our physicians and partner with them in our various research endeavors. I also enjoy coordinating our annual ARVC patient and family seminar each spring to share the latest and greatest when it comes to clinical care and research progress on ARVC.

MEET THE TEAM

Emily Graham, BA
Genetic Counselor Assistant

I am the genetic counseling assistant split between the Center for Inherited Heart Disease and ARVC Program. I help with scheduling and record collection for the centers and am always happy to answer any administrative questions that you may have! When I'm off the clock, I enjoy biking, cooking, and watching movies.

Christal Holmes-Igwebike
Clinical Program Coordinator

I have been working at Johns Hopkins since July 2011 when I first started working in the gift shop. Over the years, I found myself working in a variety of positions ranging from patient transporter to patient service coordinator to medical office coordinator. I worked as a senior patient access specialist for 8 years before starting my new position as a financial clearance and scheduling coordinator within the Center for Inherited Heart Disease. In this role I help to schedule patient appointments and work with insurance clearance for those visits.

Leonore Okwara, MPH
Research Program Manager

I joined the ARVC team in July as a research program manager. I manage the many tasks associated with industry collaborations, including contracts and budgets as they relate to clinical trials for new therapies in ARVC. I have over 15 years of experience managing national research initiatives within the academic, corporate, and government sectors. I earned my B.A. in Sociology from Fort Hays State University and my Master of Public Health with a concentration in Epidemiology from Eastern Virginia Medical School. I have extensive experience with the research lifecycle, grant development and management, budget management, and serving as a liaison between the community, researchers, and funders to identify priorities and achieve research goals. In my previous role, I served as a Senior Program Manager for AllStripes, Inc. where I managed partnerships with rare disease Patient Advocacy Groups to engage their communities in research programs.

MEET THE TEAM

Catherine Pendleton, BS
Research Program Coordinator

I am a research program coordinator with the Center for Inherited Heart Disease. I have a Bachelor's degree in Biology from Dickinson College, and am applying to genetic counseling graduate programs this year! As a research program coordinator, I manage the ARVC patient registry. I also work on the studies going on in the Center for Inherited Heart disease, including preparing for the RESEQUENCE-GC clinical trial on genetic counseling outcomes and processing research data.

Zeba Shaik, MS
Research Program Coordinator

I joined the ARVC Program in March as a research program coordinator, but have overlap with the CIHD program. I am originally from Boston, Massachusetts. I received my Master of Science in Physiology at Georgetown University in D.C. My future plans include attending medical school and traveling to experience different foods, music, and cultures from all over the world. My primary role is working with our research database and collecting blood samples from those who join our research studies. You may see me in clinic the next time you are here!

Research

The Johns Hopkins Center for Inherited Heart Disease is very active in cardiovascular research. We have a number of ongoing studies and several recent publications from our team members.

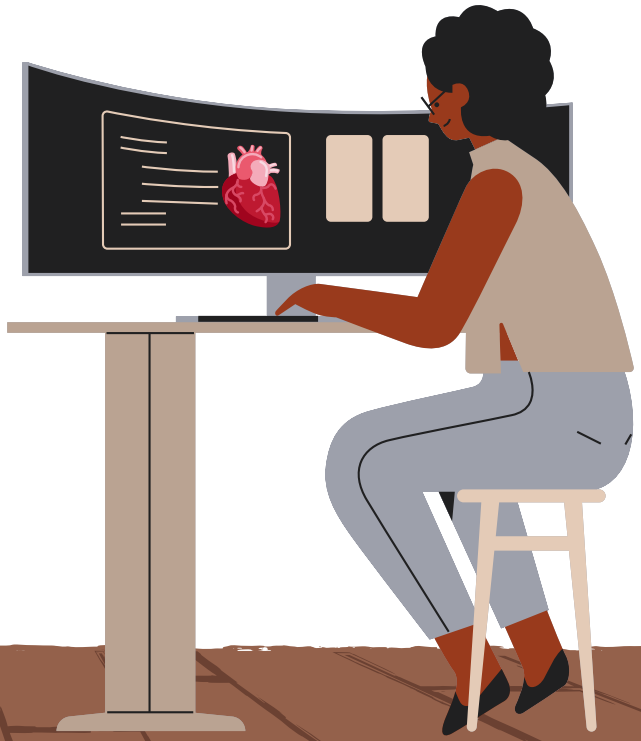
About the CIHD Research Registry

The Johns Hopkins Center for Inherited Heart Disease is dedicated to advancing cardiovascular genetics research as it relates to the health and care of our patients. The first step in getting involved in our research is joining our research registry: "Genetic Investigation of Inherited Cardiac Conditions". The purpose of this study is to learn more about the genetic causes of heart conditions. We also study which gene(s) cause patients with inherited heart conditions to vary in symptoms, outcomes, and rates of disease progression.

What Does Participation Include?

Participation includes giving us permission to review your cardiac medical records. We may invite you to submit a DNA sample. If we do, we will send you a DNA collection kit by mail or collect a sample in clinic. There is no financial compensation for joining the study.

When you join we will also ask you if you are interested in being invited to join other studies specific to your condition or genes in the future.



Who Can Join?

Adults and children with an inherited heart condition and their family members.

How to Join

To learn more, please contact us at GeneticHeartStudy@jh.edu.

Ongoing Studies

RESEQUENCE-GC

Randomized clinical trial of the sequence of genetic counseling and testing to optimize efficiency, patient empowerment and engagement, and medical adherence for diverse cardiovascular genetic testing indications, or RESEQUENCE-GC

The RESEQUENCE-GC study is an NIH funded study to explore different models of providing genetic counseling and comparing their effectiveness to the standard of care model. Standard of care for the structure of the genetic counseling process is generally a more in-depth pre-genetic-testing consultation with a genetic counselor, followed by a typically much shorter results disclosure conversation upon completion of genetic testing. As genetic testing continues to become more widely accessible and more consistently recommended, it is possible that other models of genetic counseling services may be equally as effective as the standard of care model while improving efficiency.

Individuals who are scheduling at Johns Hopkins for a first time appointment with a cardiac genetic counselor are eligible for this study. A team member will let you know if you are eligible for this study at the time of scheduling.

RESEQUENCE-GC

Principal Investigator: Dr. Cindy James, PhD, CGC
Study Name: RESEQUENCE-GC
Study ID: IRB00320656
ClinicalTrials.gov Identifier: NCT05422573

RECENT PUBLICATIONS

Phenocopies of Sarcomere Gene Mediated hypertrophic Cardiomyopathy in Children

Brown E, Murphy AM. Prog Pediatr Cardiol. 2021;61:10149.

Conclusions: It is important to recognize non-sarcomere genetic disease presenting with features of HCM and assess the patient and extended family for disease when indicated. In some cases of phenotypic copies of sarcomere HCM, directed therapies or clinical trials for these diseases are available in infants, children and adolescents.

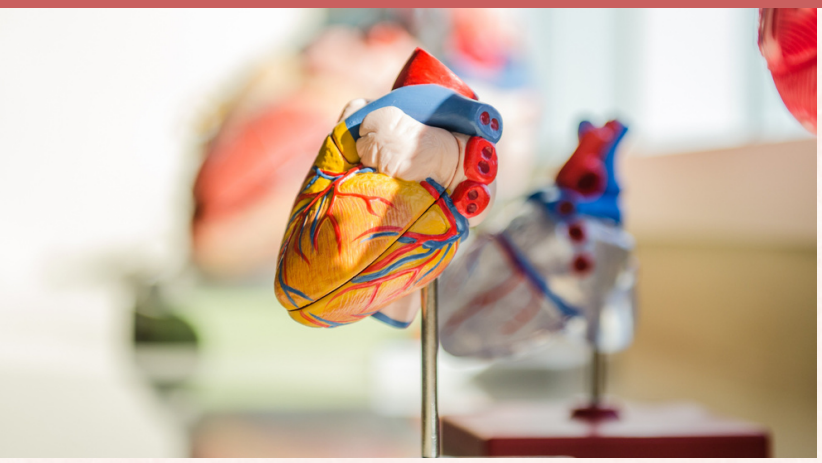
CHECK THIS OUT!

An International Evidence Based Reappraisal of Genes Associated with Arrhythmogenic Right Ventricular Cardiomyopathy (ARVC) using the ClinGen Framework

James CA, Jongbloed JD, Hershberger RE, Morales AM, Judge DP, Syrris P, Pilichou K, Domingo AM, **Murray B**, Cadrin-Tourigny J, Depres RL, Celeghin R, Protonotarios A, Asatryan B, **Brown E**, Jordan E, McGlaughon J, Thaxton C, Kurtz L, Van Tintelen JP. Circ Genom Precis Med. 2021;14(3):e003273.

Conclusions: Using the Clinical Genome Resource approach to gene-disease curation, only 8 genes (PKP2, DSP, DSG2, DSC2, JUP, TMEM43, PLN, and DES) had definitive or moderate evidence for ARVC, and these genes accounted for nearly all pathogenic/likely pathogenic ARVC variants in ClinVar. Therefore, only pathogenic/likely pathogenic variants in these 8 genes should yield a major criterion for ARVC diagnosis. Pathogenic/likely pathogenic variants identified in other genes in a patient should prompt further phenotyping as variants in many of these genes are associated with other cardiovascular conditions.

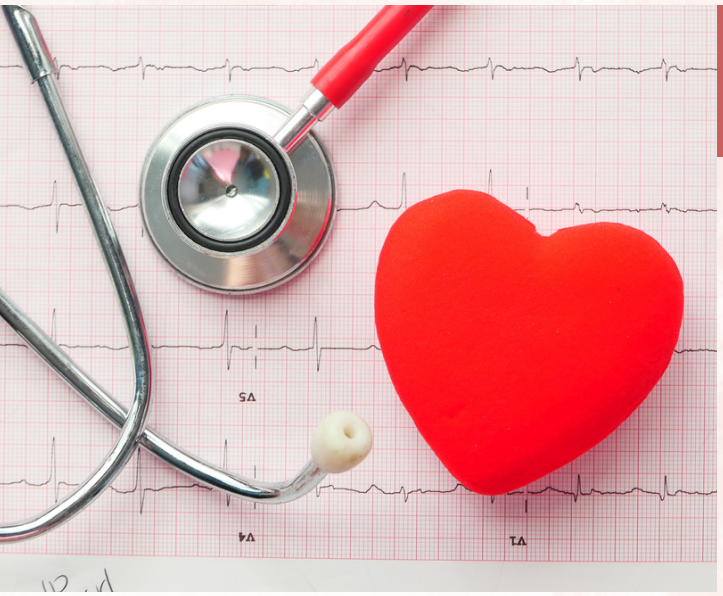
HAVE YOU READ THIS?



AHA Scientific Statement Highlights the Utility of Genetic Testing for Young Cardiology Patients

Brown EE, Martin SM, Blumenthal RS, Arvanitis M. Amer Heart J Plus. 2022.

Conclusions: Genetic test results can provide useful information regarding medical management, risk stratification, and cascade screening for pediatric cardiology patients and families. Whether genetic testing is appropriate should be decided on a case by-case basis taking into consideration age of onset, utility, and potential yield. Ideally, pediatric patients and families have pre-and post-test genetic counseling to understand the possible implications of these results.



HOT OFF THE PRESS!

The Response to Cardiac Resynchronization Therapy in LMNA Cardiomyopathy

Sidhu K, Castrini AI, Parikh V, Reza N, Owens A, Tremblay-Gravel M, Wheeler MT, Mestroni L, Taylor M, Graw S, Gigli M, Merlo M, Paldino A, Sinagra G, Judge DP, Ramos H, Mesubi O, **Brown E**, Turnbull S, Kumar S, Roy D, Tedrow UB, Ngo L, Haugaa K, Lakdawala NK. 2022;24(4):685-93.

Conclusions: Systolic function improves in patients with LMNA cardiomyopathy who undergo CRT, especially with strong guideline indications for implantation. Post-CRT improvements in LVEF are associated with survival benefits in this population with otherwise limited options.

DON'T MISS THIS!

An Evidence-based Assessment of Genes in Dilated Cardiomyopathy

Jordan E, Peterson L, Ai T, Asatryan B, Bronicki L, **Brown E**, Celeghin R, Edwards M, Fan J, Ingles J, **James CA**, Jarinova O, Johnson R, Judge DJ, Lahrouchi N, Lekanne Deprez RH, Lumbers RT, Mazzarotto F, Domingo AM, Miller RL, Morales A, **Murray B**, Peters S, Pilichou K, Protonotarios A, Semsarian C, Shah P, Syrris P, Thaxton C, van Tintelen JP, Walsh R, Wang J, Ware J, Hershberger RE. Circulation. 2021;6;144(1):7-19.

Conclusions: In the curation of 51 genes, 19 had high evidence (12 definitive/strong, 7 moderate). It is notable that these 19 genes explain only a minority of cases, leaving the remainder of DCM genetic architecture incompletely addressed. Clinical genetic testing panels include most high-evidence genes; however, genes lacking robust evidence are also commonly included. We recommend that high-evidence DCM genes be used for clinical practice and that caution be exercised in the interpretation of variants in variable-evidence DCM genes.

SO INTERESTING!

Wild-type Transthyretin Cardiac Amyloidosis is Associated with Increased Antecedent Physical Activity

Lee YZ, Fajardo J, **Brown EE**, D'Adamo CR, Judge DP. J. Cardiovasc. Transl. Res. 2022;27:1-3.

Conclusions: This retrospective cohort study compared the imputed lifetime physical activity (PA) (or its proxy) between patients with ATTRwt (wild type) and the general population presumed not to have the disease. This was a pilot study to explore whether a history of increased PA is associated with ATTRwt. We found an increase both in average vigorous recreational PA and average moderate recreational PA among those with ATTRwt compared to healthy cohort. However, no difference were identified for age of onset. The results of this pilot study support additional investigation, including prospective trials of a role for PA contributing to the pathogenesis of ATTRwt and its prevalence in cohorts with high levels of exercise.

TAKE NOTE!

Genotype-phenotype Correlates in Arrhythmogenic Cardiomyopathies

Murray B, James CA. Curr Cardiol Rep. 2022 Sep 8.

Conclusions: Plakophilin-2 (PKP2) ARVC/ACM is most likely to meet ARVC Task Force Criteria with right sided involvement and ventricular arrhythmias, while desmoplakin (DSP) ACM may have a normal electrocardiogram (ECG) and has a subepicardial LV scar pattern. Extra-desmosomal ACM including ACM associated with transmembrane protein 43 and phospholamban variants may have characteristic ECG patterns and biventricular cardiomyopathy. Lamin A/C and SCN5A cardiomyopathy often have heart block on ECG with DCM, but are distinct from DCM in that they have significantly elevated arrhythmic risk. Newer genes, especially filamin-C (FLNC) also may have distinct imaging scar patterns, arrhythmia risk, and risk predictors.

These data stress the importance in identifying those with a genetic risk factor that may not have been otherwise suspected. Indeed, in many of these families due to incomplete penetrance and variable expressivity, 50% or more of individuals with a genetic ACM may not have any clear family history of disease. As a result, increasingly experts are recommending genetic testing in any suspected arrhythmic cardiomyopathy presenting under the age of 50, and in many myocarditis cases, especially those with recurrent episodes and young age of presentation.

GOOD TO KNOW!

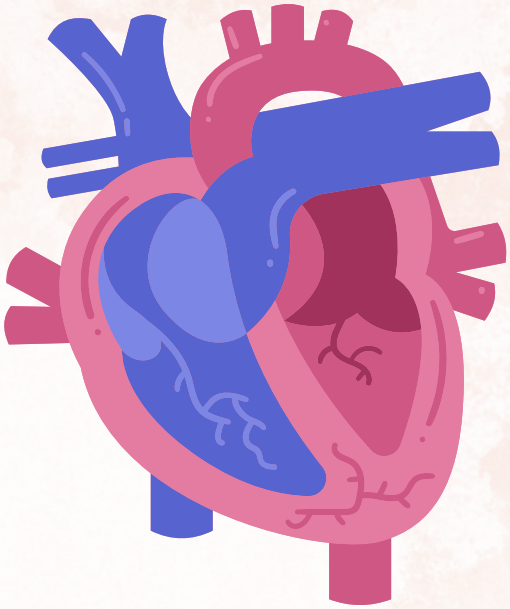
C-reactive Protein Elevation Is Associated With QTc Interval Prolongation in Patients Hospitalized With COVID-19

Nino Isakadze, Marc C. Engels, Dominik Beer, Rebecca McClellan, Lisa R. Yanek, Bahareh Mondaloo, Allison G. Hays, Thomas S. Metkus, Hugh Calkins and **Andreas S. Barth**. Front Cardiovasc Med. 2022; 9: 866146.

Objective: This study aimed to assess the effect of marked interval changes in the inflammatory marker C-reactive protein (CRP) on QTc interval in patients hospitalized with COVID-19.

Results: Mean age was 58 ± 16 years, of which 39% were women, 41% were Black, and 25% were White. On average, the QTc interval calculated via the Bazett formula was 15 ms higher when the CRP values were "high" vs. "low" [447 ms (IQR 427-472 ms) and 432 ms (IQR 412-452 ms), respectively]. A 100 mg/L increase in CRP was associated with a 1.5 ms increase in QTc interval [β coefficient 0.15, 95% CI (0.06-0.24). In a fully adjusted model for sociodemographic, ECG, and clinical factors, the association remained significant (β coefficient 0.14, 95% CI 0.05-0.23).

Conclusions: An interval QTc interval prolongation is observed with a marked elevation in CRP levels in patients with COVID-19.



WANT TO STAY UP TO DATE ON ALL OF OUR RESEARCH? MAKE SURE TO BE ON THE LOOKOUT FOR OUR UPCOMING NEWSLETTERS!

FEATURED ARTICLE

The genetic counselor's role in management of patients with dyslipidemia

Emily E Brown

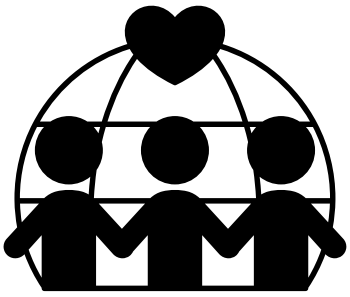
Curr Opin Lipidol. 2021 Apr 1;32(2):83-88. doi: 10.1097/MOL.0000000000000732.

Purpose of review: The role of genetic testing in diagnosis and management of dyslipidemias continues to grow. Consequently, it is increasingly important for patients to have access to clinicians who have expertise in medical genetics and the psychological implications related to this type of testing. Often a lipidologist has had limited training in this regard, and this review explores the role of the genetic counselor to fill this gap.

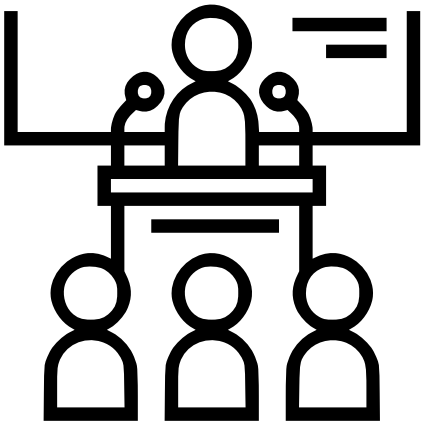
Recent findings: Genetic counselors are key members of the healthcare team, and their specialized training in medical genetics and counseling allows them to fill this professional knowledge gap within the lipid clinic.

Summary: With the continued emphasis on precision medicine, the utility of genetic testing for dyslipidemias will continue to grow. This will in turn increase the demand for provider expertise in medical genetics and counseling around these complex issues. Integrating a genetic counselor within the lipid clinic provides an ideal management scenario providing patients and families with access to not only medical information but also emotional support regarding their hereditary condition.

RESOURCES



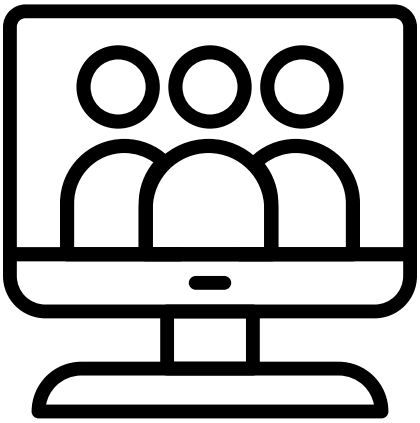
PAST PATIENT SEMINARS



- Understanding Hypertrophic Cardiomyopathy (HCM) Webinar - Part 1 https://www.youtube.com/watch?v=BmhDPDCxn3A
- Understanding Hypertrophic Cardiomyopathy (HCM) Webinar - Part 2 https://www.youtube.com/watch?v=0dJaiQWDL2Y

PATIENT ORGANIZATIONS

- SADS Webinars - https://www.sads.org/what-now/living-with-sads-webinars/
- Sudden Arrhythmia Death Syndromes (SADS) Foundation Regional Gatherings - please contact Rebecca McClellan at rmcclel4@jhmi.edu to learn more
- Hypertrophic Cardiomyopathy Association (HCMA) - https://4hcm.org/
- FH Foundation - https://familyheart.org/



Here's How to Donate

Click here: DONATE TO SUPPORT THE MISSION OF CIHD

Or copy and paste the following link into your browser:
https://secure.jhu.edu/form/heart

Support the Johns Hopkins Heart and Vascular Institute

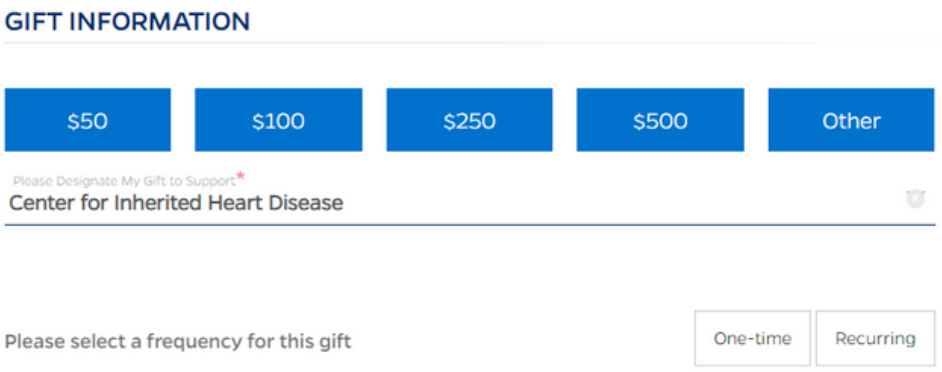
To contact the Heart and Vascular Institute Development Office:
Lisa Hammann, Director of Development
Fund for Johns Hopkins Medicine

600 North Wolfe Street
Blalock 536
Baltimore, MD 21287

443-287-7384
Hopkinsheart@jhmi.edu

Questions or problems? Please email the online giving administrator.

IMPORTANT NOTE: Make sure to select Center for Inherited Heart Disease in the drop down



We Appreciate Your Support!