Sharing Innovations and Insights with Our Partners in Care

PEDIATRIC ROUNDS

Parents and providers frequently ask how to navigate the available genetic testing approaches for developmental delays, autism and congenital anomalies.

Children's Wisconsin

VOLUME 20 \ ISSUE 2 \ 2021

To refer a patient, call (800) 266-0366.

Safety and precision

Highlighting some of the many ways we provide safe and effective care to children and families

BY JASON A. JARZEMBOWSKI, MD, PHD

With so many teens and adults vaccinated, and with children ages 5–12 now eligible for the vaccine, COVID-19 case rates are dropping in many areas across the nation. In those places, we can tentatively venture forward into the new normal with common sense precautions still in place for our youngest patients and other vulnerable community members. But because some regions are still seeing significant numbers of cases, in part because of the Delta variant of SARS-CoV-2, we must help patients, families and friends understand the necessity of getting vaccinated if they haven't already done so.

Because so many of the early COVID-19 deaths were among the elderly, people may not realize that a large number of young adults and teens have contracted the disease, albeit with much milder illness. That being said, long-term health issues such as COVID-19-related heart problems may still affect some survivors. As you will read in our article on youth athletics (page 3), pediatricians and other providers have an important role in helping youngsters who are returning to sports to safely resume play.

Keeping kids safe is also of the utmost importance when it comes to performing surgery. Children's is one of a few pediatric hospitals in the nation to acquire a new system for robotically assisted spine surgery, the Mazor X (page 6). The system can be used for traumatic injuries, as well as congenital or idiopathic conditions. Our surgeons who are using the system are impressed with its precision and the reduced recovery time for patients.

Other articles in this issue cover a clinical trial of a drug that may minimize long-term side effects for leukemia patients (page 4), how our Enteral Feeding Program helps babies go home sooner from the NICU (page 7) and collaboration on a new endoscopic technique in children (page 8). Providing safe and effective care to the children and families we serve is, and always will be, an essential part of our mission.

Wishing you a safe and happy winter,

JA Jarzembowski, MD, PhD

Jason A. Jarzembowski, MD, PhD
Interim Chief Executive Officer,
Children's Specialty Group;
Medical Director, Pathology and Laboratory Medicine, Children's Wisconsin;
Vice Chair and Professor,
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2021 Pocket Directory

The updated directory of Children's services is available now. To request a copy, email mdconnect@chw.org.

Back to play

Keep kids and teens safe as they return to sports after COVID-19

Getting back into action is an exciting — and healthy — prospect for the approximately 35 to 45 million youth who participate in athletics in the United States. As sports ramp up, proceeding with caution and care is essential to prevent more COVID-19 cases, address complications from illness and avoid injury after a hiatus from physical activity.

CLEARING FOR PARTICIPATION

Recent research reveals that myocarditis in children, while still a concern, is not as prevalent as initially thought. A study of collegiate athletes published in *Circulation* showed a low prevalence of heart inflammation after COVID-19 illness. Only 21 of the 19,378 athletes (0.7 percent) had cardiac involvement.

A cardiologist should be consulted for patients with a history of moderate or severe disease. However, "young people with asymptomatic illness do not need to worry much about cardiac complications, especially when they have been asymptomatic for greater than 14 days," says Kevin D. Walter, MD, FAAP, a sports medicine physician at Children's. "If symptoms arise with exercise, the family should stop activity and contact their primary care provider."

Still, anyone who has tested positive for COVID-19 should be medically cleared by a physician before returning to play.

The following symptoms of myocarditis should be covered in a return-to-play evaluation:

- Chest pain
- Respiratory distress
- Gastrointestinal symptoms
- Tachycardia/ arrhythmias
- Poor perfusion/ diminished extremity pulses
- Fatigue
- Syncope

continued on page 4

SMART Series webinars

Study a page from the playbook of pediatric experts who help young athletes get back in the game, from diagnosis through treatment. The SMART (sports medicine and rehab teaching) Series is a unique, monthly virtual experience dedicated to sports medicine professionals, including psychologists, primary care providers, and sports medicine and orthopedic physicians. This activity is eligible for continuing medical education credits if you participate live and complete the post-event evaluation. Register at **childrenswi.org/smart**.

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continued from page 3

PLAYING AFTER MIS-C

"The most significant way we are seeing COVID-19 affect the heart is from a severe inflammatory response that occurs many weeks following infection," says Joseph R. Block, MD, a cardiologist at the Herma Heart Institute. "These patients need hospitalization with a cardiac workup, treatment and then follow-up in cardiology clinic."

Multisystem inflammatory syndrome in children (MIS-C) is a broad set of inflammation of organs, including the heart, and enlargement of the coronary blood vessels. As of May 2021, Children's had more than 70 cases confirmed as MIS-C by the Centers for Disease Control and Prevention (CDC).

"Due to the cardiac involvement of children with MIS-C, we have restricted them from competitive athletics for six months," Dr. Block says. "We follow these patients closely in cardiology clinic to ensure that they are recovering."

The Herma Heart Institute team at Children's developed an easy-to-follow flow chart to help physicians screen patients for returning to play after a positive COVID-19 test. Find it at childrenswi.org/covidsports.

RAMPING UP

Unless they had moderate to severe COVID-19 symptoms, most kids can be cleared to play once they have recovered. "Those who need a graduated return-to-play program should be under the care of a cardiologist to help manage that," Dr. Walter says.

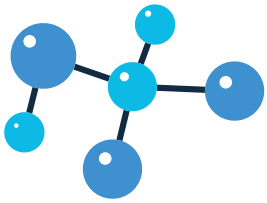
"We don't want young athletes who had COVID-19 or any illness immediately returning to 100 percent activity on day one," Dr. Walter says. "For asymptomatic and mild illness, athletes should be ideally progressed back to full speed over a few days, allowing the chance to regain their fitness level and comfort with their sport."

A novel approach to leukemia treatment

A new clinical trial at Children's could improve quality of life for children battling leukemia

About 15–20 percent of children who are treated for leukemia and achieve complete remission will experience a relapse of the disease, according to the Dana-Farber Cancer Institute, Boston Children's Hospital. A study recently started at Children's Wisconsin aims to reduce this percentage and decrease the risk of long-term side effects from treatment, using advanced transplant techniques as well as the exciting new drug blinatumomab.

"We want to identify a set of patients who we believe may be at lower risk for relapse after transplant by putting them into a deep disease remission prior to undergoing the transplant process. We will then examine if we are able to administer lower-intensity therapy with the transplant that will decrease the risks of long-term side effects while maintaining disease control," says Rachel Phelan, MD, pediatric bone marrow transplant physician at the MACC fund Center at Children's. "In kids, these late or long-term side effects related to the therapy they receive can be quite substantial because they're still growing and developing."



What is blinatumomab?

Blinatumomab is a type of immunotherapy called a bispecific monoclonal antibody. These drugs bind to two different molecules at the same time. The two molecules to which blinatumomab binds are a protein (CD19) expressed on the surface of acute lymphoblastic leukemia (ALL) cells and a protein (CD3) expressed on immune system cells called T cells. The bridge formed by blinatumomab brings the T cells close enough to the leukemia cells to recognize and kill them. In 2017, the U.S. Food and Drug Administration (FDA) granted blinatumomab accelerated approval for the treatment of advanced ALL in children and adults.

Kids and young adults under age 25 with B-cell acute lymphoblastic leukemia can qualify for the study.

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Relapsed or refractory leukemia can be treated with a bone marrow transplant, and getting patients ready for the transplant can involve giving therapy to get them into remission prior to the transplant process. The chemotherapy can be toxic, resulting in side effects that, if severe, could delay the timeline for the transplant or impact the type of transplant that can be given. One major goal of the Children's study is to use blinatumomab instead of traditional chemotherapy regimens to prepare patients for a less-intensive transplant.

"Blinatumomab is an exciting new drug that goes after the leukemia cells and therefore doesn't lower blood counts like traditional chemotherapy; it doesn't increase the risk of infection; and it doesn't affect the kidneys, liver, lungs or heart like typical chemotherapy can," says Michael Burke, MD, director of the Pediatric Leukemia & Lymphoma Program at Children's.

Dr. Burke notes that blinatumomab is also being used after the transplant to further eliminate the chance of relapse. "Traditionally, relapse is the most common reason patients with leukemia fail transplant," Dr. Burke explains. "So this is a very novel study not only using blinatumomab before and after transplant, but also using deep sequencing and minimal residual disease testing to identify which patients may receive a reduced-intensity transplant rather than a standard myeloablative 'intensive' transplant."

In addition, Children's is one of the few centers in the nation that uses a transplant technique based on the donor's stem cells. "We do a special kind of processing to the donor's T cells that takes out a subset of those T cells that we think causes graft-versus-host disease while keeping some of the T cells that do good things, like fight infection or residual leukemia," Dr. Phelan says. "We've been using this technique for a number of years, and we've shown through prior trials that it maintains good disease control and decreased need for immunosuppressive drugs following transplant, which also have a long list of side effects. This technique is also incorporated into the trial."

COMPASS Clinic provides specialized cancer therapies

When standard therapies for childhood cancer don't work, the COMPASS Clinic at Children's can help. This multidisciplinary team of experts works with a patient's dedicated oncologist or primary provider to offer targeted treatments. Learn more about this unique program from Children's oncologist Matt Kudek, MD, in an article at **childrenswi.org/compass**.

It's clear this trial could have a potentially huge impact on children with leukemia and their families. Reducing instances of relapsed pediatric leukemia, as well as the long-term effects that can occur due to treatment, will improve the quality of life for children in the present as well as far down the road. "We can see side effects from treatment, including impacts on cognitive function, fertility potential, or other hormone or growth issues," Dr. Phelan says. "And so obviously, if we can do something to avoid those issues, that would be a huge success of this trial."

Anyone under age 25 with B-cell acute lymphoblastic leukemia and an indication for transplant can be a candidate for the study. Candidates must have B-cell leukemia because blinatumomab targets the B cell.

Currently, the study is active and enrolling patients. It is available at Children's in Milwaukee, as well as at American Family Children's Hospital in Madison, which is partnering with Children's on the study. The team hopes to enroll about 20 patients over the course of the next few years in the study. Once the results of the study are known, the goal is to expand it.

"This trial would essentially provide pilot data," Dr. Burke says. "The hope is that it will show feasibility and encouraging responses, and then it could become a much larger study that would be available across the country."

To learn more about the blinatumomab bridging therapy study, visit clinicaltrials.gov and search for NCT04556084. You can contact Rachel Phelan, MD, at rphelan@mcw.edu and Michael Burke, MD, at mmburke@mcw.edu or (414) 955-4198.

New Juvenile Dermatomyositis Clinic

Children's is offering a new clinic in Kenosha for patients with juvenile dermatomyositis, an inflammatory disease that causes muscle weakness and skin rashes.

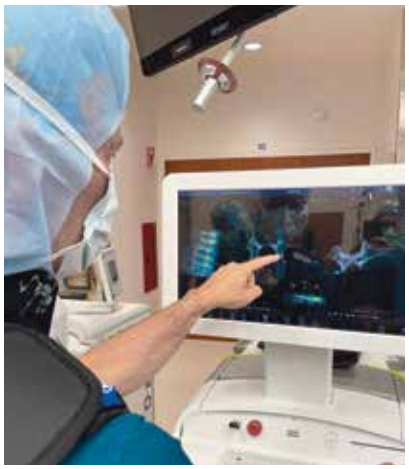
Sara Sabbagh, DO, a pediatric rheumatologist who researched the disorder and did her fellowship at Children's National Medical Center and the National Institutes of Health, is heading the clinic.

"There are only a handful of juvenile dermatomyositis subspecialty clinics in the nation," Dr. Sabbagh says. "Specialty care for this rare condition is important because different patients can have a spectrum of symptoms, some of which can be very serious. Access to subspecialty care also gives patients the opportunity to complete disease assessments that aren't routinely included in a visit. These assessments help manage care and drive treatment decisions for patients living with juvenile dermatomyositis."

To refer a patient to the Juvenile Dermatomyositis Clinic, call (800) 266-0366.

Leaders in pediatric spine surgery

Mazor X robotic surgery technology improves accuracy and safety



Mazor X features a robotic arm that positions surgical instruments and implants based on images acquired through a CT or CT-ARM scan.

In early 2021, Children's acquired a new robotic guided spine surgery system called Mazor X, which is currently being used at only a handful of other pediatric spine centers in the country.

Benjamin G. Escott, MD, orthopedic surgeon at Children's and assistant professor of Orthopedic Surgery at the Medical College of Wisconsin, says the greatest benefits to using the new technology are improved accuracy and safety for patients. "The technology allows us to see the patient's anatomy and map out exactly how and where we want to position and place screws," he says. "Then, during surgery, the robot helps us place them with greater confidence."

Since March, Dr. Escott and J. Channing Tassone, MD, clinical vice president of Surgical Services and Anesthesia at Children's and associate professor at the Medical College of Wisconsin, have used the Mazor X technology for cases related to spinal trauma and adolescent idiopathic scoliosis. They expect to expand the use of the technology to spondylolisthesis and congenital scoliosis, among other conditions.

Learn more about Children's pediatric spine care at childrenswi.org/spine.

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Enteral Feeding Program innovates and educates

Unique Children's program focuses on tubes and bridles, offering wraparound services and educating providers

Children's Enteral Feeding Program is one of the only programs of its kind in the nation equipped to provide a full range of services for enteral feeding, including tube placement, speech therapy for feeding and swallowing concerns, dietitian support, and education and individualized case management for every patient.

In addition to traditional feeding tubes, the Enteral Feeding Program offers nasal bridles for home use, which help prevent nasoenteric tubes from being dislodged and increase patient mobility. "Many adult hospitals use bridles, but in pediatrics it is just not done," says Julie Lavoie, PhD, AC-PNP, MSN, MS, RD, program manager for the Enteral Feeding Program.

Using these specialized bridles requires additional training for the program's nurse clinicians, but the results pay off, because they allow babies to go home from the hospital sooner. "We want to send our patients home as soon as they are ready, and the NG bridle decreases a child's length of stay by 26 days, on average," Lavoie says. "It also helps avoid G-tube placement in newborns 60 percent of the time, because the bridle gives our infants time to learn to eat at home and master sucking and swallowing."

The Enteral Feeding Program has shown such success with placing NG bridles — including publishing a paper in the *Journal of Pediatrics* that looked at quality of life when kids go home with different types of tubes and bridles — that the program is joining a multi-center collaborative looking at enteral feeding solutions when discharging NICU patients. "We're interacting with other NICUs in the country to try to bring this service to them," Lavoie says.

In addition, the Enteral Feeding Program recently was awarded the Building Bridges grant to further their education efforts for families when a G-tube is placed. "We reach out to families preparing to have a G-tube placed and offer to have them attend a one-hour class," Lavoie says. "We're also bringing them back for the initial independent tube change to provide that extra support." This not only gives families more confidence in changing tubes independently, but it will prevent many from ending up in the Emergency Department when they encounter difficulty with their first G-tube change.

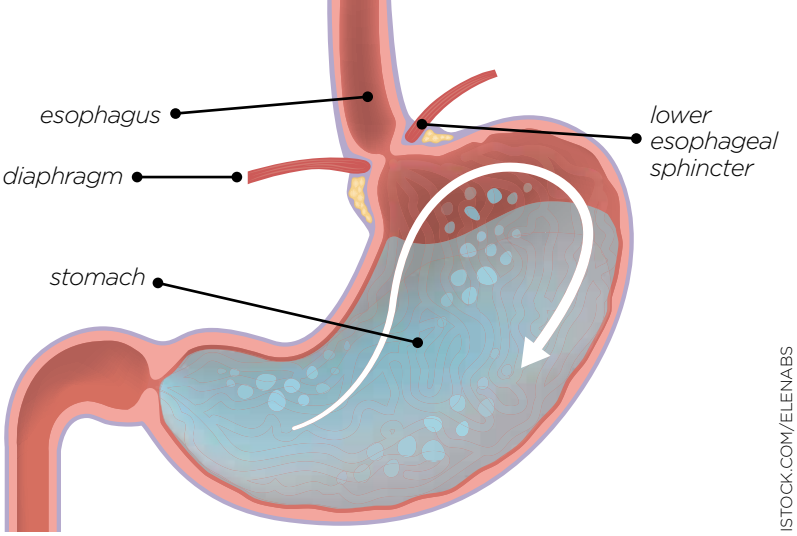
"Our overall focus is education, not only for families but also across disciplines for providers and nurses," Lavoie says. That's why the Enteral Feeding Program offers 24/7 provider and clinician support and is always willing to talk with providers — in the Children's system and beyond — who are looking for information about feeding tubes and bridles.

A nasal bridle helps keep an NG tube in place and allows patients to practice eating by mouth.

24/7 Physician Support

Children's Enteral Feeding Program team is available for in-person consults during regular clinic hours and remotely, including on weekends and holidays. To contact an enteral feeding clinician, access the call schedule in QGenda by searching "enteral feeding." For providers without QGenda access, call (414) 266-2085.

To learn more about the Enteral Feeding Program, visit childrenswi.org/enteral.



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Collaboration leads to cutting-edge treatment

First POEM performed at Children's to treat rare swallowing disorder

Last year, the gastroenterology and surgery divisions at Children's collaborated to successfully diagnose and treat a rare swallowing disorder — type 3 achalasia — in an 11-year-old boy. The result was the first peroral endoscopic myotomy (POEM) procedure, a relatively new endoscopic technique, performed on a child in Wisconsin.

A RARE DIAGNOSIS

When 11-year-old Dalton was having frequent episodes of food getting stuck in his throat, his mother took him to a local gastroenterologist, who suspected achalasia. But the tests were inconclusive. The gastroenterologist referred Dalton to Karlo Kovacic, MD, a pediatric gastroenterologist at Children's and assistant professor at the Medical College of Wisconsin.

Achalasia, a condition in which the lower esophageal sphincter fails to relax, affects about 1 in every 100,000 adults in the United States and only 1 in 500,000 children. Using high-resolution impedance esophageal manometry to assess esophageal muscle function, Dr. Kovacic diagnosed Dalton with type 3 achalasia, the most rare and difficult to treat form of the disease.

A SURGICAL APPROACH

Dr. Kovacic consulted with Dave Lal, MD, a general pediatric surgeon at Children's and professor of surgery at the Medical College of Wisconsin, about the best treatment approach in this unusual case.

For children with type 1 or type 2 achalasia, Dr. Lal typically performs two laparoscopic procedures: a Heller myotomy to cut the lower esophageal sphincter and relieve dysphagia, followed by a fundoplication to prevent stomach acid from coming back up into the esophagus. But because more of the esophageal muscle is affected in patients with type 3 achalasia (in this case, approximately 14 cm), Dr. Lal thought that peroral endoscopic myotomy (POEM), an innovative endoscopic technique capable of a longer myotomy, was the best option.

He asked Andrew Kastenmeier, MD, a minimally invasive gastrointestinal surgeon at Froedtert Hospital and an associate professor of General Surgery at the Medical College of Wisconsin, to perform the first POEM at Children's in October 2020. Dr. Kastenmeier, who has performed POEM in adults since 2016, says the benefits of this procedure over a traditional Heller myotomy are less pain, a quicker recovery and no external scars. However, there is a concern that POEM could make kids prone to acid reflux because there is no fundoplication involved.

TREATMENT OPTIONS

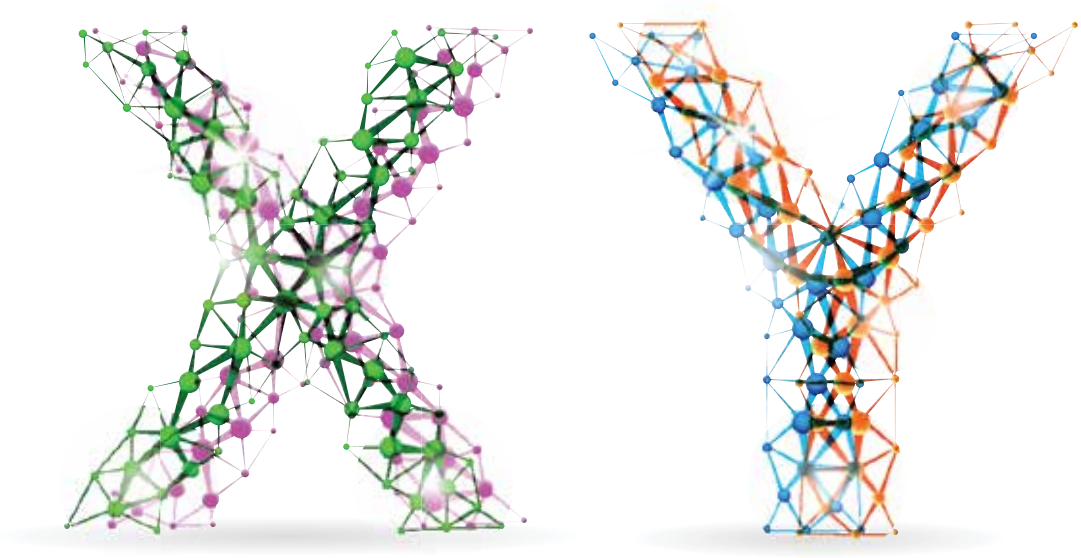
In Dalton's case, the POEM procedure was successful, and his ability to eat and swallow has dramatically improved. Dalton will continue to receive follow-up care with Dr. Kovacic to monitor for acid reflux.

While the traditional Heller myotomy is an excellent treatment option for many pediatric achalasia patients, this collaboration has expanded Children's knowledge, expertise and resources to provide patients options for cutting-edge treatment and improved quality of life.

"Kids with achalasia should be seen and treated somewhere like Children's, where all of the treatment options are offered," Dr. Kastenmeier says. "That way, you can tailor the treatment approach based on the particular patient's needs."

Dalton, 11, was the first child to undergo peroral endoscopic myotomy in Wisconsin.

Learn more about Children's Gastroenterology, Liver and Nutrition Program at childrenswi.org/gi.



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Navigating genetic testing

A primer on testing approaches for developmental delays, autism and congenital anomalies

BY DONALD G. BASEL, MD

How can parents navigate genetic testing for developmental delays, autism or multiple congenital anomalies? This is probably the question the Genetics and Genomics Program at Children's is asked most frequently.

The stratospheric field of genetic testing is constantly changing, and in the future, it will be much simpler: a single test that queries most of the important mechanisms for genetic disorders across a broad spectrum of clinical presentations. However, with such expanded testing comes

Donald G. Basel, MD, is a pediatric medical geneticist and medical director of the Genetics Center at Children's Wisconsin and a professor of Genetics at the Medical College of Wisconsin.

To refer a patient
to the Genetics and Genomics Program, call (877) 607-5280 or visit childrenswi.org/refer.

To make an appointment
Call Central Scheduling at (414) 607-5280 or toll free (877) 607-52800

For more information
Visit childrenswi.org/medical-care/genetics-and-genomics-program.

increased responsibility and liability, which raises ethical concerns and invites a philosophical discussion that is outside the scope of this article.

In the present, when we are seeking the cause of developmental delays, autism or multiple congenital anomalies, we must choose between the available genetic testing approaches, each of which has its advantages and limitations.

THE TEST

As a primer to thinking about an approach to testing, it will be helpful to remind ourselves of the information we can expect from different testing modalities. Broadly speaking, there are three different types of testing.

1. Chromosomal analysis looks at the microscopic morphology of chromosomes and can tell us if there are large aberrations in chromosome number or positioning. An example would be the loss of an X chromosome in Monosomy X (Turner Syndrome).

Chromosomal analysis is rarely used in routine testing today. It is typically reserved for when a specific diagnosis is suspected or if there are concerns that might suggest a chromosomal rearrangement (such as an unbalanced translocation). It is still a common tool in oncology and is far from redundant but has lower yield for diagnosis than other tests available when evaluating for developmental disorders or multiple congenital anomalies.

2. Chromosomal microarray, also called comparative genomic hybridization (CGH) array, is a technology that uses approximately 3 million markers to map chromosomes. An analogy I like to use is that an array is the "Google Maps" to the "globe" of chromosome analysis. There is a lot more detail, but you are still looking at the same thing. An array is useful to show copy number variation (CNV), which is reported as

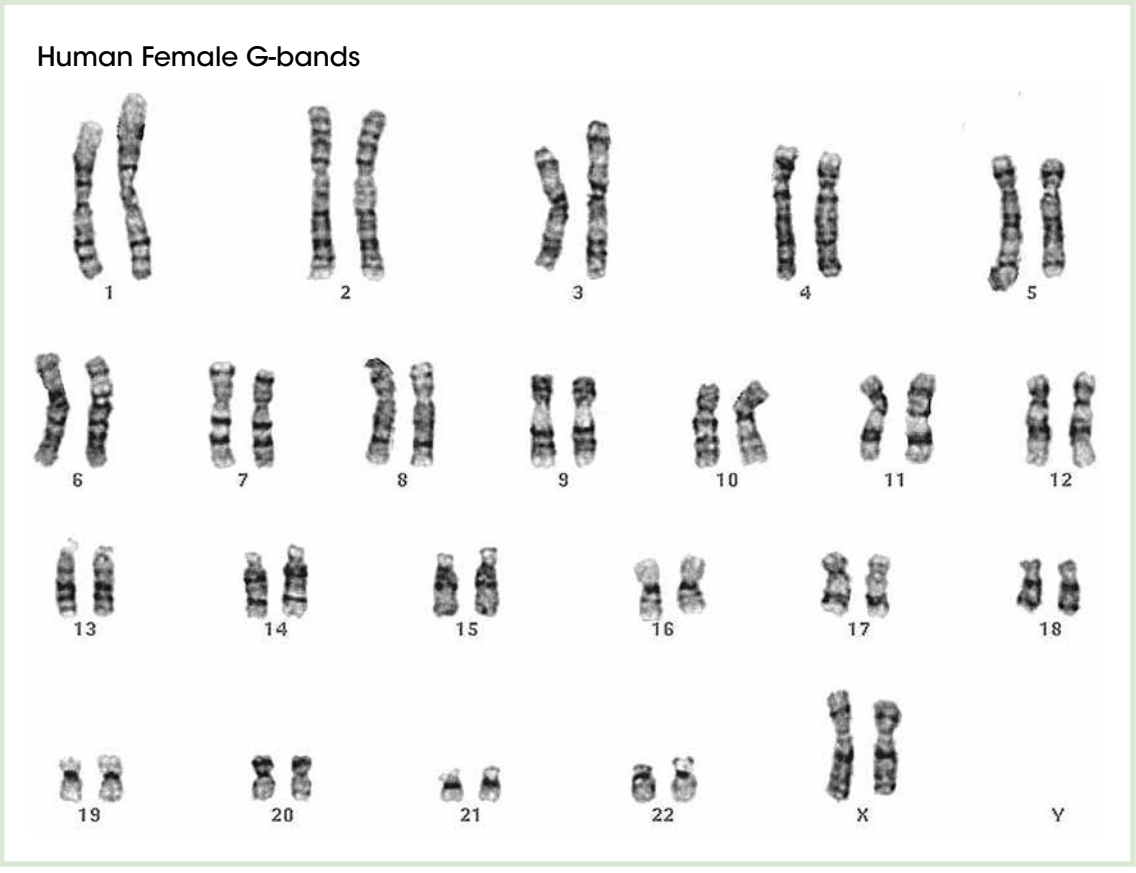

Figure 1. *Normal female karyotype*

Chromosomal array

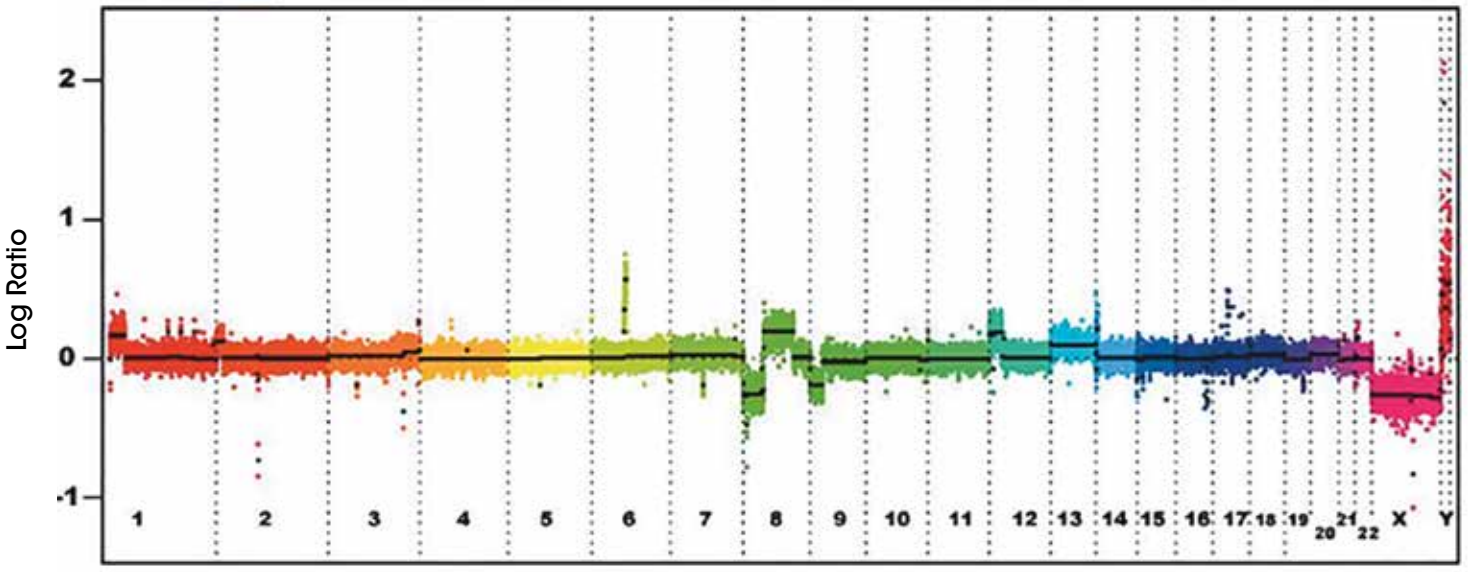

Figure 2. *Whole genome copy number analysis using a CGH array*

small deletions or duplications across the entire genome.

CNV is estimated to account for approximately 5 percent of normal human variation, which is one of the reasons that the technology is comparative. Normal human variation is accounted for, and the test only looks for deletions or duplications that are uncommon or unique.

Laboratories have a standardized reporting threshold that is typically 200,000 base pairs (200 Kbp) for deletions and 500,000 base pairs (500 Kbp) for duplications. Most common syndromes, such as 22q11.2 deletion syndrome or Williams syndrome, represent 2 million to 3 million base pair (Mbp) deletions. An average gene is approximately 10,000 to 15,000 base pairs in size, and thus smaller deletions that could impact gene function will not be reported through this type of testing.

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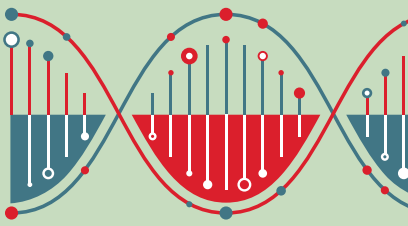
Children's Wisconsin Genetics and Genomics Program

The Genetics and Genomics Program at Children's is the largest genetics program in Wisconsin and a national leader in whole genome sequencing. We diagnose, educate, counsel and medically manage patients with a variety of genetic conditions. In addition, we continue to forge partnerships with other academic institutions to bring cutting-edge treatment to patients with genetic disorders, including enzyme replacement and gene-based therapies. Our team of specialized experts includes:

- **Medical geneticists**
- **Advanced practice providers**
- **Genetic counselors**
- **Metabolic and biochemical dietitians**



Genetic testing terms

Copy number variation (CNV): A segment of DNA in which copy number differences have been found by comparison of two or more genomes. The segment may range from one kilobase to several megabases in size. The variation is usually due to deletion or duplication.

Exome: The approximately 1 percent of the human genome that comprises all exons and therefore the entire protein-coding region of the genome.

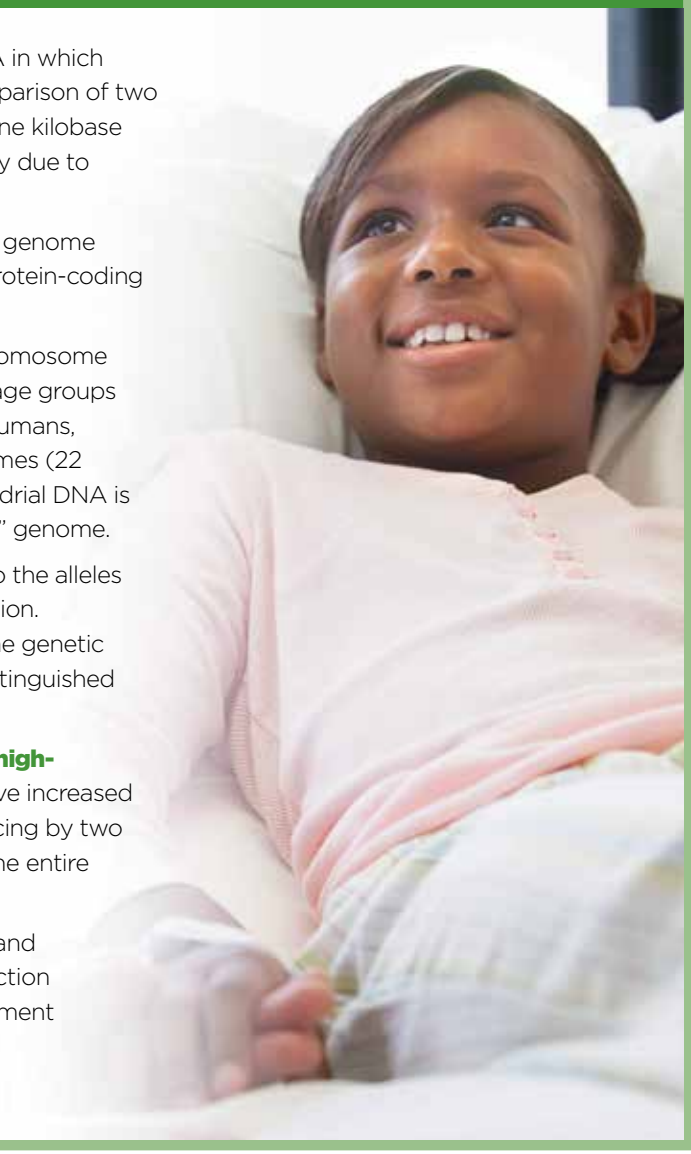
Genome: In eukaryotes, the basic (monoploid) chromosome set, consisting of a species-specific number of linkage groups and the genes contained therein. For example, in humans, the genome consists of the 24 different chromosomes (22 autosomes, X and Y chromosomes). The mitochondrial DNA is usually considered to be a separate "mitochondrial" genome.

Genotype: The genetic constitution with respect to the alleles at one or more pairs of genetic loci under observation. The genotype of an individual is the sum total of the genetic information contained on the chromosomes, as distinguished from the individual's phenotype (idiotype).

Next-generation sequencing (also referred to as high-throughput sequencing): New techniques that have increased the speed and decreased the cost of DNA sequencing by two orders of magnitude, enabling the sequencing of the entire genomes of many individuals.

Phenotype: The observable properties (structural and functional) of an organism, produced by the interaction between the organism's genotype and the environment in which it finds itself.

Source: Dialogues Clin Neurosci. 2010 Mar; 12(1): 116–120.



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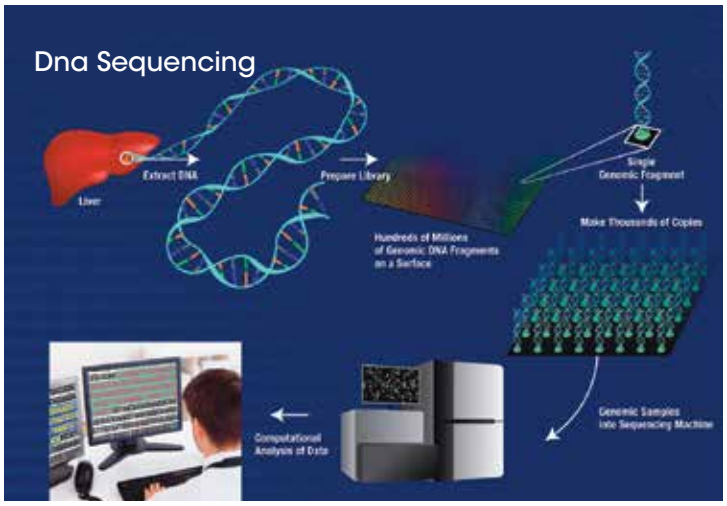
3. Gene sequencing is the final broad category for testing. This also takes many forms and can be considered under the context of targeted single-gene sequencing or sequencing multiple genes in a panel or as part of exome or genome sequencing.

Commercial labs predominantly use next-generation technology to sequence large numbers of genes simultaneously and then only report back the genes that were requested on the test requisition form. It is important to know what genes the lab you choose offers in their report and also how well their technology covers all of the sequence of the genes that you are particularly interested in. This is one of the reasons many providers refer to the Genetics and Genomics Program at Children's. We have a team that regularly curates which tests are optimal, and our PLUGS® (Patient-centered Laboratory Utilization Guidance Services) team ensures that the appropriate testing is being ordered after the necessary insurance authorization is approved.



COURTESY: NATIONAL HUMAN GENOME RESEARCH INSTITUTE, GENOME.GOV

Figure 3. *Technological improvements and automation have made DNA sequencing faster and less expensive, allowing scientists to sequence large numbers of genes at once. This illustration shows the sequencing process from sample collection to capture, massive parallel sequencing and analysis.*

WHAT TO ORDER?

Chromosomal microarray is standard of care and supported by the U.S. Food and Drug Administration (FDA) as medically necessary as the first-tier evaluation in children with developmental delays, autism or multiple congenital anomalies. This method yields a diagnosis in approximately 20 percent of cases. This is a very reasonable test to consider performing in a primary care setting after pretest counseling to establish appropriate expectations for outcomes, which could be diagnostic or non-diagnostic, or result in a variant of uncertain significance (VUS). It is also important to ensure that the test is a covered benefit through insurance preauthorization.

Some of these additional burdens remain the primary reason for a genetics consult, and as Children's continues to develop our digital health platform, the genetics team will be able to offer remote counseling. In addition, if a Children's laboratory is utilized, the PLUGS® team can help navigate the insurance authorization hurdles. These additional services are not yet fully realized, but we hope to have these services in place to support our community pediatricians and providers in the near future.

If microarray testing is non-diagnostic or results in a VUS, the value of input from the genetics team becomes more important to determine the best next step for testing strategy. Comprehensive clinical examination and other tools may be used to aid clinical diagnosis and direct testing. For example, the "gestalt" of the patient's overall phenotypic presentation is taken into consideration and may assist in navigating whether consideration of a large gene panel or metabolic workup is warranted.

The results from sequencing frequently are not bipolar, and VUSs require further evaluation to try and resolve their importance.

The genetics team is always willing to help navigate these often-uncharted waters. We hope this primer has provided you with the necessary tools needed to consider the journey.

Continuing medical education

Please join us for these events and more

Children's is committed to providing continuing medical education and continuing education credits. We are continually planning events that highlight the latest news about our specialties, best practices, COVID-19 and other important topics.

FIND EVENTS
For a list of upcoming and recorded events, visit **childrenswi.org/cme.**

QUESTIONS?
Email **mdconnect@chw.org.**

BEST PRACTICES IN PEDIATRICS | 2022 HYBRID CONFERENCE
March 4–5, 2022
We are thrilled to announce our long-standing tradition of meeting in Wisconsin Dells to learn about current pediatric practices and information is back. We will also offer a parallel virtual experience. The safety and health of our attendees, speakers and all who support these events is our top priority. We will adhere to the latest CDC guidelines and provide updates closer to the event.

To learn more about the conference and register, visit childrenswi.org/cme.

BEST PRACTICES IN PEDIATRICS | SPECIAL EDITION: MOVING PAST COVID-19
At this event on Sept. 18, Children's Wisconsin experts provided up-to-date information about the COVID-19 landscape and its impact on children and their families. Topics included mental and behavioral health, MIS-C updates from cardiology and rheumatology faculty, return-to-play guidelines from sports medicine faculty and COVID-19 updates from infectious disease faculty.

View the recordings at childrenswi.org/cme.

NEW ON STAFF
Specialists in our network ready to help

To refer a patient, call (800) 266-0366.

Critical Care

Matthew Amidon, DO, is a pediatric critical care physician at Children's Wisconsin and assistant professor of Pediatric Critical Care at Medical College of Wisconsin.

- Chicago College of Osteopathic Medicine, DO
- Advocate Children's, Pediatrics
- Medical College of Wisconsin, Pediatric Critical Care

General Medicine

Matthew Levy, MD, is a pediatrician at Children's Wisconsin and section chief of General and Community Pediatrics at Medical College of Wisconsin.

- Sackler School of Medicine (Israel), MD; New York Medical College, MD; Johns Hopkins Bloomberg School of Public Health, MPH
- New England Medical Center, Pediatrics; Winthrop University Hospital, Pediatrics
- Georgetown University Hospital, Community Pediatrics and Child Advocacy; National Academy of Science, Health Policy
- Pediatrics

Hematology-Oncology

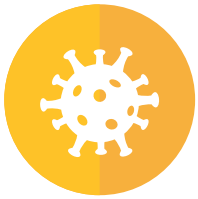
Kristin Page, MD, is a pediatric hematologist-oncologist at Children's Wisconsin and associate professor of Pediatric Hematology-Oncology at Medical College of Wisconsin.

- University of Vermont College of Medicine, MD
- University of Vermont College of Medicine, Pediatrics
- Duke University Medical Center, Pediatric Hematology-Oncology
- Pediatric Hematology-Oncology, Pediatrics

Pain Management

Monica Gremillion, PhD, is a pediatric pain management specialist at Children's Wisconsin.

- Medical College of Wisconsin, PhD



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Departures

Children's would like to thank the following providers for their contributions. We wish them well in future endeavors.

Thomas Abshire, MD
Hematology-Oncology

Francis Kim, MD
Critical Care

Sabina Siddiqui, MD
Pediatric Surgery

Manu Sood, MD
Gastroenterology

KEY TO SYMBOLS: DEGREE RESIDENCY FELLOWSHIP BOARD CERTIFICATION

Children's Hospital of Wisconsin
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CHW-051

Here for you whenever or wherever you need us

The Children's Wisconsin physician liaison team is available to you in person or virtually and is dedicated to developing and maintaining relationships with referring physicians.

In addition to serving as a link between Children's and referring physicians, your liaisons can:

- **Provide** information about Children's services and programs
- **Direct** you to continuing education opportunities
- **Facilitate** solutions to referral issues

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