HSS Pediatrics: Keeping Kids in the Swing of Things
Cover: Being born with bilateral clubfeet has not kept 4-year-old Jack Gore from getting into the swing of things thanks to the expertise of Dr. David Scher.

Hospital for Special Surgery’s pediatric team of orthopedic surgeons, rheumatologists, pediatricians, and anesthesiologists gather in the Leon Root, MD Motion Analysis Laboratory. Pictured here are:

Seated, from left:
David M. Scher, MD, Cathleen L. Raggio, MD, Shevaun M. Doyle, MD, and Roger F. Widmann, MD, Chief of Pediatric Orthopedic Surgery

Middle row, from left:
Hyun Susan Cha, MD, Victor M. Zayas, MD, Director of Pediatric Anesthesiology, Lisa S. Ipp, MD, Chief of Pediatrics, Stephanie L. Perlman, MD, Thomas J. A. Lehman, MD, Chief of Pediatric Rheumatology, Daniel W. Green, MD, John S. Blanco, MD, and Leon Root, MD, Chief Emeritus of Pediatric Orthopedics

Top row, from left:
Emma Jane MacDermott, MD, Andrew C. Lee, MD, Kathryn DelPizzo, MD, Chris R. Edmonds, MD, and Alexa B. Adams, MD
A Commitment to Children with Musculoskeletal Conditions

Eight years ago, when she was just two years old, Gabrielle Ayoub developed juvenile arthritis. Last September, Hernan Munoz-Kenny was driving to football practice when he was struck by a drunk driver traveling 70 miles per hour. Hernan was injured from head-to-toe, and his left leg was shattered. Both Gabrielle and Hernan are patients at Hospital for Special Surgery, where each year more than 17,000 visits are made to the Hospital’s pediatric orthopedic and rheumatic disease specialists.

It is no surprise that Special Surgery is the destination for the care of so many children with orthopedic conditions and rheumatic disorders. Since 1863, the treatment and rehabilitation of children with disabilities has constituted the Hospital’s earliest mission. In fact, its first patient was a 4-year-old boy with paralysis of his left leg.

As we prepare for the construction of our new Children’s Pavilion – a 34,000-square-foot, family- and child-friendly environment spanning the Hospital’s fifth floor – we are reminded of the commitment that our founders had to improving the lives of young patients. It is a commitment that continues to be carried out every day by our pediatric orthopedic surgeons, pediatric rheumatologists, pediatric anesthesiologists, and pediatricians, in collaboration with health professionals from many disciplines. “Providing the best of care to children with musculoskeletal problems is a key mission of Hospital for Special Surgery,” says Thomas P. Sculco, MD, Surgeon-in-Chief. “We are committed to our pediatric patients; this has been the tradition of the Hospital for almost 150 years, and we are more dedicated to it than ever.”

Today, the Division of Pediatric Orthopedic Surgery, under the direction of Roger F. Widmann, MD, manages the full spectrum of musculoskeletal problems – from common fractures to congenital conditions, complex spinal disorders, and traumatic injuries.

Under the leadership of Thomas J.A. Lehman, MD, the Division of Pediatric Rheumatology is a center of excellence known worldwide for the care provided to children with juvenile arthritis, lupus, and scleroderma; the ability to diagnose and treat rare and difficult cases; and pioneering work in developing new and alternative treatments for rheumatic disorders in children.
“A multidisciplinary approach is key,” adds Stephen A. Paget, MD, Physician-in-Chief. “Our pediatric patients thrive from the involvement of expert physicians and surgeons, nurses who deliver care with compassion, social workers who help families cope with the stresses of having a child with a chronic illness or disability, and rehabilitation therapists who guide each child individually to reach his or her highest potential.”

Perfecting Treatment for Osteogenesis Imperfecta

Osteogenesis imperfecta (OI) is a congenital disorder in which children are born with very brittle bones. “The bones are so fragile that they can actually break with a prenatal sonogram,” says Daniel W. Green, MD. According to Dr. Green, Special Surgery cares for one of the largest populations of patients with OI in the region. “In the last few years, newer surgical implants and surgical techniques have been designed specifically for children with OI to try to limit the frequency of their surgeries and improve their function,” says Dr. Green. “At the same time, the same class of medicines – bisphosphonates – that are being used to treat osteoporosis in adults has been shown to have a beneficial effect on children with fragile bones.”

“We are unable to use standard orthopedic implants because patients with OI have such small bones,” explains Dr. Green. “In fact, many of the children would need an implant thinner than a straw.” Dr. Green began using new rodding technology that was the invention of François Fassier, MD, at McGill University. “Dr. Fassier’s creation of three millimeter rods for the femur and humerus allows us to insert them in younger children, leading to decreased fractures and improved function. The implants are designed in a way that they do not affect the growth plate, and in many cases, the rods expand as the children grow, helping to avoid repeat surgical procedures.”

A Specialized Center for Skeletal Dysplasias

“As a parent you have to look for what is really best for your child,” says Veronica Vivar, who was told after the birth of her son Nicolas that he may have a type of skeletal dysplasia. “I wanted to see a doctor who was used to seeing this type of condition and could give him the best care possible. That’s what I found with Dr. Raggio and the program at Special Surgery.”

Skeletal dysplasia is an umbrella term for a group of genetic conditions characterized by differences in the size and shape of the limbs, trunk, and/or skull, all of which can impact stature. “There are over 300 known dysplasias, and today, with molecular-based genetic testing, we are able to differentiate many of the different types and manage them accordingly,” says Cathleen L. Raggio, MD, who co-directs the Kathryn O. and Alan C. Greenberg Center for Skeletal Dysplasias with geneticist Jessica G. Davis, MD. The Center, which currently cares for over 200 patients from around the country, was created out of a need to provide comprehensive care to young patients with skeletal dysplasias, and to offer ongoing care as they become adults. Appointments are comprehensive so that each patient can see the Center team (orthopedic surgeon, geneticist, physical therapist, social
In the Motion Analysis Laboratory, Dr. Leon Root – for whom the lab is named – is assisted by physical therapist Lisa Cannegieter, PT, to prepare 6-year-old Juan Chumaceiro for a gait evaluation. Motion analysis enables surgeons to see which muscles are working and can guide their treatment plan.
worker, and dietician) on one day and in one place, minimizing the burden of scheduling and traveling to multiple medical appointments.

**Proven Care for Clubfeet**

Nearly 10 years ago, the treatment of clubfoot changed dramatically with a minimally invasive approach called the Ponseti method. The Ponseti technique is based on the principle that the tendons, ligaments, joint capsules, and certain bones of the newborn’s foot will yield to gentle manipulation and casting begun within the first few weeks of life. “If the details of this technique are applied without modification, most clubfeet can be corrected without the need for major reconstructive surgery,” says David M. Scher, MD, who used the technique with Jack Gore (on the cover). “Following the treatment phase, a removable brace is used to maintain the foot in its corrected position. Long-term results indicate that foot function is comparable with that of normal feet. Dr. Ponseti, who passed away this fall, made a tremendous impact on our field and taught me the technique. Those of us who treat clubfeet, and our patients, owe him our gratitude for his work and tireless efforts in this field.”

**Pacesetting Work in Cerebral Palsy**

In the summer before his senior year of high school, 17-year-old Adam Johnson came to see Dr. Scher because he was having an increasingly difficult time walking due to problems associated with cerebral palsy. “Adam, who has spastic diplegia cerebral palsy, meaning it involves his legs, had a crouched and twisted gait,” says Dr. Scher. “When we see someone Adam’s age with crouch gait, the concern is that if left untreated, there’s a potential that they could lose the ability to walk.” To determine if Adam was a candidate for surgery, Dr. Scher recommended that he be evaluated in the Hospital’s Leon Root, MD Motion Analysis Laboratory. “Motion analysis enables us to monitor in a very precise way the movement of all the joints in the lower extremities, when the muscles turn on and off, and the forces acting across the joints during the act of walking,” says Dr. Scher, Co-Medical Director of the Motion Analysis Laboratory. “We can create a very detailed description of a person’s gait, which then guides treatment.”

“Motion analysis has grown into a very sophisticated process,” says Leon Root, MD, who is the founding Clinical Director of the Motion Analysis Laboratory. “It provides us with an objective way of looking at the patient. I can conduct pre- and post-operative studies to determine outcomes and evaluate progress of a patient over time.”

**Improving Surgery for Scoliosis**

Children with early onset scoliosis are now benefitting from new surgical options that protect their growing spine. “Traditional treatment involved fusion of the spine,” says John S. Blanco, MD. “We now know that in younger children with spinal deformities, fusing the spine exacts a penalty in terms of pulmonary function. HSS surgeons have significant expertise with the vertebral expandable prosthetic titanium rib that allows for growth of the spine, minimizes spinal deformity, and
allows for normal lung development. With this device, the expandable rods are attached to the ribs, spine, or pelvis, and can be expanded over time.”

**Taking Care of Orthopedic Trauma**

Just shy of his 13th birthday, Patrick Mozingo, now 17, was struck by a car crossing a street. His right leg was shattered and his mother was told the leg would need to be amputated. A friend advised her to take Patrick to Special Surgery, where Dr. Widmann operated immediately to reconstruct and save Patrick’s leg.

“Reconstruction and limb lengthening techniques are used to replace missing bone and to lengthen and/or straighten deformed bone segments of legs and arms that may be the result of trauma, a poorly healed fracture or a fracture that involved damage to the growth plate, a bone tumor, or a congenital defect,” says Dr. Widmann. “To repair these problems, we call on the body’s own capacity to create new bone.”

After surgery to prepare the bone to be lengthened, the leg is stabilized using an internal or external fixation device. Growth of new bone tissue is accomplished by adjusting pins in the frame several times a day for a period of four to six months. The bone grows approximately a millimeter a day and continues to grow until the desired length of bone has been achieved.

**Understanding Fractures in Children**

“Pediatric fractures are different than those we see in adults, particularly since young bones are still soft,” says Dr. John Blanco. “For example, in plastic deformation injuries, a child’s bone bends and doesn’t completely break, or in greenstick fractures, the bone partially breaks. Or a fracture can involve the growth plate, which is more serious. Pediatric orthopedists have the experience to appreciate the different fracture types and make an accurate diagnosis.”

While most pediatric fractures are treated nonoperatively, there are certain cases that do better with operative management. “Fortunately, we now have scaled-down implants that are small enough for pediatric patients and take advantage of the rapid healing ability of a child’s bone,” says Dr. Blanco. “If you can correctly diagnose the child’s fracture and get timely and appropriate treatment, most of these fractures are going to heal very well.”

**Sports Injuries in Children**

Stress fractures in their lower lumbar spine are appearing with more frequency in young athletes, and Dr. Daniel Green and other HSS specialists are conducting various studies to determine why. “They may be associated with how aggressive they are in their sports at the time of their growth spurt,” says Dr. Green. “These athletes need to be aware that low back pain that does not go away with a few days of rest could be more serious than a muscle sprain. With quick recognition of the injury, a brief time out from sports, and physical therapy, most can go back to sports within three to six months.”

Dr. Green and his colleagues are also seeing more serious knee injuries. Many are rupturing their anterior cruciate ligament, and a number of young teenage athletes are having isolated meniscal tears. “We’re finding that with several of the lateral meniscal
Personal Triumphs for Our Young Patients

The conditions of children seen by our pediatric orthopedic surgeons and rheumatologists may involve a few visits for a broken arm or long-term relationships for a chronic disease. These physicians and their colleagues in nursing, rehabilitation, and social work develop close relationships with their patients and their families, helping them to triumph over their medical, surgical, or developmental challenges.

1 year old
Nicolas Vivar
At 14-months-old, Nicolas Vivar is a happy, energetic, and healthy boy. At Special Surgery, Nicolas has his own team of specialists who manage the multiple medical issues that can be associated with his condition. He sees his doctor, Cathy Raggo, every three months, as well as Dr. Jessica Davis, the geneticist. “Nicolas is doing great,” says his mother Veronica. “We’ve been very lucky. He hasn’t had any major surgeries. What’s important for him now is to have the medical care that he needs and for him to develop as healthily as possible. Kids with skeletal dysplasias can live fulfilling lives just as anyone else.”

4 years old
Jack Gore
At her 20-week sonogram, Tara Gore was told that her baby would be born with clubfeet. “We were devastated and started to research clubfeet. We were very fortunate to learn about the Ponseti method,” says Mrs. Gore. “Before Jack was born we met with Dr. Scher, who was one of the few doctors in the city trained by Dr. Ponseti and highly regarded in the field. He explained everything, showed us casts and little shoes, and completely put us at ease.” Within a few weeks of Jack’s birth, he was in the office of Dr. David Scher having his first casting done (photo below). “He’s an amazing doctor,” says Mr. Gore. “It’s a blessing that we found him.”

7 years old
Hannah Jaramillo
At seven years old, Hannah is truly enjoying her childhood. When you see her on the playground, it is hard to imagine that since the age of three she has been coming to Hospital for Special Surgery for treatment of rheumatoid arthritis under the medical guidance of Drs. Emma MacDermott and Alexa Adams, in collaboration with orthopedic surgeon Dr. Daniel Green. With medications, Drs. McDermott and Adams have been able to keep her inflammation under control. For the past two years, Hannah has not had any disease flares. “She has taken up karate and dance,” says her mother, Martha Jaramillo. And clearly, she stays very active.
10 years old

Gabrielle Ayoub

When Gabrielle Ayoub was just 2 years old, her mother noticed that she was limping and that her knee was swollen. The pediatrician thought it might be pauciarthritis, a form of childhood arthritis that typically affects large joints such as the knee, which can develop persistent swelling if not treated early on (image at left). She recommended that Mrs. Ayoub take Gabrielle to see Dr. Thomas Lehman, who confirmed the diagnosis. “We’ve been going to HSS now for eight years. Early on, Dr. Lehman said that Gabrielle could do some kiddie classes to stay active, so I signed her up for dance school,” says Mrs. Ayoub. “Since then, dance became her passion. This past July, she did her first solo in a national competition and got a gold medal. She’s really come a long way.”

13 years old

Maria Serrantino

Maria Serrantino has a goal to be a collegiate softball player. But after her 13th birthday last April, Maria developed tears in both of her menisci. She had actually been living with pain in her knees for years. Her diagnosis was congenital discoid meniscus. Rather than having a regular shaped meniscus, Maria’s was disc-shaped with extra tissue. In outpatient surgeries five weeks apart, Dr. Daniel Green reshaped the discs in each knee arthroscopically (image at right). Physical therapy followed for three weeks, twice a week. And just two months after the surgeries, weeks earlier than expected, she was back playing softball. “She’s 100 percent healed,” says her father, John.

17 years old

Clayton Robertson

During a routine physical when he was 15 years old, Clayton Robertson was told by his physician that he had a curve in his back, and it was recommended that he see Dr. Roger Widmann at Hospital for Special Surgery. “Dr. Widmann told me I would need surgery because the curve was severe,” says Clayton. An active tennis player, Clayton and Dr. Widmann had in-depth discussions on how spinal fusion (as shown on his post-operative X-rays at right) would affect his ability to return to high level athletics and tennis in particular. Dr. Widmann proceeded with the surgery, and as early as 12 weeks after surgery Clayton was back on the court. “The surgery actually made me stronger,” says Clayton. “I was overcompensating for the curve and the surgery corrected that.”

18 years old

Adam Johnson

At 17 years old, Adam Johnson learned he would need major surgery to correct a progressively worsening condition called crouch gait, which was related to spastic dysplasia cerebral palsy. “With crouch gait, it becomes difficult for the person to stand erect without a great deal of effort,” says Dr. David Scher. The complex surgery was performed in two stages, three weeks apart in the fall of 2008. “Adam went back to school in mid-January in a wheelchair,” says his mother, Debbie. “Then he progressed to using a walker and then crutches in time for graduation. Now he’s a lot taller!” Adam is currently a freshman at Rider University majoring in theater.
Parents from across the country and around the world bring their children for a consultation with Dr. Thomas Lehman, shown here with Nile Cohen, who has juvenile rheumatoid arthritis. Dr. Lehman is renowned for managing young patients with diseases that are difficult to diagnose or treat. Says one parent, “When he walks into that exam room, he’s just so focused on that child.”
tears, the younger child has a condition known as congenital discoid lateral meniscus where the meniscus, instead of being in the shape of a crescent, is more oval,” says Dr. Green. “This makes them more prone to tears. However, the condition can be successfully treated through arthroscopic surgery, and the child can return to activities within a short amount of time.”

Managing Outpatient Orthopedic Care
Shevaun M. Doyle, MD, focuses her practice on pediatric trauma and pediatric and adolescent metabolic bone diseases, managing them non-surgically in the outpatient setting. “I see a lot of children who have fallen and broken their arm, clavicle, ankle, or other bones,” says Dr. Doyle. In addition, Dr. Doyle manages orthopedic issues commonly seen in newborns. These include hip dysplasia, where a baby’s hip is unstable and can be addressed with simple, non-invasive measures, or foot deformities that can be treated with casting.

Perspectives from Pediatricians
“Our pediatricians have developed a unique niche at HSS,” says Dr. Widmann. “We are one of the few places that has pediatricians intimately familiar with pediatric orthopedic diseases. They are very important to our success as orthopedic surgeons.”

“Our pediatricians manage both the pre-operative evaluation and inpatient care of children admitted for orthopedic surgery or a procedure requiring sedation,” says Lisa S. Ipp, MD, Chief of Pediatrics. “We have established guidelines for pre-surgical clearance and have developed protocols to ensure continuity of care before, during, and after surgery.”

Under Dr. Ipp’s leadership, Stephanie L. Perlman, MD, and Hyun Susan Cha, MD, provide direct patient care. “The doctors alternate their roles week to week, enabling them to follow the same patient who they saw during the pre-operative visit after surgery,” says Dr. Ipp.

“We spend a lot of time with parents, providing reassurance and answering their questions,” adds Dr. Perlman. “We can give them the big picture about what to expect before and after surgery. Surgery for a child can be a scary time for parents, and I think that they find communication with the pediatrician very helpful.”

Hyun Susan Cha, MD, agrees. “There is a lot of education that occurs during my visit with the family,” says Dr. Cha. “We also manage information from the surgeon, the primary pediatrician, and any subspecialist they might have seen. It can be an overwhelming experience, especially for parents of a child with complicated issues. We try to help them sort it all out.”

Pediatric Rheumatology: The Expert’s Experts
Under the direction of Thomas J.A. Lehman, MD, the Division of Pediatric Rheumatology has become known for caring for children with rare and complex diseases. The Hospital’s pediatric rheumatologists have pioneered new therapies that are now widely accepted for children with lupus, juvenile rheumatoid arthritis, uveitis, scleroderma, and dermatomyositis, and they continue to work on a number of new studies related to documenting better therapies for children.
“Our role is to take care of patients who aren’t getting better with their current treatment and need more aggressive therapy,” says Dr. Lehman. “We’re the expert’s experts. Physicians send their challenging cases to us when the diagnosis is elusive or standard treatments have been unsuccessful.”

The Hospital’s pediatric rheumatologists care for the broad spectrum of diseases that fall within childhood arthritis – babies with Kawasaki disease, toddlers with pauciarticular arthritis, children with scleroderma, and young teens with polyarticular arthritis and lupus. Notes Emma J. MacDermott, MD, “When managing their disease and the medications that one chooses to treat them, you always keep in mind that you’re dealing with a body that’s in flux.”

“When our patients reach the age of young adults, it becomes appropriate for them to be referred for ongoing care to the Hospital’s adult rheumatologists,” says Alexa B. Adams, MD, who directs the Division’s Pediatric to Adult Rheumatology Transition Clinic. “We introduce them to their new physicians and assure the appropriate transfer of information.”

In the Hospital’s basic research laboratory, pediatric rheumatologist Theresa Lu, MD, PhD, seeks to understand the mechanisms that contribute to autoimmune and inflammatory diseases with a goal of developing new therapies for children and adults with rheumatic disease.

Maximizing Quality of Life

In the Pediatric Rehabilitation Center, physical, occupational, and speech therapists address mobility and functional limitations of their young patients.

“We work closely together to develop a plan of care for each child,” says Magdalena Oledzka, PT, MBA, PCS, Section Manager of Pediatric Rehabilitation. “At the same time, we are in ongoing communication with the doctors to discuss progress and information that is relevant for the therapeutic intervention.”

These therapists provide treatment to help children with disabilities navigate their home or classroom, enjoy themselves on the playground, and participate in activities that are meaningful to them. “In occupational therapy, this may involve helping them build their arm strength or improve their ability to grasp so that they can hold a pencil or play with a toy,” says Michelle Patterson, MS, OTR/L. In physical therapy, treatment focuses on improving coordination and balance, or a child’s ability to sit and walk.

Speech language pathologist Judy Mahler, MA, CCC-SLP, emphasizes the development of communication and feeding skills. Says Ms. Mahler, “To be able to help a child express their desires is something that we all strive to accomplish.”

As a pediatric social worker, Lorraine Montouri, LCSW, provides emotional support, works with parents on non-medical issues that may occur while their child is in the Hospital, and helps them to plan for the child’s needs at home. “The doctors, nurses, and therapists are just extraordinary in what they do. I try to support them but also help the child, siblings, and parents maintain their sense of being a family.”

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As a physical therapist, Magdalena Oledzka, PT, MBA, PCS, helps optimize function and mobility in children of all ages – from newborns to adolescents. Here she is working with Gertrude Lipkin to improve her muscle strength.
Marilyn Levitt recalls her introduction to Special Surgery.

Marylin Levitt remembers her son Arthur’s hospitalization at Hospital for Special Surgery as if it were yesterday. It was actually 40 years ago. “You never forget it, especially when your child is hospitalized for nearly four months,” says Mrs. Levitt.

Arthur Levitt was 13 years old when he injured his knee playing football as a quarterback for the Collegiate School team. “I don’t remember it looking like much of a cut,” says Mrs. Levitt. “But he got very, very sick about 10 days later, and was in terrible pain. It didn’t make sense to us and we got frightened.” The family called their friend Leon Root, who examined Arthur and admitted him to the Hospital.

“Arthur had a staph infection that developed into osteomyelitis, which is an infection in the bone,” says Dr. Root, who joined HSS in 1967, becoming Chief of Pediatric Orthopedics in 1970. “When Arthur got sick we were young people with our lives ahead of us. I’ve now known the Levitts for more than 40 years. We have been able to see how each of us developed, and we’ve always been close friends. Over the years I’ve taken care of several generations of the family.”

One day when the Levitts came to visit Arthur, they couldn’t find him. “His best friend was racing him down the hallway! He was in a wheelchair with the intravenous drip, and his best friend was pushing the wheelchair around the corridors trying to avoid us. We knew then it was time for him to come home.”

For years after his recovery, Arthur came back to HSS every Halloween with candy for the children. “He would leave it at the front desk on the pediatric floor because he was so grateful.”

When Mrs. Levitt was asked to become involved with the Board of Trustees, she didn’t hesitate for a moment. “I jumped at the opportunity. I think a lot of people knew that I loved the Hospital,” says Mrs. Levitt. “My husband and I are very dedicated to HSS, and we are delighted with their plans for the Children’s Pavilion. To have a place where the children can be treated and recover in a cheerful, brand new environment will be just wonderful.”

The Children’s Pavilion will offer a warm, cheerful environment for small children and adolescents alike. At the time Arthur was in the Hospital, the children’s service was made up of wards, each with several beds. Arthur was in a ward with three other children. At one point, his infection worsened, requiring him to be in isolation.

“He was desperately ill,” says Mrs. Levitt. “Dr. Lim, his pediatrician there, slept in his room for two nights. Pat Reeves was his nurse. If it hadn’t been for that pediatric group, he might not be walking today. We owe them our lives. And we’re indebted to Dr. Root,” says Mrs. Levitt.

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The Children’s Pavilion will be funded in part by a major endowment that will provide enduring support for the Pavilion’s infrastructure and development of new programs.