



Shriners Hospitals
for Children®— Greenville

The Trusted Leaders in Orthopaedic Care for Kids!



REFERRAL & RESOURCE GUIDE

Main Hospital Campus:

950 West Faris Road | Greenville, SC 29605

Outreach Clinic Locations:

Bluffton, SC | Hendersonville, NC | Spartanburg, SC

Referrals:

866.459.0013

www.GreenvilleShrinersHospital.org

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Welcome to Shriners Hospitals for Children — Greenville. We are one of 22 hospitals in an international health care system dedicated to improving the lives of children by providing pediatric specialty care, innovative research and outstanding teaching programs. For more than 90 years, we have been caring for children with a wide range of orthopaedic and neuromuscular conditions. Our multidisciplinary approach to care allows us to treat the whole child, which enables us to customize a treatment plan that best meets the patient's medical needs.



Shriners Hospitals for Children — Greenville prides itself on presenting a fun and welcoming atmosphere for all of our visitors. Walking through the front doors, you are immediately greeted by life-size animal sculptures and a soothing waterfall. Our colorful, kid-friendly environment is designed to put patients and their families at ease.

Our 50-bed pediatric orthopaedic facility includes the following:

- Two operating rooms
- 15 outpatient exam rooms
- In-house prosthetics and orthotics services
- Motion analysis center for evaluating gait abnormalities
- 3D imaging center with ultra-low radiation dose
- Physical and occupational therapy
- KidZone, complete with pool tables, video games and air hockey tables
- Handicap accessible playground

Signature Programs

Cerebral palsy
Clubfoot
Hip disorders
Limb deficiency
Spina bifida
Spine

Specialty Clinics

Arthrogryposis multiplex congenita
Genetics
Rett syndrome
Rheumatology
Tone management

Service Area

Shriners Hospitals for Children – Greenville is a regional pediatric orthopaedic hospital, serving children from six states.

Outcomes

Excellence in Quality and Patient Safety*

- Surgical site infection rating: 0.15%
- Average length of stay: 2.7 days
- Unplanned re-admissions: 2.5%

National Recognition for Patient Satisfaction

Press Ganey Guardian of Excellence Award in Patient Satisfaction 2013-2018

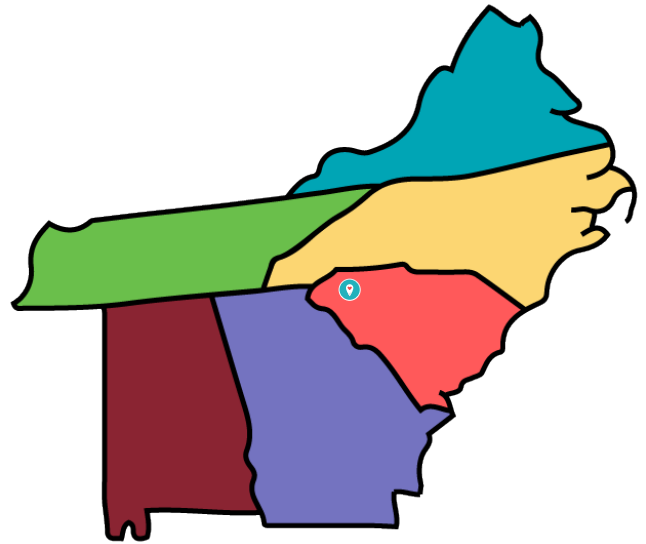
Press Ganey partners with more than 10,000 health care facilities, including more than half of all U.S. hospitals, to measure and improve the patient experience. The Guardian of Excellence Award recognizes top-performing facilities that consistently achieved the 95th percentile of performance in patient satisfaction, and is a health care industry symbol of achievement. Fewer than 5% of all Press Ganey clients reach this threshold and consistently maintain it for the one-year reporting period.

2016 Press Ganey Pinnacle of Excellence Award in Patient Satisfaction

The Press Ganey Pinnacle of Excellence Award recognizes top-performing facilities that consistently achieve 95th percentile performance in patient satisfaction based on three full years of data from May 2013 – April 2016.

2018 Press Ganey Overall Patient and Family Experience Satisfaction

In 2018 for Overall Patient and Family Experience Satisfaction, we ranked in the 93rd percentile, 98th percentile, and 99th percentile for Ambulatory Services, Inpatient Services and Outpatient Services respectively among pediatric service peers.



**Source: 2018 Quality Outcomes Data – Total Orthopaedic Surgical Procedures*

Orthopaedic Outreach Clinics

Improving access to trusted specialists in orthopaedic care for kids

The orthopaedic care in our monthly outreach clinics is provided by board-certified pediatric orthopaedic surgeons from Shriners Hospitals for Children – Greenville. These clinics are currently located in Bluffton, SC; Hendersonville, NC and Spartanburg, SC. Appointments are available for first-time patient evaluations, second opinions and follow-up care. Surgeries and multidisciplinary care for more complex orthopaedic conditions will continue to be provided at our main hospital location in Greenville, SC.

Simple Referral and Appointment Process

Providers: Please send all orthopaedic clinic referrals to our central intake office where our referral coordinators will work with families on appointment times and upcoming dates. You have the option to call our central referral line at 866.459.0013, or you may complete our referral form and fax to 864.240.3111. Once we successfully connect with the patient's family, scheduled appointment times will be faxed to you.

Clinic Locations

Bluffton Orthopaedics Clinic

Beaufort Memorial Medical Services at
Westbury Park
11 Arley Way, Suite 201
Bluffton, SC 29910

Monthly Clinic Schedule:
First Wednesday of every month
8 a.m. – 12 p.m.

Spartanburg Orthopaedics Clinic

MGC Orthopaedic Trauma Services
480 Floyd Road
Spartanburg, SC 29307

Monthly clinic schedule:
Second Friday of every month
8 a.m. – 12 p.m.

Hendersonville Orthopaedics Clinic

Blue Ridge Health
2579 Chimney Rock Rd.
Hendersonville, NC 28792

Monthly clinic schedule:
Second Wednesday of every month
8 a.m. – 12 p.m.



All In A Year's Work

SPECIALIZING IN

85+

ORTHOPAEDIC
CONDITIONS



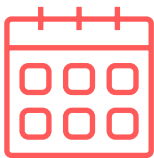
SERVED PATIENTS FROM

36 & **13**
STATES COUNTRIES



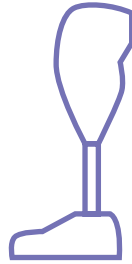
1,334

LIFE CHANGING
SURGERIES



16,720

CLINIC VISITS



4,643

CUSTOM
PROSTHETICS
&
ORTHOTICS

27,581

INDIVIDUAL GIFTS



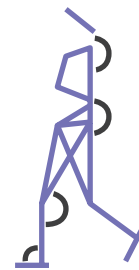
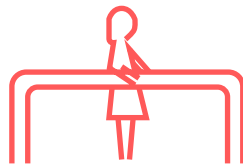
18,085

RADIOLOGY EXAMS



19,850

REHABILITATION
PROCEDURES



821

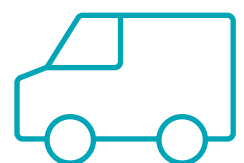
MOTION
ANALYSIS
STUDIES



7 SURGEONS
WITH
150+ YEARS
OF EXPERIENCE

1,663,890

MILES TRAVELED
BY OUR ROADRUNNER VOLUNTEERS



**All information based on 2019 data*

Pediatric Orthopaedic Conditions Treated

The hospital's medical staff includes board certified pediatric orthopaedic surgeons. The medical team is supported by residents, physician assistants, nurse practitioners, prosthetists, orthotists, therapists, nurses and consulting physicians, each of whom play an essential role in our multidisciplinary approach to care. We have an in-house prosthetics and orthotics provider, a motion analysis center, a radiology department and a physical and occupational therapy department. All of these services are located under one roof in an effort to coordinate your child's care in the best and most efficient way possible.

Scoliosis and Other Spine Conditions

- Back pain
- Congenital scoliosis
- Infantile scoliosis
- Juvenile/adolescent idiopathic scoliosis
- Kyphosis
- Lordosis
- Neuromuscular scoliosis
- Post-traumatic spine disorders
- Spina bifida
- Spinal fractures
- Spinal muscular atrophy
- Spondylolysis
- Spondylolisthesis
- Thoracic insufficiency syndrome

Musculoskeletal disorders in children and orthopaedic consequences of neuromuscular problems in children, including:

- Amniotic band syndrome
- Arthrogryposis multiplex congenita (AMC)
- Cerebral palsy (CP)
- Charcot-Marie-Tooth disease
- Complex regional pain syndrome
- Congenital neuromuscular disorders
- Dwarfism
- Friedreich's ataxia
- Juvenile idiopathic arthritis
- Juvenile rheumatoid arthritis
- Metabolic bone disease
- Muscular dystrophy
- Neurofibromatosis
- Osgood-Schlatter disease
- Osteogenesis imperfecta
- Osteomyelitis
- Rickets

Sports Injuries, including:

- Anterior cruciate ligament (ACL) injury
- Meniscus
- Patella dislocation
- Patella-femoral instability
- Elbow injuries
- Bankart lesion
- Osteochondral lesions
- Hip impingement
- Hip labral tear

Upper Extremity Conditions

- Brachial plexus palsy
- Congenital hand deformities
- Crooked digits
- Elbow injuries
- Fracture complications
- Hypoplasia of the thumb
- Limb deficiencies (congenital and acquired)
- Multiple hereditary exostosis (MHE)
- Obstetric birth plexus palsy
- Osteochondroma
- Polydactyly (extra digits)
- Post-traumatic cubitus varus (Gunstock deformity)
- Radial/Ulnar deficiency
- Shoulder injuries
- Syndactyly (conjoined digits)

Lower Extremity Conditions

- Blount's disease
- Bowed legs
- Clubfoot
- Congenital foot deformities
- Deformity secondary to trauma
- Femoral-acetabular impingement
- Flat feet (flexible or rigid)
- Fracture complications
- In-toeing
- Iselin's disease
- Knock knees
- Legg-Calvé-Perthes disease
- Limb deficiencies
- Limb deformities
- Length discrepancies
- Multiple hereditary exostosis (MHE)
- Osteochondroma
- Out-toeing
- Proximal femoral focal deficiency (PFFD)
- Polydactyly (extra digits)
- Sever's disease
- Syndactyly (conjoined eights)
- Tarsal coalition
- Vertical talus

Hip Care

- Apophysitis
- Deformity secondary to trauma
- Developmental dislocation of the hip (DDH)
- Hip dysplasia
- Hip dislocation
- Slipped capital femoral epiphysis (SCFE)

The injury care program at the Greenville Shriners Hospital serves children and teens with stable orthopaedic injuries that require prompt evaluation and care, yet are not serious enough for the emergency department. Stable orthopaedic injuries include sprains, strains, fractures and painful, swollen joints.

Unstable orthopaedic injuries require a higher level of care and should be evaluated at a medical facility offering emergency services.

Common Orthopaedic Injuries We Treat

- Acute and stable injuries
- Strains and sprains
- Stable fractures
- Sports injuries
- Painful, swollen or injured joints

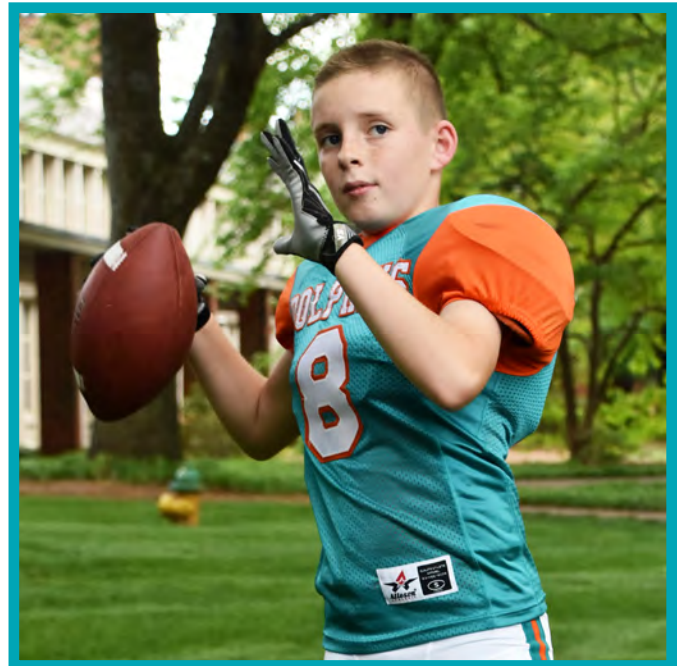
Why Choose Us?

We offer appointments with pediatric orthopaedic surgeons within 48 hours, Monday through Friday.

Because children and teens are not small adults, it is especially important to have timely access to a pediatric orthopaedic surgeon who specializes in growing bones.

“It is important to have someone who knows what the growth plates are supposed to look like when examining an injury,” Lauren Hyer, M.D., explains.

“Many of the fractures we see are subtle, but we are able to offer the careful eye of an orthopaedic surgeon, all within the comfort of a children’s hospital.”



Comprehensive Pediatric Injury Care Services Under One Roof

The Greenville Shriners Hospital offers a full range of inpatient and outpatient services, so a child can receive care for all orthopaedic injury needs at one location.

Services available:

- X-ray evaluations
- Consultations
- Follow-up care for injuries stabilized by an ER or urgent care provider
- Splinting and casting
- Fracture reductions
- Physical therapy
- Surgery

We are in-network with most insurance providers, and have various financial assistance plans available to families in need.

Simple Scheduling Process

If your patient has a stable injury and is 17 or younger, please call the Greenville Shriners Hospital, Monday – Friday, 7:30 a.m. to 4:30 p.m. at 866-459-0013 to schedule your appointment for injury care. A referral is not required unless the patient’s insurance provider dictates otherwise.

- There are two convenient ways for you to refer your patient for injury care at the Greenville Shriners Hospital:
 - a. Complete our referral form and fax it to 864-240-3111. If you are using your own form, please be sure to identify the referral as INJURY CARE so that it will be appropriately triaged.
 - b. Call our central intake office at 866-459-0013. If you are connected to voicemail, please leave a message and an intake coordinator will promptly return your call.
- A Greenville Shriners Hospital intake coordinator will contact the parent/guardian within 30 minutes to schedule an appointment.
- A Greenville Shriners Hospital intake coordinator will then immediately call the referring professional with patient appointment information.
 - » Please make sure you have provided your name and most accessible phone number on the referral form to ensure our intake coordinator successfully connects with you.
 - » If we do not hear back from the parent/guardian within 30 minutes, our intake coordinator will contact you by phone to confirm receipt of the referral and the first attempt to schedule an appointment.
 - » We invite you to call our central intake office at 866-459-0013 or our physician liaison at 864-365-8454 if you have not been contacted by our intake coordinator within 60 minutes.

Outcomes Excellence

*Surgical Outcomes**

- Surgical site infection rating: 0.15%
- Average length of stay: 2.7 days
- Unplanned re-admissions: 2.5%

Patient and Family Experience

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**Source: 2018 Quality Outcomes Data – Total Orthopaedic Surgical Procedures*

Orthopaedic Surgeons



J. Michael Wattenbarger, M.D.
Chief of Staff

Scoliosis & Spinal Deformity, Cerebral Palsy, Clubfoot, Myelomeningocele, Skeletal Dysplasia & other Congenital Deformities

Education: University of Texas
Residency: University of Texas Southwestern Medical
Fellowship: Texas Scottish Rite



Lt. Col. (Retired) T. Whitney Gibson, D.O.
Pediatric Orthopaedic Surgeon

Sports Medicine, ACL Repair, Hip, Injury Care, Clubfoot & other Foot Conditions, Limb-length Discrepancies & Lower Limb Deformities

Education: Philadelphia College of Osteopathic Medicine
Residency: William Beaumont Army Medical Center
Fellowship: Greenville Shriners Hospital



Keith Gettys, M.D.
Pediatric Orthopaedic Surgeon

Hip Preservation, Spine & Foot Conditions, Injury Care & Cerebral Palsy

Education: University of South Carolina School of Medicine
Residency: Carolinas Medical Center
Fellowship: Carolinas Medical Center
Texas Scottish Rite Hospital



Lauren Hyer, M.D.
Pediatric Orthopaedic Surgeon

Arthrogyrosis, Cerebral Palsy, Clubfoot, Limb Deficiencies, Congenital Deformities & Injury Care

Education: University of South Florida College of Medicine
Residency: Greenville Health System
Fellowship: Phoenix Children's Hospital



Michael J. Mendelow, M.D.
Pediatric Orthopaedic Surgeon

Spine Deformities (Scoliosis, Spondylolisthesis, Congenital Scoliosis & Kyphosis), Cerebral Palsy & Foot Deformities

Education: Baylor College of Medicine, Houston
Residency: University of Michigan
Fellowship: Vanderbilt University



Peter J. Stasikelis, M.D.
Pediatric Orthopaedic Surgeon

Infantile Scoliosis, Limb Deformities & Neuromuscular Diseases

Education: University of Texas Medical Branch
Residency: University of Texas Medical Branch
Fellowship: Greenville Shriners Hospital



David E. Westberry, M.D.
Pediatric Orthopaedic Surgeon

Limb Deficiencies, Cerebral Palsy, Clubfoot & Upper Extremity Deformities

Education: Medical College of Georgia
Residency: Greenville Hospital System
Fellowship: Greenville Shriners Hospital

The Medical Team

Tone Management Coordinator/Pain Management Coordinator, Family Nurse Practitioner
Denise Strasser, MSN, APRN, FNP-BC

Spina Bifida Coordinator, Pediatric Nurse Practitioner
Theresa Sexton, MSN, APRN, PNP-BC

Physician Assistants

Marcus Cox, PA-C
Lisa Haselden, PA-C
Erin Howell, PA-C
Brittany Jones, PA-C
Dave Reich, PA-C
Katie Ward, PA-C

Consulting physicians

Anesthesiology

Greenville Anesthesiology, PA

Genetics

David Everman, M.D. Greenwood Genetics Center
Swetha Krishnamurthi, M.D. Greenwood Genetics Center
Curtis Rogers, M.D. Greenwood Genetics Center
Elliot Stolerman, M.D. Greenwood Genetics Center

Pediatric Infectious Disease

Joshua Brownlee, M.D. Greenville Health System
Sue Jue, M.D. Greenville Health System
Robin LaCroix, M.D. Greenville Health System

Pediatric Neurology

Emily Foster, M.D. Greenville Health System

Pediatric Neurosurgery

Christopher Troup, M.D. Greenville Health System

Orthopaedics

Christopher Bray, M.D. Greenville Health System
Scott Porter, M.D. Greenville Health System
Tim McHenry, M.D. Greenville Health System
Trey Gurich, M.D. Greenville Health System

Rheumatology

Sarah Payne-Poff, M.D. Greenville Health System

Upper Extremities

Timothy Dew, M.D. The Hand Center, P.A., GHS
Dan Zlotolow, M.D. Shriners Hospitals for Children

Urology

Regina Monroe, M.D. Greenville Health System
Lynn Teague, M.D. Greenville Health System

Cerebral Palsy Program

Each year, Shriners Hospitals for Children — Greenville cares for hundreds of children with cerebral palsy (CP). We provide multidisciplinary care for children with all types of CP, from mild cases that require minimal intervention to more complex diagnoses that necessitate a wider range of support services. Comprehensive orthopaedic care and rehabilitation services are coordinated and delivered in one setting, relieving the burden on families to travel to multiple locations to see each specialist.

Cerebral Palsy Conditions Treated

- Muscle spasticity and contracture
- Foot and ankle malalignment
- Balance and motor control deficits
- Gait abnormalities
- Hip dislocation
- Spine deformity
- Torso abnormalities
- Upper extremity contractures/dysfunction

Treatment Options

- Physical or occupational therapy
- Stretch casting
- Bracing
- Botulinum toxin A injections
- Oral or intrathecal baclofen
- Orthopaedic surgery

Why Choose Us?

Pediatric and Adolescent Cerebral Palsy Expertise and Experience

- Seven fellowship-trained and board-certified pediatric orthopaedic surgeons who specialize in cerebral palsy orthopaedic conditions
- 169 CP-related surgeries performed annually (2018)

Patient-Centered Pediatric Multidisciplinary Team

- Pediatric orthopaedic surgeon
- Pediatric neurologist
- Pediatric neurosurgeon
- Geneticist
- Physical and occupational therapists
- Motion analysis team
- Baclofen therapy specialist
- Physician assistants and nurse practitioners
- Orthotists
- Radiologists
- Social workers
- Registered nurses

Innovative Technologies and Advanced Treatments

- Inside the internationally recognized **Motion Analysis Center (MAC)**, patients' movement patterns are carefully measured with specialized technologies and protocols. For children with CP that can walk, their gait pattern is frequently disrupted by muscle spasticity and contracture, skeletal malalignment, and deficits of balance and motor control. Quantitative data processed during a gait analysis provides an objective basis for clinical decision-making and treatment planning by our experienced, multidisciplinary team comprised of orthopaedic surgeons, bioengineers, physical therapists and kinesiologists. The gait model used in our analyses was published by our MAC director over two decades ago; today, it is the most widely-used clinical gait analysis approach in the world.



- Our **Tone Management Clinic** provides a comprehensive nonsurgical approach to evaluate and manage spasticity (condition where certain muscles are continuously contracted) with the goal of improving function and the ability to sit, stand and – in some cases – begin walking. Each child's team includes a pediatric orthopaedic surgeon, pediatric neurologist, pediatric neurosurgeon, geneticist, physical and occupational therapists, kinesiologist, bioengineer and social worker. Each member of the team independently assesses every patient and participates in a team conference to develop a coordinated plan of care to best meet the child's needs. Neuromuscular blocking injections, medication pumps, bracing, serial stretch casting and oral medications are some of the treatment options available in the tone management clinic.
- In-house **Pediatric Prosthetics and Orthotics (POPS, LLC)** designs custom orthotics to maintain optimal alignment of the upper and lower extremities. In some cases, the orthoses also helps the child to walk by providing stability.
- Our **Rehabilitation** department is comprised of pediatric physical therapists (PTs) and occupational therapists (OTs) who work together with the common goal of helping children recognize and reach their full potential. Treatment options include solutions for daily routine and activity positioning, expansion of walking or wheelchair mobility for freedom of movement, equipment assessment, and recommendations to help with care and daily living activities. Consultations with doctors assist with developing an optimal plan of care, smoothing transitions from early childhood, to school, to adult life, and integration of new and innovative treatment techniques to provide alternate care.
- South Carolina's only **EOS Imaging Center** provides surgeons clear and unprecedented 3D images of bone structures, while benefiting patients with up to 90 percent less radiation exposure than a traditional X-ray.

Outcomes Excellence

*Surgical Outcomes**

- Surgical site infection rating: 0.15%
- Average length of stay: 2.7 days
- Unplanned re-admissions: 2.5%

Patient and Family Experience

- Recipient of the Press Ganey Guardian of Excellence Award for Patient Experience in 2017, 2016 and 2014. This award is given to hospitals scoring at or above the 95th percentile as compared to other hospitals nationwide for a one-year period.
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**Source: 2018 Quality Outcomes Data – Total Orthopaedic Surgical Procedures*

To learn more about Greenville Shriners Hospital's cerebral palsy program, please visit www.shrinershospitalsforchildren.org/greenville/cerebral-palsy

Clubfoot Program

The medical term for clubfoot is talipes equinovarus, which describes the position of the feet as pointed downward (equinus) and inward (varus). It may look like the foot is lying on its side. The feet are usually stiff and difficult to get out of this position.

Clubfoot is one of the most common conditions treated at Shriners Hospitals for Children — Greenville. With proper intervention and treatment, the foot or feet can be repositioned, allowing complete freedom to enjoy running, jumping, sports and other routine activities.

We offer comprehensive diagnosis and specialized treatment and management of clubfoot for infants, children and adolescents, as well as prenatal consultations when clubfoot has been diagnosed during pregnancy. Our specialists also collaborate to provide care for children with related conditions, such as developmental dysplasia of the hip, cerebral palsy, spina bifida, arthrogryposis and other complex issues.

Hospital tours are available upon request for families before treatment begins.

Types of Clubfoot

Isolated (idiopathic) clubfoot, which is apparent at birth, is the most prevalent form of clubfoot. It is seen in children with no other medical issues.

Nonisolated clubfoot is seen in combination with other genetic conditions or neuromuscular disorders, such as arthrogryposis or spina bifida.

Treatment and Management Options

Nonsurgical Clubfoot Treatment

- **Ponseti method:** This effective technique is most successful when started shortly after birth when the ligaments, tendons and joints are most flexible. This method alternates between gentle foot massages to loosen tight or short segments, then casting for brief periods to encourage the desired positioning. This back and forth allows the foot to find its way gradually into healthy alignment.
- **Achilles tenotomy:** In most cases (90%), babies will require an Achilles tenotomy following the period of massaging and casting. This quick procedure releases the tightness of and lengthens the Achilles tendon (heel cord) so that the foot is physically able to get into the proper position. Following the procedure, the child will spend several weeks in a cast while the tendon heals. When the cast is removed, the tendon will have regrown to a proper length, correcting the clubfoot.
- **Bracing:** To ensure the correction is permanent, your child will wear a brace (sometimes referred to as a “boots and bar”).

Surgical Clubfoot Treatment

Reserved for those cases in which a congenital clubfoot resists correction by traditional casting methods, surgery is typically done between the ages of 6 and 12 months. Much variation exists between method, type and extent of surgical correction. After release of the offending structures, the foot is typically stabilized with intraoperative pin fixation. Casts are applied and worn, typically for six weeks. The pins are removed, and an additional cast is applied for another six weeks before treatment is complete.



Post-Correction Evaluation

Residual deformities are not uncommon for both cast and surgically corrected clubfeet. Annual radiographic evaluation is necessary to observe for recurrence of the deformity.

Why Choose Us

Pediatric and Adolescent Clubfoot Experience and Expertise

- Seven fellowship-trained and board-certified pediatric orthopaedic surgeons with over 150 combined years of experience treating clubfoot
- 649 children with clubfoot are cared for each year

Patient-Centered Multidisciplinary Team

- Pediatric orthopaedic surgeon
- Physician assistant (casting)
- In-house pediatric orthotist (bracing)
- Pediatric radiologist

Outcomes Excellence

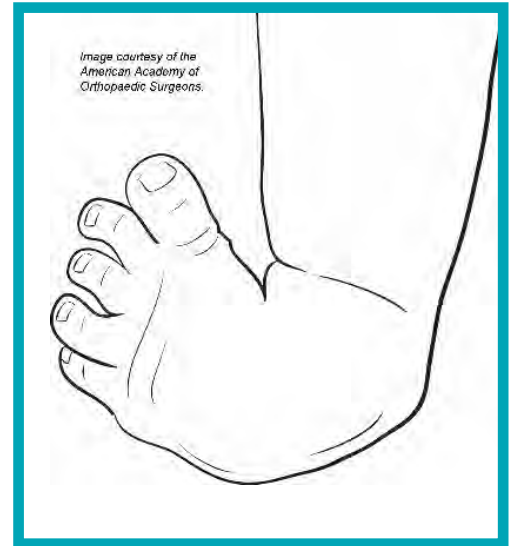
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**Source: 2018 Quality Outcomes Data – Total Orthopaedic Surgical Procedures*



To learn more about Greenville Shriners Hospital's clubfoot program, please visit www.shrinershospitalsforchildren.org/greenville/clubfoot

Hip Disorders Program

The Hip Disorders Program at Shriners Hospitals for Children — Greenville is supported by a multidisciplinary team that specializes in the diagnosis and treatment of all pediatric and adolescent hip disorders. We treat newborn patients through 17 years of age with congenital, developmental, sports injuries and post-traumatic disorders. Our hip program offers a variety of treatment options to provide state-of-the-art care for a wide spectrum of hip diseases and injuries.

Common Hip Conditions We Treat

- Developmental dysplasia of the hip (DDH)
- Adolescent hip dysplasia
- Cerebral palsy hip disorders
- Femoroacetabular impingement (FAI) and labral tears
- Legg-Calvé-Perthes disease
- Slipped capital femoral epiphysis (SCFE)
- Snapping hip
- Sports related hip injuries

Treatment Options

- Medical management
- Bracing
- Physical therapy
- Surgical procedures (*Open and closed reductions, multiple different osteotomies around the hip, hip pinnings, and arthroscopy*)

Why Choose Us?

Pediatric and Adolescent Hip Expertise and Experience

- Seven fellowship-trained and board-certified pediatric orthopaedic surgeons who specialize in hip conditions
- Over 150 combined years of experience in hip care
- More than 95 hip surgeries performed in 2018

Patient-Centered Multidisciplinary Team

- Pediatric orthopaedic surgeons
- Physician assistants
- Nurse practitioners
- Pediatric physical and occupational therapists
- Motion analysis bioengineers and kinesiologists
- Pediatric orthotists
- Pediatric radiologists

Innovative Technologies and Advanced Treatments

- South Carolina's only **EOS Imaging Center** provides surgeons clear and unprecedented 3D images of bone structures, while benefiting patients with 90 percent less radiation exposure than a traditional X-ray.
- The cutting edge **Motion Analysis Center** offers hundreds of clinical parameters for gait abnormalities, and is staffed and supported by an internationally recognized team of experts.
- An in-house **Pediatric Orthotics and Prosthetic Services (POPS, LLC)** custom fabricates hundreds of braces each year.



Outcomes Excellence

*Surgical Outcomes**

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**Source: 2018 Quality Outcomes Data – Total Orthopaedic Surgical Procedures*

Limb Deficiency Program

Treating pediatric limb deficiencies is a highly specialized area of health care. At Shriners Hospitals for Children — Greenville, we believe in collaborating with families to build individualized treatment plans tailored to each child's individual needs. We take into consideration the child's age, the severity of the discrepancy or location of amputation, and the child's ability to participate in the treatment plan. Our primary goal is to assist children and adolescents in achieving optimal independence while at home, school and play.

Children with limb deficiencies may require a wide range of services to meet their physical and psychological needs. To meet these needs, the multidisciplinary limb deficiency program at the Greenville Shriners Hospital was founded more than 50 years ago. One thing that remains constant is our dedication to helping our patients remain positive and optimistic about their future accomplishments and quality of life. Our orthopaedic specialists work side-by-side with physical therapists, occupational therapists and social workers to provide wraparound care that's designed to help children with limb deficiencies feel confident and empowered.

Types of Limb Deficiencies We Treat

Congenital Limb Deficiencies

A congenital limb deficiency is present at birth, and may be the consequence of a spontaneous genetic error. The majority of these conditions will not be passed on to subsequent generations. However, a few of these conditions are heritable, and families typically have concerns about the cause and the possible transmission of limb deficiency conditions.

Acquired Limb Deficiencies

An acquired limb deficiency means the limb or part of the limb was removed secondary to trauma or as treatment for other conditions, like cancer. Acquired limb deficiencies may be the consequence of a mechanical insult in utero (such as early amnion rupture sequence), trauma (such as a lawn mower accident, or a serious burn), infection (such as meningococemia), or of skeletal malignancy (such as Ewings sarcoma).

Treatment Options

- Surgery (*Epiphysiodesis, femoral shortening, limb lengthening and reconstruction*)
- Physical and occupational therapy
- Prosthetics

Why Choose Us?

Pediatric and Adolescent Limb Deficiency Experience and Expertise

- Founded more than 50 years ago, the limb deficiency program at the Greenville Shriners Hospital meets weekly, and sees approximately 25 to 30 children at each session.
- Dr. David Westberry, a pediatric orthopaedic surgeon with long-standing interest in the management of children with limb deficiencies, has led the clinic since 2006.
- Innovative surgical and prosthetic treatment protocols developed in this program have resulted in multiple publications in scientific literature.



Patient-Centered Multidisciplinary Team

- Pediatric orthopaedic surgeon
- Motion analysis kinesiologists and bioengineers
- Physician assistant
- Occupational therapist *(for those with an upper extremity deficiency)*
- Physical therapist *(for those with a lower extremity deficiency)*
- Prosthetist
- Prosthetic technician
- Geneticist *(for those with congenital limb deficiency)*
- Care coordinator

Innovative Technologies and Advanced Treatments

- **Physical Therapy:** This provides children with the opportunity to learn how to elevate their abilities and move toward mobility that's as independent and comfortable as possible.
- **Occupational Therapy:** Therapists work alongside children with limb deficiencies to help strengthen their fine motor skills, improve confidence and foster independent functioning.
- **Pediatric Orthotic and Prosthetic Services (POPS):** State-of-the-art Pediatric Orthotic and Prosthetic Services (POPS, LLC) departments champion a multidisciplinary team approach to treating children with amputations or limb deficiencies. Patients are given comprehensive evaluations by a physician, a prosthetist/orthotist, an occupational or physical therapist and a social worker. The POPS team works with the patient and family to build a treatment plan, consulting with orthopaedic surgeons regarding surgical options, as needed.
- **Motion Analysis Center:** Clinical motion analysis is used to help understand acquired or congenital disorders, or complex neuromuscular conditions that affect gait.
- **Genetic Counseling:** Our hospital works with internationally recognized Greenwood Genetics Center to offer comprehensive genetic counseling to all families of children with congenital limb deficiencies.

Unparalleled specialty care that addresses the unique physical and psychological needs of every child

- The clinic's format favors open, frank discussion of the issues faced by the child with a limb deficiency, which can be most helpful to parents faced with an unusual medical condition who must make difficult treatment choices for their child.
- Meet other children and families with similar conditions at the clinic, providing the opportunity for support from others with relatable journeys.

Outcomes Excellence

*Surgical Outcomes**

- Surgical site infection rating: 0.15%
- Average length of stay: 2.7 days
- Unplanned re-admissions: 2.5%

Patient and Family Experience

- Recipient of the Press Ganey Guardian of Excellence Award for Patient Experience in 2017, 2016 and 2014. This award is given to hospitals scoring at or above the 95th percentile as compared to other hospitals nationwide for a one-year period.
- In 2018 for Overall Patient and Family Experience Satisfaction, we ranked in the 93rd percentile, 98th percentile, and 99th percentile for Ambulatory Services, Inpatient Services and Outpatient Services respectively among pediatric service peers.

**Source: 2018 Quality Outcomes Data – Total Orthopaedic Surgical Procedures*

Spina Bifida (Myelodysplasia) Program

Spina bifida can manifest in a number of ways, from major complications to mild symptoms that do not require extensive medical intervention. Shriners Hospitals for Children – Greenville leverages evidence-based treatment to help children with spina bifida live their best lives. Because of the complex nature of spina bifida, care provided is both multidisciplinary and tailored to the patient's individual needs. Our team is comprised of experienced pediatric orthopaedists, neurosurgeons and urologists.

We provide a medical home for children with spinal bifida, and communication and collaboration between the various specialists and services is critical in ensuring ideal outcomes. The Greenville Shriners Hospital has a full-time, dedicated spina bifida nurse practitioner who assists the family in coordination of care and organization of the following care services:

- Assurance that all testing is completed prior to each clinic (renal ultrasounds, urodynamic testing, head CT, MRIs, spine X-rays, etc.)
- Medical management of patient care (i.e. urodynamic studies, urine analysis for UTIs)
- Prescription management for patient (i.e. urological supplies, medications, school physician orders)
- Education and training for family and/or patient throughout their growth in development, including clean intermittent catheterization and bowel program

Spina Bifida Conditions We Treat

- Bladder function
- Bone growth
- Prevention of contractures
- Infection treatment prevention
- Kidney function
- Hydrocephalus
- Feet, hip, legs and spine conditions

Treatment Options

- Orthopaedic surgical interventions
- Physical therapy
- Occupational therapy
- Bracing

Why Choose Us?

Pediatric and Adolescent Spina Bifida Experience and Expertise

- Seven fellowship-trained and board-certified pediatric orthopaedic surgeons with a combined over 150 years of experience treating feet, hip, legs and spine conditions associated with spina bifida
- 280 children with spina bifida are cared for each year

Patient-Centered Multidisciplinary Team

- Pediatric orthopaedic surgeon
- Full-time spina bifida nurse practitioner
- Pediatric neurosurgeon
- Pediatric urologist
- Pediatric physical and occupational therapists
- Social workers
- Nurses and medical assistants
- In-house orthotists
- Pediatric radiologists

Innovative Technologies and Advanced Treatments

- South Carolina's only **EOS Imaging Center** provides surgeons clear and unprecedented 3D images of bone structures, while benefiting patients with up to 90 percent less radiation exposure than a traditional X-ray.
- **Physical therapy** helps children with spina bifida work on their balance, and muscle strength and coordination, especially if their hips, legs or feet are affected by the condition.

- **Occupational therapy** focuses on strengthening fine motor skills impacted by spina bifida.
- In-house **Pediatric Orthotic and Prosthetic Services (POPS, LLC)** custom designs braces to provide support to affected lower extremities, and often the spine, to promote maximum function and prevent further deformity.

Outcomes Excellence

Patient and Family Experience

- Recipient of the Press Ganey Guardian of Excellence Award for Patient Experience in 2017, 2016 and 2014. This award is given to hospitals scoring at or above the 95th percentile as compared to other hospitals nationwide for a one-year period.
- In 2018 for Overall Patient and Family Experience Satisfaction, we ranked in the 93rd percentile, 98th percentile, and 99th percentile for Ambulatory Services, Inpatient Services and Outpatient Services respectively among pediatric service peers.

**Source: 2018 Quality Outcomes Data – Total Orthopaedic Surgical Procedures*

*To learn more about Greenville Shriners Hospital's spina bifida program, please visit
www.shrinershospitalsforchildren.org/greenville/spina-bifida*

The spine program at Shriners Hospitals for Children — Greenville is supported by a multidisciplinary team that specializes in the diagnosis, management and treatment of all pediatric and adolescent spine conditions. We treat newborn patients through 17 years of age. X-rays can be taken on site in our radiology department. Should your child require bracing or physical therapy, you may choose to receive these services from our in-house orthotics provider and rehabilitation department. In an effort to coordinate your child's spine care in the best and most efficient way, all services are located under one roof.

Spine Conditions We Treat

- Back pain
- Congenital scoliosis
- Infantile scoliosis
- Juvenile/adolescent idiopathic scoliosis
- Kyphosis
- Lordosis
- Neuromuscular scoliosis
- Post-traumatic spine disorders
- Spina bifida
- Spinal fractures
- Spinal muscular atrophy
- Spondylolysis
- Spondylolisthesis
- Thoracic insufficiency syndrome

Treatment and Management Options

At the Greenville Shriners Hospital, we understand that every child and spine case/disorder is unique. After careful observation and confirmation of diagnosis, an individualized treatment plan is discussed and established.

1. Observation
2. Bracing/Casting (*Mehta casting, Milwaukee brace, Boston brace, Providence brace*)
3. Physical therapy
4. Halo treatment
5. Surgery (*Growing rods, MAGEC rods, fusion surgery, VEPTR*)

Why Choose Us?

Pediatric and Adolescent Expertise and Experience

- Four fellowship-trained and board-certified pediatric orthopaedic surgeons who specialize in spine conditions:
 - » J. Michael Wattenbarger, M.D.
 - » Michael Mendelow, M.D.
 - » Pete Stasikelis, M.D.
 - » Keith Gettys, M.D.
- Over 75 combined years of experience in infantile, juvenile, and adolescent spine care
- More than 130 spine surgeries performed and 200 Mehta casts applied each year



Patient-Centered Multidisciplinary Team

- Pediatric orthopaedic surgeons
- Physician assistants
- Nurse practitioners
- Physical therapists
- Nurses
- Respiratory therapist
- Care managers
- Social workers
- Child life specialists
- Orthotist
- Radiologists

Innovative technologies and advanced treatments

- Only hospital in South Carolina to offer the cutting-edge, 3D precision and low-dose radiation of the EOS imaging system.
- First hospital in the Carolinas to offer infantile scoliosis patients the innovative MAGEC rods, which magnetically lengthen with an exterior device-eliminating the need for repeated open-incision surgical interventions.
- State-of-the-art vertical expandable prosthetic titanium rib (VEPTR or titanium rib) as a treatment option for patients with thoracic insufficiency syndrome whose lung development is hindered by deformities of the spine, chest and ribs.

Outcomes Excellence

*Surgical Outcomes**

- Surgical site infection rating: 0.15%
- Average length of stay: 2.7 days
- Unplanned re-admissions: 2.5%

Patient and Family Experience

- Recipient of the Press Ganey Guardian of Excellence Award for Patient Experience in 2017, 2016 and 2014. This award is given to hospitals scoring at or above the 95th percentile as compared to other hospitals nationwide for a one-year period.
- In 2018 for Overall Patient and Family Experience Satisfaction, we ranked in the 93rd percentile, 98th percentile, and 99th percentile for Ambulatory Services, Inpatient Services and Outpatient Services, respectively, among pediatric service peers.

**Source: 2018 Quality Outcomes Data – Total Orthopaedic Surgical Procedures*

When to Refer

If a curve measures 10 degrees or greater, or if there are concerning clinical findings, we recommend an evaluation by a pediatric spine specialist.

*To learn more about Greenville Shriners Hospital's spine program, please visit
www.shrinershospitalsforchildren.org/greenville/scoliosis*

Arthrogryposis Multiplex Congenita Clinic

Arthrogryposis multiplex congenita (AMC) is characterized by multiple joint contractures (stiff joints), which can include weakness, fibrosis and associated lack of muscular development. Treatment may include physical and occupational therapy, splints or casts. Surgery may be necessary to improve joint function for children born with this rare, non-progressive, congenital disorder.

The Greenville Shriners Hospital provides world-class expertise in the evaluation and treatment of children with AMC. A multidisciplinary team of neurologists, geneticists, physical and occupational therapists and pediatric orthopaedic surgeons work together to achieve non-operative and operative management of the condition.

The goals of management include improving range of motion, achieving ambulation and promoting independence in life's daily activities. The upper and lower extremity teams work in concert to achieve these goals and coordinate care to maximize the child's potential.

Genetics Clinic

Shriners Hospitals for Children — Greenville, in partnership with Greenwood Genetics Center, provides a monthly Genetics Clinic offering genetic testing as well as prenatal counseling. The clinic includes a geneticist, genetic counselors and social workers.

With the development of sophisticated techniques to study our chromosomes and DNA, the field of genetics and medicine has seen a great transformation in the last generation. Greenwood Genetics and the Greenville Shriners Hospital are committed to not only helping families identify a specific diagnosis for each child, but also offer treatments that were previously unavailable to families.

Along with diagnosis and treatment, the goal of this clinic is to provide the family with the information and guidance they will need for the management of their child's condition. Information gained from a genetic evaluation may also help to determine the underlying cause of a child's condition in addition to determining what they may expect for future siblings.

Rett Syndrome Clinic

Presenting in infancy or early childhood, Rett syndrome is a rare neurological disorder that can affect many aspects of a child's life, including the ability to walk, eat, speak, learn and breathe. While babies with Rett syndrome typically develop normally for the first six to 18 months, symptoms can then appear slowly or rapidly.

Caused by a gene mutation and occurring almost solely in females, the complex condition requires many specialists to play a part in the care of the child. A multidisciplinary team, comprised of an orthopaedic surgeon, behavioral pediatrician, neurologist, geneticist, nutritionist and physical and occupational therapists, work together to create the best treatment plan for each individual. At the Greenville Shriners Hospital's bi-monthly Rett syndrome clinic, patients are evaluated on an on-going basis.

Rheumatology Clinic

Rheumatologists treat musculoskeletal disease and systemic autoimmune conditions commonly referred to as rheumatic diseases. These diagnoses can affect the joints, muscles and bones causing pain, swelling, stiffness and deformity. Autoimmune conditions occur when the immune system sends inflammation to areas of the body when it is not needed, causing damage. These diseases can also affect the eyes, skin, nervous system and internal organs. A common pediatric rheumatologic condition is juvenile idiopathic arthritis (JIA).

Rheumatology Clinic at the Greenville Shriners Hospital

Specializing in the treatment of pediatric rheumatologic conditions, the rheumatology clinic meets two times per month and is staffed by expert rheumatologists with experience treating children and adolescents.

A vital part of the care of rheumatologic conditions is a thorough and comprehensive work-up to establish the cause of musculoskeletal symptoms in children with joint pain or swelling. The team includes nurse practitioners or physician assistants, as well as a dedicated nurse who coordinates the care of these special patients and their families.

Appropriate children to refer to this clinic include children with unexplained joint swelling and/or a positive blood test for JIA.

Treatment strategies for children with rheumatologic conditions

A mainstay of the treatment of rheumatologic conditions are anti-inflammatory, non-steroidal medications (e.g. aspirin or ibuprofen), but also includes steroids or more powerful medications. Children on medications for rheumatologic conditions need close monitoring of vital organ function, such as kidney or liver, to make sure that these potent medicines are not causing organ damage.

Other treatment options include physical or occupational therapy or joint injections with steroids.

Tone Management Clinic

Children with varying diagnoses such as cerebral palsy, myelomeningocele, spinal cord injury, traumatic brain injury and other neurological disorders often experience a debilitating type of stiffness referred to as “spasticity.” With spasticity, muscles remain flexed or stiff not only during activities but also while at rest. This is also referred to as “increased tone.” Increased tone presents differently in each child and can lead to interference in daily function or sometimes cause pain. Strategies for treating children with increased tone include the use of oral medications to decrease tone, physical and occupational therapy to help with stretching and functional improvements, oral or intrathecal baclofen and orthopaedic surgery.

Tone Management Clinic at the Greenville Shriners Hospital

Navigating treatment options for children with increased tone can be overwhelming, as families may receive conflicting recommendations from healthcare providers. This is why the Greenville Shriners Hospital offers a clinic setting where patients can be evaluated and treated, all in one location, by a multidisciplinary team consisting of:

- Pediatric orthopaedic surgeon
- Pediatric neurosurgeon
- Pediatric neurologist
- Geneticist
- Occupational therapists
- Physical therapist
- Social workers
- Registered nurse
- Physician assistants
- Nurse practitioners
- Child life specialist
- Intrathecal baclofen therapy specialist
- Motion analysis center kinesiologist and bioengineer

The tone management clinic meets once a month, allowing the team of subspecialists to work together in developing an optimal and most comprehensive treatment plan for each individual child.

Treatment Options for Tone Management

Oral or Intrathecal Baclofen

Baclofen is a medication which helps decrease tone in children. Many times children with spasticity can increase their level of function and decrease tone with doses of oral baclofen. Our team will manage or help coordinate the dosing of oral baclofen and the monitoring of children who take oral baclofen. Usually, treatment will begin with a low dose. The baclofen dosage will then be increased to maximize the decrease in tone without affecting the child's cognitive function. Some children, however, are not able to tolerate oral baclofen, as it may make them too sleepy.

Intrathecal baclofen is a way of delivering baclofen directly to the spinal cord to reduce tone in children who may not be able to tolerate high doses of oral baclofen. Children who may be a candidate for intrathecal baclofen will first have an intrathecal baclofen trial – one injection of the medicine into the child's cerebrospinal fluid through a lumbar puncture. If the child has a positive response to the injection, they may be a candidate for an intrathecal baclofen pump. This is a pump that is inserted surgically and has a catheter delivering baclofen to the cerebral spinal fluid. After the pump is placed by a pediatric neurosurgeon, its function is then monitored and refilled with medication as needed.

Botulinum Toxins

Botulinum toxins are a class of medications known to decrease tone. The botulinum toxins are injected into muscles with increased tone using tiny needles. While the procedure is not very painful, it can be frightening to the patient. A child life specialist works to help distract the child while the injections are being administered. Many children will see decreased tone and increased function with this treatment; however, it does not help all children with spasticity. Our team of specialists help families navigate which children may benefit from treatment with botulinum toxins.

Physical and Occupational Therapy

An important mainstay to the treatment of children with increased tone is physical and occupational therapy. Rehabilitation team members at the Greenville Shriners Hospital are experts in the evaluation and treatment of children with increased tone. They help children maintain motion with stretching programs and therapy, and also assist patients with increasing functionality for daily living – either through assistive devices or by learning helpful techniques and task strategies.

Orthotic Management

Children with increased tone will often need orthotic or brace management to help manage tone by placing extremities in the best position to assist with function. Our on-site team of experts in orthotics and prosthetics is a vital part of this tone management clinic.

Orthopaedic Surgery

Some children with increased tone are best treated with orthopaedic surgery. Our motion analysis center helps evaluate patients pre-operatively to determine the best surgical intervention. Multiple studies have shown that the utilization of motion analysis prior to orthopaedic surgery decreases the amount of surgery that a child must undergo. Surgical treatment includes, but is not limited to, the reconstruction of dislocated hips, fusion for scoliosis, lengthening of tendons around the hips knees and feet, foot reconstruction for flat feet associated with spasticity and the correction of rotational malalignment with osteotomies (cutting of the bones). Usually, surgeries will begin after the patient reaches elementary school age, as this decreases the total number of surgeries that the child will have to undergo by avoiding recurrence of position with growth.

Motion Analysis Center

Cutting-Edge Technology Facilitating Objective Clinical Decision-making for Motion and Gait Dysfunction

In the motion analysis center at Shriners Hospitals for Children — Greenville, our patients' motion patterns are carefully measured with specialized protocols and technologies. The quantitative data provides an objective basis for clinical decision-making and treatment planning by our experienced, multidisciplinary team comprised of orthopaedic surgeons, bioengineers and physical therapists.

Our Patients

Patients referred to our motion analysis center present with motion/gait dysfunction. In 2019, our patient mix was largely comprised of children with cerebral palsy (41 percent), foot deformity (15 percent), bony malalignment and other genetic/neurological disorders (44 percent). Over 9,000 patients have been seen in our motion analysis center since opening in 1994.

Our Approach

First, the patient's motions/gait is measured

- Specialized motion capture cameras monitor the movement of highly reflective markers placed on the patient's feet, legs and trunk
- Electromyographic (EMG) sensors on the patient's skin monitor muscle activity
- Force plates and a foot pressure platform in the walkway measure ground reactions during gait
- Video cameras capture images of the patient



Next, the walking data is processed, analyzed and compiled

Computer-based gait models combine the data to provide graphical details of the patient's walking pattern: gait kinematics and kinetics and EMG record. These quantitative findings are then combined with information gathered during a detailed interview with the patient and family, and in a careful physical examination of the patient.

Finally, the motion/gait findings are interpreted and a treatment plan is formulated

An experienced, multidisciplinary team comprised typically of physicians, bioengineers and physical therapists meet to review this information and to recommend treatments, including orthoses, physical therapy, muscle tone management or surgery.

Our Team

The motion analysis center is staffed and supported by an internationally recognized team of experts. Our center leadership provides lectures nationally and internationally pertaining to the use of clinical motion analysis and its use in clinical decision making. We are involved in several national professional organizations, including the Pediatric Orthopaedic Society of North America and the Gait and Clinical Movement Analysis Society.

Pediatric Orthotic and Prosthetic Services

Located inside the Greenville Shriners Hospital, Pediatric Orthotic and Prosthetic Services – Southeast, LLC (POPS) fabricates thousands of new orthopaedic devices each year.

The experienced and certified POPS staff specializes in the fabrication of custom-fit orthotics and prosthetics in a kid friendly environment. They use state-of-the-art componentry and offer numerous designs and colors for children who want to customize their devices. Whether it's a cartoon, super hero, or sports team, POPS can give the orthotic or prosthetic device the appearance the child desires.

Pediatric Orthotic and Prosthetic Services:

- Upper and lower orthotic and prosthetic services
- Spinal orthotic services
- Available for a wide spectrum of pediatric orthopaedic conditions, such as congenital and acquired deformities, disease, infection and trauma
- For infants to age 18 years

Convenient In-house Location:

- Vital part of multidisciplinary approach to patient care
- Immediate consultation between POPS staff and the Greenville Shriners Hospital medical, nursing, rehabilitation, radiology, and child life staff regarding any questions or concerns patients and families have.
- Option for seamless transition from the Greenville Shriners Hospital's outpatient clinic to POPS for their prosthetic and orthotic needs.

The caring and compassionate staff members of POPS are all certified by the American Board for Certification in Orthotics, Prosthetics and Pedorthics. They regularly attend continuing education seminars to stay up-to-date with current practices and techniques.



**POPS – Southeast, LLC is a subsidiary of Shriners Hospitals for Children. All Greenville Shriners Hospital patients and families are given options on where they can receive their prosthetic or orthotic care.*

Physical and Occupational Therapy

The Rehabilitation department at SHC—G is composed of physical therapists (PT's), physical therapist assistants (PTA's), and occupational therapists (OTs). Our treatment approach is family-centered, which means that both the parent and the child play an active and integral role in goal identification and treatment planning. We involve parents in all aspects of decision-making throughout the treatment process, and highly encourage parent involvement and participation in treatment sessions. The Rehab team works collaboratively across multiple disciplines to provide a comprehensive approach, which also helps us care for patients with a wide range of needs. This comprehensive multi-disciplinary team provides seamless integration of care and communication across specialties while working towards a common goal: to help children reach their full potential.

Our team of therapists cares for kids with many different injuries and conditions. Infants, youth, and adolescents may be experiencing illness, injury, or congenital conditions, which limit their ability to move or function during their daily lives. An individualized specific treatment plan will be provided after initial or ongoing assessments. Therapists apply positive, team-oriented treatments to help children function at the highest possible levels at home, at school and during play.



Common Diagnoses Treated by our Rehabilitation Department:

- Cerebral palsy
- Spina bifida
- Traumatic brain injury
- Developmental delay
- Juvenile rheumatoid arthritis
- Toe walking
- Muscular dystrophy
- Balance problems or adolescent injury
- Torticollis
- Scoliosis
- Arthrogryposis multiplex congenita (AMC)
- Amputations

Evaluation and Treatment

Initial Evaluation

An initial evaluation may include assessments of mobility, neuromotor development, posture and balance, muscle strength, joint function and endurance. The ability to care for one's self and participate in childhood activities is also determined during the evaluation.

Treatment Options

- Positioning during daily routines and activities. Custom splints may be molded to hold a hand in a certain position after surgery, or a specialized seat cushion may be created to provide support for a child to be able to sit and eat at a table.
- Expanding walking or wheelchair mobility for freedom of movement. Our pediatric therapists are familiar with the multiple equipment options available for children to use, such as gait trainers or specialized custom wheelchairs.
- Assess and recommend equipment for use at home or the community for effective care, such as dressing sticks to help with activities of daily living or a stander to help promote standing for flexibility and strong bones.
- Consultation with the Greenville Shriners Hospital doctors to assist with developing an optimal plan of care. These consults may be with orthopaedic surgeons to help improve a child's body alignment,

a physiatrist to help reduce spasticity, or a neurosurgeon who may perform a baclofen trial to determine if a child is an appropriate candidate for an intrathecal baclofen pump, thus allowing a child to move easier secondary to decreased tone.

- Smoothing transitions from early childhood to school to adult life. As children grow older, they strive to become more self-sufficient and independent in their self-care. Therapists can assist with identifying each child's unique needs, and then provide support to promote independence.
- Researching and integrating the use of evidenced based medicine. This includes ongoing studies conducted on-site, or investigating new and innovative treatment techniques to provide alternative care for children and families.

Specialized Services Include:

- Evaluation of development, sensory motor function and biomechanics
 - » May coordination, balance, mobility, and neuromotor development
- Casting and splinting such as **Constraint Induced movement Therapy (CIMT)**
 - » Improves function and strength in the weaker side by restraining the stronger side.
- Gait assessment or training including the use of **Body Weight Supported Treadmill training (BWSTT)**
 - » System of partial weight bearing allows for high repetition, high intensity gait training
- Scoliosis evaluations and treatment
 - » **Schroth based** scoliosis specific exercise programs
- Prosthesis training
- Assistive technology evaluation and training
 - » Power or manual wheelchairs, standers, gait trainers
- Pain management with programming tailored to **Complex Regional Pain Syndrome (CRPS)**
- Seating and mobility including pressure mapping to optimize postural alignment
- **Functional electrical stimulation** (SHC—G has only pediatric ergometer in SC)
 - » Patient performs activity while up to 12 muscle groups are stimulated simultaneously
- Infant positioning and stretching to prevent contracture such as for Clubfoot or Torticollis
- Task specific learning program (tying shoe laces, ascending stairs with a backpack, carrying food tray with no spills)
- Activities of daily living (self-care, bathing, grooming, dressing and cooking) with adaptations as needed
- **Day rehabilitation** (intensive, episodic care of up to 3 hours of therapy per day)
 - » Available from 9 a.m. to 3 p.m. weekdays

Pediatric Functional Electrical Stimulation (FES)

The Greenville Shriners Hospital has the only pediatric functional electrical stimulation (FES) ergometer in South Carolina.

- Can be used on both upper and lower extremities
- Allows therapists to stimulate up to 12 different muscle groups simultaneously
- Patient performs repetitive activity (such as cycling) while the FES sends low-level electrical pulses through surface electrodes to the leg muscles causing contractions.

Featuring the EOS Imaging System:

3D Precision and Micro-dose Radiation

- Provides life-size picture of a patient's full skeleton
- The only 3D system capable of scanning patients in a weight-bearing standing or sitting position, revealing natural posture and joint orientation
- 100 clinical parameters for pre- and post-op surgical planning
- Emits the same amount of radiation a person would absorb normally in one week just being on the Earth
- Especially important for scoliosis patients who can require more than 20 total scans over the course of treatment



“Being able to have this technology is very exciting,” said Pete Stasikelis, M.D., pediatric orthopaedic spine surgeon at the Greenville Shriners Hospital. “Before the EOS system, surgeons had to stitch together multiple, smaller, two-dimensional images to see an entire area. With these 3D images, we will better understand where the problem is and its complexity before we operate, thus bettering our ability to correct the problem.”

Shriners Hospitals for Children — Greenville is honored to be the first hospital in South Carolina, North Carolina, Georgia and Alabama to bring pediatric orthopaedic patients this new technology.



Made possible by the generosity of our donors

Funded entirely by donations, the EOS Imaging Center represents the single largest fundraising effort for medical equipment ever undertaken at the Greenville Shriners Hospital. For over 86 years, philanthropically-minded people have invested their time and treasure to ensure that children with neuromuscular and musculoskeletal conditions receive the best care possible, regardless of their ability to pay.

Thanks to our donors, Shriners Hospitals for Children — Greenville is proud to be the first Shriners Hospital in the Southeast and only the seventeenth hospital in the entire United States to offer this technology.

Referral Process

There are 2 ways to refer a patient:

1. Complete our referral form (or yours) and fax it to 864.240.3111
2. Call our referral department at 866.459.0013

After we receive the referral, our referral coordinator will contact the family within 48 hours to schedule an appointment.

Referral Tracking Timeline

Appointment Confirmations

Once we schedule an appointment with the family, an appointment confirmation is faxed to the referring coordinator.

Medical/Consult Notes

First appointment notes are faxed to the referring provider 2 – 3 business days following patient's visit. Additional notes can be sent upon request. If you have any questions, contact 864-240-3107.

These notes are faxed to the referring provider 2 – 3 business days following patient's visit.

Surgery Notes

These notes are faxed to the referring provider the Monday following surgery. If you have any questions, contact 864-240-3107.

Provider Relations

At Shriners Hospital for Children – Greenville, we value relationships with our referring providers. It is our belief that effective communication and strong partnerships help to provide quality, seamless care to the children we serve.

Contact Us:

Elizabeth Holcombe, Community and Physician Liaison

Phone: 864.365.8454

Email: eholcombe@shrinenet.org

Tami Johnson, Director of Business Development

Phone: 864.551.0670

Email: tjohnson@shrinenet.org

Services Provided:

- Education on programs, physicians, processes and services
- Assistance with referrals, access and communication
- Upon request, provision of detailed monthly referral reports to assist you in referral tracking. These reports include referral summaries, future and missed patient appointments and patient updates.
- Timely support for service concerns and issue resolution
- Personalized hospital tour
- Coordination of consult with surgeon

Injury Care Tracking Timeline



Call back to patient/provider within 30 minutes



Confirmation within 1 hour to patient/ provider



Patient Referral Form

There are two easy ways to refer a patient:

1. Complete this form and fax it to: 864.240.3111
2. Call our referral line at: 866.459.0013

URGENT
This requires immediate action

PATIENT INFORMATION – Please include patient’s face sheet with this referral		
Child’s Full Name:	Male Female	DOB:
Parent/Guardian Name:		
Street Address:		
City:	State:	Zip:
Home Number:	Mobile Number:	Spanish Interpreter? Yes No
Primary Insurance:		
Guarantor/Policy Holder:	Member ID:	
Reason for Referral/Diagnosis:		
Primary Care Provider:		

REFERRING PROVIDER’S INFORMATION – If applicable. We accept self-referrals		
Name:	MD DO NP PA Other:	
Practice/Agency Name:		
Street:		
City:	State:	Zip:
Phone:	Fax:	
NPI (provider or office):		

FOR INJURY CARE REFERRALS		
Date of Injury:	Location of Injury:	Surgery Performed? Yes No
Treatment? Yes No	If so, what and where?	
Mechanism of Injury:		
Medications Prescribed?	Images? X-ray MRI	

Important Contacts

Support you can count on.

Referral Office

Phone: 866.459.0013

Fax: 864.240.3111

Appointment Office

Phone: 864.255.7920

Medical Records

Phone: 864.240.8189

Fax: 864.240.3113

Care Coordination Department

Phone: 864.240.8171

Financial Counselor

Phone: 864.240.8184

Transportation and Lodging Assistance

Phone: 864.255.7846

Interpreter Services

Phone: 864.255.7846

Tami Johnson

Director of Business Development

Phone: 864.551.0670

Email: tjohnson@shrinenet.org

Elizabeth Holcombe

Community and Physician Liaison

Phone: 864.365.8454

Email: eholcombe@shrinenet.org

Financial Policy

At Shriners Hospitals for Children — Greenville, we provide specialized care regardless of a family's ability to pay or health insurance status. Shriners Hospitals for Children accepts insurance from all providers, including Medicaid and Medicare. A claim is sent to the patient's insurance provider for services performed; any remaining balances, such as copays, deductibles and coinsurance amounts, are billed by the hospital. If the patient does not have insurance or the family feels that the amount due will cause a hardship, a parent or guardian should contact one of the hospital's financial counselors at 864.240.8184. Shriners Hospitals for Children has financial assistance programs available.

If a patient is referred to Pediatric Orthotic and Prosthetic Services (POPS) – Southeast, LLC, located inside the Greenville Shriners Hospital, the patient's insurance will be billed separately. The remaining balance will be billed to the patients. If the patient does not have insurance or the family feels that the amount due will cause a hardship, a parent or guardian should contact one of the hospital's financial counselors at 864.240.8184. The POPS program has financial assistance programs available.

If a patient has surgery at Shriners Hospitals for Children — Greenville, Greenville Anesthesia Professional Association (GAPA) will bill the patient's insurance company. Any unpaid balance will be billed to the patient by GAPA.

If a patient receives services outside of our hospital (e.g. MRI, intensive care, etc.), that facility will bill the patient's insurance. The patient will receive a statement from them for any unpaid balance. Shriners Hospitals for Children does not take responsibility for any balances accrued for treatment at outside facilities.

Financial counselor

Please contact our financial counselor with any questions by calling **864.240.8184** or emailing **financialcounselor-grn@shrinenet.org**.

Transportation Assistance

Shriner fraternity members believe transportation should never be an obstacle for any child to access the internationally recognized pediatric orthopaedic care available at Shriners Hospitals for Children — Greenville. That is why a group of Shriner volunteers, the "Roadrunners," passionately dedicates their time and resources to safely and comfortably transport families to the hospital and back home. Transportation is offered at no cost to the family, and is provided throughout the Carolinas, Georgia, Tennessee, Alabama and Virginia.

If this assistance is needed, notify the scheduler when the appointment is made. Contact information for the closest Shrine center from the patient's home will be provided. With a minimum two-week notice, the Shrine center will schedule transportation to accommodate the patient's appointment time.

Interpreter Services

It is vital that accurate information is provided and understood regarding a child's care; for that reason, the Greenville Shriners Hospital offers interpretive services for patients and their families. If this service is needed, please contact care management at 864.255.7846 to request interpreter services prior to the patient's appointment.

SHRINERS HOSPITAL FOR CHILDREN

Authorization for Disclosure of Health Information

Patient Name: _____ Medical Record # _____ Date of Birth _____

Address: _____
 Telephone _____

For the period(s) of health care from (date) _____ to _____

1. I hereby authorize Shriners Hospitals for Children®, Greenville to disclose to:

Name: _____

 Street Address: _____

 City, State & Zip Code: _____

Shriners Hospitals for Children
950 W. Faris Rd
Greenville, SC 29605
Att: HIS Dept
Phone 864-240-3107 FAX 864-240-3113

2. Information to be disclosed:

- | | | |
|---|---|---|
| <input type="checkbox"/> Discharge Summary | <input type="checkbox"/> Progress Notes | <input type="checkbox"/> Operative Reports |
| <input type="checkbox"/> History & Physical examination | <input type="checkbox"/> Laboratory tests | <input type="checkbox"/> Consultation reports |
| <input type="checkbox"/> X-ray reports | <input type="checkbox"/> X-ray films/images | <input type="checkbox"/> Photographs/slides |
| <input type="checkbox"/> Billing Statements | <input type="checkbox"/> MAL | <input type="checkbox"/> Other _____ |

3. Reason for Disclosure: _____

4. Separate signature required for release of information related to items below. Initial each line if required.

- _____ Acquired immunodeficiency syndrome (AIDS) or infection with human immunodeficiency virus (HIV)
- _____ Behavioral health services/psychiatric care/psychotherapy records
- _____ Alcohol and substance abuse diagnosis and treatment records
- _____ Pregnancy, contraceptives, and sexually transmitted diseases
- _____ Genetics testing

Signature for release of information in item 4: _____

5. I understand this authorization may be revoked in writing at any time, except to the extent that action has been taken in reliance on this authorization. **Unless otherwise revoked, this authorization will expire in one year (12 months) from the original date for release of information to family members: six (6) months from the original date for all other releases.**

6. I have had the opportunity to ask questions regarding this Authorization and these questions have been answered fully.

7. I hereby release and agree to indemnify and hold harmless Shriners Hospitals for Children, its successors and assigns, and its agents and employees, from and against any claim or cause of action based on the release of requested health records and/or health information I previously authorized.

8. The recipient of this information might disclose it to other people. Shriners Hospitals for Children has no way To prevent this re-disclosure and cannot be held liable for such re-disclosures.

I understand that I do not have to and have chosen not to sign this Authorization. My failure or refusal to sign will not affect my child's or my treatment or ability to receive treatment at Shriners Hospitals for Children.

 Signature of patient (14 years or older) Date Time AM/PM

 Signature of the Parent/Legal Guardian Date Time AM/PM

 Signature of the Parent/Legal Guardian Date Time AM/PM

 Print Name Relationship to Patient

 Print Name Relationship to Patient


 Signature of Witness Date Time AM/PM

 Signature of Witness Date Time AM/PM

 Print Name

 Print Name

Authorization for Disclosure of Health Information
Shriners Hospitals for Children®



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UDA.001a Rev. 05/2015