

ORTHOPEDIC SURGERY AND MUSCULOSKELETAL SCIENCE ANNUAL REPORT 2020



A MESSAGE FROM RICHARD M. SCHWEND, MD, FAOA, FAAP

Like many of the children we care for in the Children's Mercy Kansas City Department of Orthopedic Surgery and Musculoskeletal Science, despite the challenges of COVID-19 in 2020, we have continued to grow this past year.

After 20 years serving as Chairman of the Department of Orthopedics, Brad Olney, MD, has stepped down from his leadership role and has retired from clinical practice. Over the years, he has grown the department from a very small group of surgeons to an expansive and diverse program of surgeons, musculoskeletal physicians, advanced practitioners and other professionals with a nationally ranked reputation. Children's Mercy is also fortunate to be the recipient of the Brad and Dawn Olney Endowed Chair in the Department of Orthopedic Surgery and Musculoskeletal Science. This was created as a result of his and his wife Dawn's vision, generosity and commitment to the excellence of the department. We are currently actively recruiting for this endowed chair position. At the end of 2020, we also said goodbye to Coley Vitztum, RN, PhD, CNS-BC, who worked faithfully with Dr. Olney during his time as Chairman.

In fiscal year 2020, our team of 18 fellowship-trained orthopedic faculty, 26 advanced practitioners, 10-plus physical therapists and 29 athletic trainers provided more than 39,000 clinic visits for our patients and 2,816 operative procedures.

We remain one of the largest programs in the country in a free-standing pediatric hospital by embracing a multidisciplinary collaborative approach that puts children first. Referring physicians and parents often consult us to care for the most complicated pediatric cases.

The Children's Mercy team is well-known for innovations in adolescent idiopathic scoliosis management strategies, sports medicine, hand surgery and a wide range of complex surgical treatments. This year saw exciting developments, including the advancement of our telemedicine program in orthopedics with more than 2,000 visits.

To better serve the needs of our patients, we developed a daily fracture clinic in 2020. This still requires an appointment, but we plan for this to provide better access for our patients and service for the community.

We also experienced further development in our Sports Medicine program at Village West, including the Human Performance Lab, where athletes utilize advanced technology to both prevent and recover from injuries and our experts in spine and neuromuscular surgeries analyze their patients' body mechanics, carefully planning their surgical strategies.

We look forward to developing a new subspecialty program focused on non-operative orthopedics. This program will care for children with neuromuscular and musculoskeletal conditions that are best treated with bracing and therapy. The department will also develop a new section devoted to complex trauma. The Accreditation Council for Graduate Medical Education (ACGME) and the Pediatric Orthopedic Society of North America have both approved the Pediatric Orthopedic Fellowship at Children's Mercy and our first fellow will start in August 2021.

The 375,000-square-foot Children's Mercy Research Institute officially opened on Feb. 18, 2021. Our department has been working collaboratively already to provide intraoperative tissue samples for the Genomics Answers for Kids (GA4K) research program.

Our prospective and retrospective research efforts and registries are helping lead the way to better orthopedic treatments and therapies today and tomorrow for children in Kansas City and around the globe.



We have a new department program for Quality Safety and Value led by Micah Sinclair, MD, and Heather Barnes, APRN. As I reflect on the many advances we've made through the work of everyone in our department, I'm proud of all we've accomplished for the children and families who have entrusted us with their care in 2020.

Richard M. Schwend, MD, FAOA, FAAP
Interim Chair, Department of Orthopedic Surgery and Musculoskeletal Science

CY 2020 HIGHLIGHTS

We routinely nominate patients diagnosed with scoliosis, osteogenesis imperfecta, osteochondritis dissecans and other suspected genetic bone diseases as candidates for Genomic Answers for Kids. This unique program systematically **employs an advanced set of genomic tools to uncover a greater number of inherited mutations in these patients.**

Donna Pacicca, MD, Pediatric Orthopedic Surgeon and Physician-Scientist, is one of the only orthopedic surgeons in the nation **investigating new ways to study human bone and cartilage cells** using novel single-cell techniques. This work is being performed in collaboration with Emily Farrow, PhD, Children's Mercy Genome Center.

Ranked #28 in Orthopedics by U.S. News & World Report in 2020.

Richard M. Schwend, MD, FAOA, FAAP, was named the recipient of the **Dr. Rex L. Diveley Endowed Professorship in Orthopaedic Research**, the highest academic award that one can achieve at Children's Mercy.

Dr. Schwend authored and published *Back Pain in the Young Child and Adolescent*, in collaboration with William L. Hennrikus. The book focuses on back pain evaluation for primary care providers.

Children's Mercy is one of only 30 locations in the nation to be **verified by the American College of Surgeons as a Level One Children's Surgery Center.**

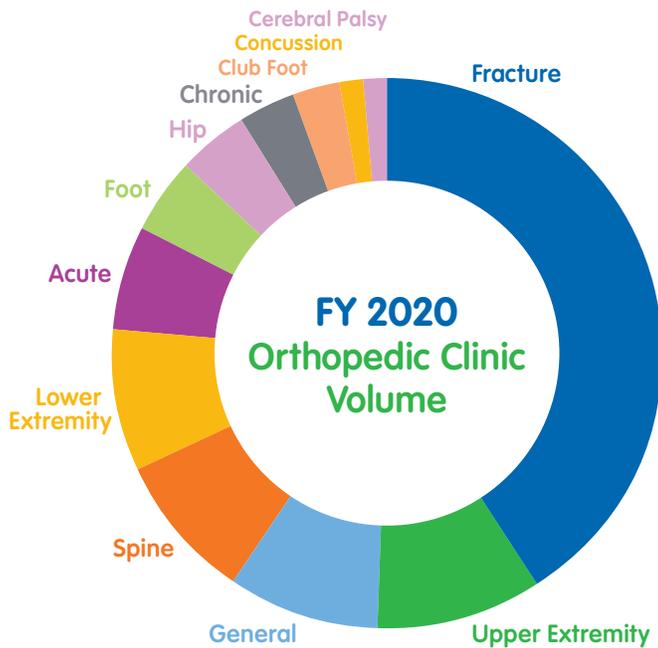


Brad Olney, MD, with his wife Dawn Olney, **established the Brad and Dawn Olney Endowed Chair of the Department of Orthopedic Surgery and Musculoskeletal Science.** This generous gift to the hospital and department will assure that we have the highest quality of leadership to follow Dr. Olney's legacy.

FY 2020 By the Numbers

39,000+ outpatient clinic visits

2,816 surgeries/procedures



18 faculty

- **12** surgeons
- **6** musculoskeletal medicine physicians

23 nurse practitioners

3 physician assistants

10+ fully dedicated physical therapists

29 athletic trainers

2,010 telemedicine visits*

- **92%** of patients rated their telemedicine visit experience a 9 or 10 on a 10-point scale

*Jan.-Dec. 2020

CLINICAL OUTCOMES

100% compliance with the preoperative antibiotic prophylaxis timing

2.08% SSI rate following spinal fusion for scoliosis

Orthopedic Surgeons Lead Tissue Collection for Genomic Answers for Kids

What role does genetics play in conditions like osteochondritis dissecans (OCD), adolescent idiopathic scoliosis (AIS) or even human bone development and response to treatment?

Genomic Answers for Kids (GA4K), a novel project at Children's Mercy Kansas City, is systematically employing an advanced set of genomic tools to uncover a greater number of inherited mutations in patients with rare diseases and their families.

The program's goal is to collect the genomic data and health information of 30,000 children and their families over the next seven years, creating a database of nearly 100,000 genomes.

Physicians from across Children's Mercy are nominating patients for this project, according to Tricia Zion, Genetic Counselor II – Research, Children's Mercy Research Institute, Genomic Answers for Kids. The Department of Orthopedic Surgery and Musculoskeletal Science has been the largest contributor of tissue to the project to date.

"We have established a protocol with the orthopedic surgeons utilizing a Redcap database that notifies us when an orthopedic patient is scheduled for surgery," Tricia explained. "That alerts us to contact the family to request consent for tissue collection during the procedure."

The tissue collected includes bone, cartilage, muscle and skin. Previously, this tissue was discarded or sent to pathology for analysis. "It's very helpful to be able to look at patient tissue. Sometimes we might find a mutation in the tissue that we might never find if we just analyzed the blood. The more tissue we collect, the stronger the database will be," Tricia added.

Once collected, the tissue is sequenced, generating a tremendous amount of data that can then be accessed and queried by the orthopedic surgeons, as well as other researchers.

In most cases, the orthopedic surgeons are enrolling patients who represent tier II populations. "These are patients who have multifactorial diseases, like AIS and OCD. These tissue samples can be very helpful

in determining gene expression," Tricia said.

For example, OCD tissue samples from more than 500 patients will be sequenced as part of Genomic Answers for Kids. The goal is to determine if there is a possible genetic connection that may one day identify the defect and better inform treatment options. Likewise, the department's spine surgeons are nominating AIS patients and children with other spine conditions for the project, collecting tissue for analysis.

In a related project, Donna Pacicca, MD, Orthopedic Surgeon and Physician-Scientist, in collaboration with Emily Farrow, PhD, Children's Mercy Genome Center, are using deidentified discarded healthy juvenile bone and cartilage (under 18 years old) obtained from routine pediatric orthopedic surgeries to study bone cell development.

"The data we generate by collecting these tissue specimens is for the physicians to use in their research," Tricia added. "We need a large population of patients to determine

if we're seeing similarities in terms of genetic change or gene expression. "The long-term goal is to collect tissue from enough patients so that we can see commonalities and differences in children who have these conditions. If you have a research question in mind, we can provide this data for you."

If you are interested in nominating a patient for Genomic Answers for Kids, please call (816) 915-4200, email GA4K@cmh.edu, or visit childrensmercy.org/genomicanswers.

ROCK Collaborative

The orthopedic surgeons at Children's Mercy also participate in the Research in OsteoChondritis of the Knee (ROCK) collaborative. This organization consists of 18 pediatric hospitals from across the United States devoted to the investigation of etiology, diagnostic criteria, management and optimization of physical activity for patients with OCD. Kevin Latz, MD, Chief, Section of Sports Medicine, represents the Children's Mercy team with this group.



photo of Children's Mercy Research Institute

SPORTS MEDICINE

Kevin Latz, MD
Chief, Section of Sports Medicine
Director, Sports Medicine Center



Despite COVID-19, the Section of Sports Medicine continued to grow and thrive in 2020.

Winter sports were wrapping up and our spring sports season was just getting underway when school sports shut down secondary to COVID-19 in March 2020. With the temporary cessation of organized sports, our medical sports faculty stepped up to provide increased fracture care for the Department of Orthopedic Surgery and Musculoskeletal Science. Those additional skills have continued to be vital to our department even after the resumption of a more normal sports landscape in fall 2020.

Brian Harvey, DO, Natalie Stork, MD, Donna Pacicca, MD, and Nicole Fillingame, MS, LAT, in combination with our colleagues in Infectious Diseases and Cardiology, have been instrumental in guiding a safe return to sport with COVID in their white paper, "Recommendations for a Safe Return to Sport and Physical Activity After COVID-19." Additionally, Drs. Harvey and Stork, along with Nicole and Michael Denning, DPT, have provided guidelines for return to sports post-COVID in their paper titled, "Plan for Pre-Season Post-Pandemic."

Mellony Mann, DPT, along with Dr. Harvey, utilized the expertise from David White, MD, and the exercise physiology lab to create a cardiopulmonary rehabilitation program for struggling athletes post-COVID. Dr. Canty's service on the Sports Medicine Advisory Committee with the Missouri State High School Activities Association (MSHAA) has been instrumental in guiding the safest possible return to high school sports during the pandemic.

The pandemic has exacerbated and highlighted the health and educational inequities that exist in our metropolitan area. James Roberson, MD, and Nicole have worked tirelessly with the Children's Mercy school-based health committee led by Margo Quiriconi, MPH, RN, to address some of these inequities. Dr. Roberson and Nicole also have shared their expertise with the KC Physical Activity Plan.

We have continued to grow our school-based sports medicine program under Nicole's direction, which now includes athletic trainers

embedded with 21 of our local high schools, in addition to our two athletic trainers embedded with Sporting Kansas City's academy program.

Our sports medicine fellowship led by Dr. Canty continues to attract outstanding clinicians. Stephanie Tow, MD, graduated in summer 2020 and joined the staff of Scottish Rite Hospital and UT Southwestern Medical Center. Kyle Pontiff, MD, arrived in summer 2020 as our fifth sports medicine fellow.

Clinicians in the Sports Medicine Center and the Section of Sports Medicine continue to be active in basic science research, multidisciplinary and multi-center research under the direction of Drs. Pacicca and Harvey. This productive group's research has been accepted for presentation at national forums and has been published.

HAND SURGERY

Christine Cheng, MD, MPH
Chief, Section of Hand Surgery



Although the COVID pandemic closed summer camps and organized activities for children, the Children's Mercy Department of Orthopedic Surgery and Musculoskeletal Science maintained an average volume of injuries throughout the summer and into fall 2020.

Our two full-time, board-certified hand surgeons and nurse practitioner in the Section of Hand Surgery still saw more than 4,000 clinic patients, similar to 2019 patient volumes. We achieved this despite limiting visits to only high-acuity conditions per COVID protocols through the spring and summer. A small number of appointments (3%) were via telehealth, but the creative team approach of alternating weeks in clinic allowed timely care that maintained social distancing for both the patients and providers. The surgeons assisted by personally reviewing all appointment requests to ensure proper triage.

The COVID pandemic also generated unique research. The department presented The Effect of COVID-19 on

Pediatric Orthopedic Trauma Volume at a Level 1 Pediatric Trauma Center in the Midwestern United States at the 2021 Children's Mercy GME Research Days. This study noted a significant increase in injuries due to motorized vehicles such as ATVs, dirt bikes and boating, as our communities remained in relative lockdown.

One such patient was a 10-year-old girl who sustained a severe elbow injury from an ATV accident. The hand surgery team helped the orthopedic trauma team with her nerve and arterial reconstruction and skin grafting. However, she also required reconstruction of half of her distal humerus, using cadaveric bone to preserve the hinge mechanism of the elbow to try to maintain motion.

This type of procedure has not been reported to date in the pediatric population and has very few case reports in the adult population. The innovative approach combined the skills of Caroline Tougas, MD, MACM, our fellowship-trained orthopedic trauma surgeon, and the fellowship-

trained hand surgery team of Micah Sinclair, MD, and Christine Cheng, MD, MPH. After numerous surgeries and support from our inpatient, operating room and therapy personnel, our patient has returned to school and activities. She surprised us with winter holiday cards written using her injured extremity!

As we transitioned away from COVID restrictions, we were able to welcome our patients with less acute conditions, such as congenital differences, back to clinic.

SPINE SURGERY

Nigel Price, MD, FAAP
Chief, Section of Spine Surgery



We have had another productive year with over 220 spinal reconstructions without an infection. The section continues to find ways to improve efficiency in the operating room with two-surgeon cases for idiopathic scoliosis and selective high-risk cases. We have added waterproof Mehta casting for infantile scoliosis, ApiFix and spinal tethering to our clinical care.

We will be upgrading our navigational abilities with the purchase of an O-arm 2.

On the research front we have had several publications and presentations this year (see research report). I chaired a webinar for the Scoliosis Research Society on the “Non-operative Care of the Spine Patient.”

Orthopedic Fellowship

The 2020 match results yielded our first pediatric orthopedic fellow. Dr. Olubusola Brimmo will join us in August 2021.

Telemedicine

The Department of Orthopedic Surgery and Musculoskeletal Science added over 2,000 home health telemedicine visits in 2020. Physicians and nurse practitioners were credentialed during the pandemic and continue to provide home telehealth and telemedicine visits in Missouri and Kansas.

QUALITY REPORT

Micah K. Sinclair, MD
Director of QSV



As value-based health care delivery is at the forefront at Children's Mercy Kansas City, the development of a Quality, Safety and Value team has been one of the many important additions this year in the Department of Orthopedic Surgery and Musculoskeletal Science. The team is led by Micah K. Sinclair, MD, Orthopedic Hand Surgeon, and Heather Barnes, DPN, Orthopedic Sports Medicine, APRN. The development of this team has created a structure to provide oversight and consistency for the QSV work between the ambulatory clinics, perioperative department and other multidisciplinary teams.

This past year, due to social distancing, fracture care has transitioned from a large weekly ambulatory clinic to smaller daily fracture clinics. The QSV team has undertaken work to support this change, focused on delivering evidence-based fracture care. Distal radius fractures are one of the most common fractures that we see and are the focus of our first initiative. Limiting the scope of our work to one fracture type should achieve a detailed

understanding of an episode of care in our defined patient population. Once the processes for one fracture type are streamlined, a similar framework can more effectively be applied to each subsequent fracture type.

Despite the changes in school schedules and structured activities such as sports and camps, our staff has noticed a consistent number of injuries, including those which require surgery. With this increasing need for orthopedic fracture and trauma care, as well as for pre-existing orthopedic conditions, the QSV team has undertaken a project to maximize the efficiency of the department's use of available surgical time. As access to the operating room has a direct relationship to ambulatory clinic patient volume, this important work should improve overall access for our children and families.

Reviewing the quality of patient care is very important work. Our previously named Morbidity & Mortality conference (M&M) is now titled Continuous Quality Improvement

(CQI). This alignment with all surgical departments and the hospital system provides the opportunity for multidisciplinary work. Additionally, we are streamlining the electronic tracking of patient-reported outcomes measures. With our commitment to shared decision-making and health literacy, these tools will provide improved discussions and partnerships with patients and families to advocate for the most appropriate plan of care.

Our continued dedication to patient-centered care as well as the creation and ongoing work of the Department of Orthopedic Surgery QSV team exemplifies this commitment. We strive not only for excellent patient care, but also excellence in how we deliver it, thus aligning with our vision of creating a world of well-being for all children.

PEDIATRIC ORTHOPEDIC SURGERY RESEARCH

Richard M. Schwend, MD, FAOA, FAAP
Interim Chair, Department of Orthopedic Surgery and Musculoskeletal Science
Director of Research



The Department of Orthopedic Surgery and Musculoskeletal Science has a long history of a dedicated research program. Julia Leamon, RN, is the research coordinator who manages all aspects of our program.

Since 2010, we have continued to have a very successful Summer Scholars program. Micah Sinclair, MD, Director of Quality, Safety and Value for Orthopedics, also leads the Summer Scholars Program. Marisha Madhira, KU MS2, and Allison Goodrich, KU MS2, were our 2020 Summer Scholars and have since moved forward to their second year of medical school at KU. Paige Pearson, Mason Fawcett and Morgan Williams were competitively selected to be our 2021 Summer Scholars.

Other medical students working with us this past year included Fahad Qureshi, Johanna Hild and Gabi Cleary. Our orthopedic residents working on research projects include Alex Metoxen, Kirsten Norrell, Dan Bachman, Dan Hagaman, Sean Bonanni and Tanner Campbell.

Programs represented include the University of Missouri-Kansas City, the University of Kansas Medical Center and Kansas City University of Medicine and Biosciences.

The Department of Orthopedic Surgery and Musculoskeletal Science has developed a relationship with the University of Kansas Clinical and Translational Science Institute to have a one-year scholar working with us in our department and enrolled in the Master of Clinical Science program. Brittany Sipp, MS4, was selected to be our first-ever one-year scholar in the 33 credit hours TL1 Frontiers Program. She is currently working on her thesis, which she defended in April. We encourage medical students willing to take a year between their third and fourth years or before residency to apply for this program. If interested in this program, contact: frontiers-info@kumc.edu or jleamon@cmh.edu.

2020 By the Numbers

PUBLICATIONS

22 published manuscripts

6 published book chapters

1 book

PRESENTATIONS

4 invited lectures

2 international presentations

36 national presentations

- 17 oral
- 12 posters
- 7 invited lectures

LEADERSHIP

21 faculty leadership positions

RESEARCH

16 retrospective IRB-approved studies

7 prospective studies

4 approved registries

BRITTANY SIPP Takes on Role as Department's First TL1 Predoctoral Frontiers Scholar

As a busy third-year medical student at the Kansas City University of Medicine and Biosciences (KCUMB), Brittany Sipp was looking forward to heading into her final year of medical school in 2020, then applying for residency, but fate had different plans.

Richard M. Schwend, MD, FAOA, FAAP, Interim Chair for the Department of Orthopedic Surgery and Musculoskeletal Science and Director of Research, had been working with the University of Kansas Medical Center to establish a year-long research opportunity for a medical student in the final two years of their education.

It turned out KU had an existing program, the TL1 Predoctoral Frontiers Scholar Clinical and Translational Research Training Program. This is an NIH-funded opportunity for students interested in developing and advancing their research skills.

Brittany, who had previously worked with Dr. Schwend on some data collection, had already decided she wanted a career at an academic medical center. She also knew she wanted clinical research to be part of her practice. So, when she learned about the Frontiers Scholar opportunity, she applied and was accepted.

"I thought this program would give me a better background into what goes into clinical research," Brittany said. "In medical school, we don't have much time to learn in depth about clinical research, trials, epidemiology, etc."

As a Frontiers Scholar, Brittany was required to take a leave of absence from her medical program, putting her fourth year of medical school on hold.

During the master's program, she had to pursue a research project with Dr. Schwend as her mentor. Plus, she had to complete her master's in clinical research degree during the same year. The degree is a minimum of 33 credit hours and includes courses in epidemiology, biostatistics, grant writing and bioinformatics.

In addition to the challenging curriculum, Brittany faced an unforeseen obstacle during her program year—the COVID-19 pandemic.

"I accepted the position in February 2020, just before the pandemic hit," Brittany said. As a result, her classes and most of her interactions with Dr. Schwend and the Children's Mercy orthopedic surgeons became virtual.

With her recent graduation from the KU master's program, Brittany said this past year has been an exciting one that's expanded her horizons.

"It has been a fantastic opportunity to learn more about the specifics of clinical research and all it entails," Brittany said. "Additionally, I have been able to assist with other projects and learn more about the research process from start to finish."

But the most valuable lesson Brittany learned from the Children's Mercy orthopedic surgeons is how complex and time-consuming research is.

"I have so much respect for all the orthopedic surgeons in the department. I've learned it's no easy feat to balance your personal life with being a clinician, surgeon and researcher," she said. "I only hope I can be as good at it as they are one day. It's amazing all the Children's Mercy orthopedic surgeons, musculoskeletal medicine physicians and nursing professionals do to improve the well-being of their patients."

Following Brittany's graduation from the Postdoctoral Frontiers Scholar program, she will return to KCUMB for her fourth year of medical school and will apply for her residency match this fall.

Publications

Hiett A, Tung R, Emanuelli E, Sherman A, **Anderson JT, Schwend RM**. The amount of surgical correction of the main thoracic curve is the best predictor of postoperative shoulder balance in patients with adolescent idiopathic scoliosis. *Spine Deformity*. 2020; 8(6): 1279-1286.

Gordon JE, **Anderson JT**, Schoenecker PL, Luhmann S, Dobbs M, Hoernschemeyer D. Treatment of femur fractures in children age 2-6: A multicentre prospective case series. *Bone Joint J*. 2020;102-B(8): 1056-1061.

Cohen LL, **Schwend RM**, Flynn JM, Hedequist DJ, Karlin LI, Emans JB, Snyder BD, Hresko MT, Anderson JT, Leamon J, Talwar DG, Michael P. Why irrigate for the same contamination rate: Wound contamination in pediatric spinal surgery using betadine versus saline. *J Pediatr Orthop*. Nov./Dec. 2020;40(10):e994-e998. doi: 10.1097/BPO.0000000000001620.

Marasigan JAM, Wagala NN, Wu Z, **Schwend RM**. Combined skeletal age using hand, elbow, and pelvis X-rays: A pilot study. Submitted to: *JPO*.

Wu Z, **Schwend RM, Anderson JT**, Marasigan J, Sherman A. Iliac screw instrumentation to the pelvis in children with neuromuscular and syndromic scoliosis. No lateral connectors and respect sagittal balance. *Spine Deformity*. Published online Jan. 25, 2021.

Bachman D, Singh L, **Anderson JT, Schwend RM**. An intraoperative laterally placed distractor for gradual load sharing correction of severe spastic neuromuscular spines. Accepted for publication in *Spine Deformity*. Feb. 16, 2021.

Miller M, Clohisy JC, Pashos GE, **Berglund LM**, Schoenecker PL. Severe hip dysplasia in skeletally mature patients with spastic cerebral palsy: The technique and early outcome of comprehensive surgical correction (Including the Bernese PAO). *J Pediatr Orthop*. 2021 Jan. 41(1):e7-e13.

Stricker PR, Faigenbaum AD, McCambridge TM. Council on Sports Medicine and Fitness Collaborator, **Canty G**. Resistance training for children and adolescents. *Pediatrics*. 2020 Jun;145(6): e20201011. doi: 10.1542/peds.2020-1011. PMID: 32457216.

Lobelo F, Muth ND, Hanson S, Nemeth BA. Council on Sports Medicine and Fitness; Section on

Obesity Collaborator, **Canty G**. Physical activity assessment and counseling in pediatric clinical settings. *Pediatrics*. 2020 Mar;145(3): e20193992. doi: 10.1542/peds.2019-3992. Epub 2020 Feb. 24. PMID: 32094289.

Harvey B. COSMF Effort, *Thrombosis case series*. Online newsletter, 2020.

Harvey B. Return to sport task force. *COVID-19 Return to sport white paper*.

Shah K, Fulbright J, Katz A, Zhang L, **Jarka D**, Lypka M. Malignant granular cell tumor of the lower extremity in an adolescent male. *J Pediatr Hematol Oncol*. 2020 Aug. 5; Online ahead of print. PMID: 32769557 DOI: 10.1097/MPH.0000000000001886.

Knewton KE, Gonzalez Flores JG, **Pacicca D**, Robinson JL. Transcriptome sequencing reveals sex differences in human meniscal cell response to estrogen based on dosing kinetics. *J Ortho Res*. (submitted 05/20).

Shah R, Talwar D, **Schwend RM**, Sponseller P, Aoyama JT, Ganley TJ. POSNA Evidence-Based Practice Committee. Lawnmower injuries in children: A national 13-year study of urban versus rural injuries. *J Am Acad Orthop*. May 1, 2020;28(9):e 387-e394.

Murray E, Tung R, Sherman A, **Schwend RM**. Continued vertebral body growth in patients with juvenile idiopathic scoliosis following vertebral body stapling. *Spine Deformity*. Published online 05 Feb. 2020.

Wagala NN, Marasigan J, Mian H, **Schwend RM**. Operative time in adolescent idiopathic scoliosis surgery: A need for a standard definition. Accepted to *JPOB*.

Schwend RM. The burden of pediatric musculoskeletal diseases worldwide. *Ortho Clinic North Am*. 2020 Apr; 51(2):207-217.

Fornari E, **Schwend RM**, Schulz J, Bray C, Schmitz MR. Development of a global pediatric orthopedic outreach program in Ecuador through Project Perfect World: Past, Present, and Future Directions.

Stevanovic, Emanuelli E, O, KlottJ, Uvodich M, Sherman A, **Schwend RM**. Treatment of type III supracondylar humerus fractures: adherence and limitations of American Academy of Orthopedic Surgeons Appropriate Use Criteria App. *J Pediatr Orthop B*. 2020 July 17. PMID 32694424.

Bonanni S, **Schwend RM**. Anaphylaxis after injecting hemostatic agent containing gelatin into bone under pressure-A warning. Submitted to *Spine Deformity*. Accepted for publication.

Boschert E, Stubblefield C, **Schwend RM**, Reid KJ. 22 years of pediatric musculoskeletal firearm injuries: adverse outcomes for the very young. Accepted to *J Pediatr Orthop*.

Fournier MN, **Sinclair MR**, Zheng ET, Spiegel DA, Johnson AL, Shaw AS, Riccio AI, Elliott ME, Bae DS, Sawyer JR. The frequency of mediastinal injury in acute posterior sternoclavicular dislocations: A multicenter study. *J Pediatr Orthop*. 2020. DOI: 10.1097/BPO.0000000000001649 (e-published ahead of print).

Tow S. Youth athlete's hip pops him out of soccer game. **Stork N**, Chorley JN ed. AMSSM/AOASM Case Study Teaching Tool. *American Medical Society for Sports Medicine*. URL: <https://www.amssm.org/Case-Studies.php>. Submitted 09/2020.

Chen R. Hand ball, more than just a penalty? **Stork N**, Chorley JN ed. AMSSM/AOASM Case Study Teaching Tool. *American Medical Society for Sports Medicine*. URL: <https://www.amssm.org/Case-Studies.php>. Submitted 10/2020.

Goodwin C. A typical but atypical ankle inversion injury. **Stork N**, Chorley JN ed. AMSSM/AOASM Case Study Teaching Tool. *American Medical Society for Sports Medicine*. URL: <https://www.amssm.org/Case-Studies.php>. Submitted 11/2020.

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Tougas CM, Ballester AM, Morgan RD, et al. Quantification of ankle dorsiflexion in Ponseti-managed unilateral clubfoot patients during early childhood. *Journal of Pediatric Orthopedics*. 2020 Dec.

Tougas CM, Voltaren R, Bajwa A, Beck J. Gender disparity in academic orthopaedics: An analysis of abstract authorship at national meetings. *Journal of Orthopedics*. 2020;19:212-217.

Continued

Presentations, Lectures, Posters

Anderson JT. Pediatric back pain. Truman Lakewood Family Practice Residence. April 21, 2020.

Anderson JT. Overview of scoliosis. Kansas Academy of Pediatrics Annual Meeting. April 22, 2020.

Rivard D, **Anderson JT.** Evaluate the efficacy of image-guided pain management procedures on pediatric patients. Poster presentation at the Society of Interventional Radiology Annual Meeting. Seattle, WA. March 28-April 2, 2020.

Wu Z, Schwend R, **Anderson, JT,** Marasigan J, Sherman A. Iliac screw instrumentation to the pelvis in children with neuromuscular scoliosis. Risk factors for failure and the importance of sagittal balance. Podium presentation at the International Meeting of Advanced Spinal Technologies. Athens 2020.

Li Y, St. Hilaire T, **Anderson J,** Erickson M, McIntosh A, Sturm P, Skaggs D, Vitale M, El-Hawary R, Pediatric Spine Study Group. Actuator end cap separation in magnetically controlled growing rods (MCGR). Accepted for podium presentation at International Congress of Early Onset Scoliosis 2020

meeting and submitted to Pediatric Orthopaedic Society of North America 2020 meeting.

Berglund LM. Clinical challenges in adolescent hip. Imaging of children. Adolescent and Young Adults. Virtual Conference. American Osteopathic College of Radiology. September 2020.

Berglund LM. Developmental hip dysplasia: Evaluation and treatment. Orthopaedic Resident Didactic. Children's Mercy Kansas City. Quarterly 2020-present.

Berglund LM. Developmental dysplasia of the hip. Orthopedic Grand Rounds. Children's Mercy Kansas City. Biannually 2011-present.

Berglund LM. Evaluation and treatment of adolescent hip disorder. Orthopedic Grand Rounds. Children's Mercy Kansas City. Biannually 2011-present.

Berglund LM. Limb deficiency: Evaluation and management. Orthopedic Grand Rounds. Children's Mercy Kansas City. Biannually 2011-present.

Berglund LM. Musculoskeletal infection in the pediatric patient. Orthopedic Resident Didactic. Children's Mercy Kansas City. Quarterly 2013-present.

Berglund LM. Orthopedic in-training examination review. Department of Orthopedic Surgery. University of Kansas School of Medicine. Annually 2018-present.

Tow S, **Canty G.** Youth athlete's hip pops him out of soccer game: A case report. American Medical Society for Sports Medicine 29th Annual Meeting. April 26, 2020. Virtual due to COVID-19 pandemic.

Harvey B. Effort thrombosis – with Chi A. Virtual AMSSM 2020. Unique case of elbow pain and loss of range of motion in a 13-year-old athlete. Virtual presentation 2020 AAP.

Harvey B. Return to play post-COVID. USTA-MV Regional. May 2020.

Harvey B. Brain injury association – BIA sports concussions: Facts, fallacies and new frontiers seminar. Feb. 10, 2020.

Harvey B. Physical and cognitive rest is it still recommended BIA sports concussions: Facts, fallacies and new frontiers seminar. Feb. 10, 2020. Keynote speaker. How to support students in school following a concussion.

Presentations, Lectures, Posters

Todd J, Lawrence R, **Latz K**. Subspecialty day-trauma/AP, axial, and external oblique views reliably measure medial epicondyle displacement using corresponding point methodology but the measurements only moderate correlate with true displacement as measured by CT scan. 2021 POSNA session. May 13, 2021.

Vanderpool A, Barnes H, Hornick, Sherman A, **Latz K**. Relationship between suicidal ideations and length of time away from sport in the adolescent athlete. E-Poster presentation. PRISM Phoenix, AZ. Jan. 23-25, 2020.

Butler Lauren, **Latz K**. Literacy in elementary physical education: A survey of fundamental movement skill practice patterns. Podium presentation. PRISM Phoenix, AZ. Jan. 23-25, 2020.

Butler L, Miliam E, **Latz K**. Reliability of a qualitative scoring system of trunk and LIMB alignment during a 45-degree CUT. Scientific poster. PRISM Phoenix, AZ. Jan. 23-25, 2020.

Farrow E, Brown T, Johnston J, Walter A, Gibson M, Pastinen T, **Pacicca D**. Single cell expression analysis of pediatric bone reveals novel cellular heterogeneity. American Society for Bone and Mineral Research Annual Meeting. Sept. 11-15, 2020.

Pacicca D, Brown T, Johnston J, Gibson M, Pastinen T, Farrow E. Analyzing transcriptome of primary cells from bone: Noise from bulk vs. single cell expression. Orthopaedic Research Society Annual Meeting. Phoenix, AZ. Feb. 8-11, 2020.

Pacicca D. Advanced Biomaterials course guest lecturer. Orthopedic surgery and biomaterials. University of Kansas School of Engineering, Lawrence, KS (virtual). October 2020.

Pacicca D. Introduction to Biomedical Engineering class guest lecturer. Introduction to orthopedic surgery. University of Kansas School of Engineering, Lawrence, KS (virtual). October 2020.

Pacicca D. Perspectives on novel technologies for meniscus repair, regeneration, and replacement: A surgeon's perspective. ORS Meniscus Section Annual Meeting. Phoenix, AZ. Feb. 10, 2020.

Price NJ. Vertebral body tethering and ApiFix. Update for nurses. Children's Mercy Kansas City. Nov. 12, 2020.

Price NJ. Children's Mercy Kansas City Grand Rounds. How to be an ally in addressing racism and discrimination. Presented by F. Bruder Stapleton, MD, Sr. Vice Pres. for Scientific Affairs, Seattle Children's Research Institute. Nov. 19, 2020.

Price NJ. Children's Mercy Kansas City Nursing Group 5 Hall. Nursing update on ApiFix and VBT. Jan. 20, 2021.

Roberson J. Youth sports return to play in COVID-19. Instagram Live with 12345 Fit-Tastic! July 2020.

Schwend RM, Boschert E, Stubblefield C, Reside KJ. 22 Years of pediatric musculoskeletal firearm injuries: Adverse outcomes for the very young. POSNA 36th Annual Meeting. San Diego, CA. May 12-16, 2020.

Continued



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Schwend RM. Imaging of pediatric scoliosis. Webinar, University of Maryland, May 24, 2020.

Talks given:

- Anatomy and physical examination of pediatric scoliosis, Greg Mencio – Vanderbilt
- Early Onset Scoliosis, Paul Sponseller, MD – Johns Hopkins University
- Congenital Scoliosis, David Skaggs, MD – Los Angeles Children's
- Adolescent Idiopathic Scoliosis, Suken Shah, MD – Dupont
- Neuromuscular Scoliosis, Dan Sucato, MD – TSRH

Marasigan JA, Wagala NN, Wu Z,

Schwend RM. Combined skeletal age using hand, elbow and pelvis X-rays: A pilot study. AAP NCE Section on Orthopaedics Annual Meeting. Virtual. San Diego, CA. Oct. 3, 2020.

Schwend RM. Invited as visiting professor to the 26th Annual Conference of the Paediatric Orthopaedic Society of India, Jan. 9-12, 2020, Coimbatore, India.

Talks given:

- Management strategy in severe pediatric scoliosis

- Adolescent dysplasia treatment algorithm
- Indication for surgery for 50-degree AIS
- EOS decision-making at maturity
- Fracture care—10 things that have changed for me
- PAO master surgery technique
- What is PAO? Technique

Sinclair MR. Growth plate injuries. Ascension Via Christi Quarterly Trauma Rounds. Pittsburg, KS. Oct. 19, 2020.

Sinclair MR. Six months later ... has the COVID-19 response affected traumatic injuries in children and adolescents? 4th Annual Children's Mercy Pediatric Trauma Conference. Changed to virtual conference due to COVID-19 pandemic. Sept. 10, 2020.

Chase P, **Sinclair MR**, Leamon J, Sherman A. Use of virtual reality distraction vs. standard cast removal in children: A prospective, randomized trial. Presented at Pediatric Orthopaedic Society of North America Annual Meeting. San Diego, CA. Changed to virtual conference due to COVID-19 pandemic. May 13, 2020.

Continued

Sinclair MR, Silva M, Sanders J. Best of POSNA 2020-Trauma Subspecialty Day. May 18, 2020.

Sinclair MK. Pediatric supracondylar humerus fractures: Pearls and pitfalls. IC08-L: Management of pediatric elbow and forearm fractures. 2020 Virtual ASSH Annual Meeting. Live presentation.

Sinclair MK. How to be a good mentee – developing mentor relationships. American Society for Surgery of the Hand Fellows' Virtual Mini-course. Live presentation. April 2020.

Sibbel SE, Vossler K, Goodrich A, Campbell T, Lalka A, Faulk LW,

Sinclair MK. Ulnar epiphysiodesis: Success of the index procedure. 2021 AAHS Webinar Series. 2021 Annual meeting changed to virtual conference due to coronavirus pandemic.

Sibbel SE, Look N, Korrell H, Schutz J, Lalka A, Nance J, Scott F, **Sinclair MK**. Pediatric proximal phalanx base fractures in fingers: Identifying the need for surgical management. 2021; AAHS Webinar Series. 2021 Annual meeting changed to virtual conference due to coronavirus pandemic.

Sibbel SE, Vossler K, Goodrich A, Campbell T, Lalka A, Faulk LW, **Sinclair MK**. Ulnar epiphysiodesis: Success of the index procedure. E-Poster presentation. 2021 POSNA Meeting. Dallas, TX.

Norrell K, Stubblefeld C, **Sinclair MK**. Risk factors associated with nerve palsy in operatively treated supracondylar humerus fractures in the pediatric population. AAP Virtual National Conference and Exhibition. 2020. Changed to virtual conference due to coronavirus pandemic.

Look NE, Lalka A, **Sinclair MK**, Schutz J, Korrell H, Nance J, Sibbel SE. Proximal phalanx base fractures: Outcomes and treatment characteristics. POSNA Annual Meeting. 2020. Changed to virtual conference due to coronavirus pandemic.

Tougas CM. The orthopedic surgeon's guide to quality improvement. Trauma Subspecialty Day. POSNA Annual Meeting. Online May-December 2020.

Tougas CM. The one-off complication: Case presentation. Trauma Subspecialty Day. POSNA Annual Meeting. Online May-December 2020.

Tougas CM. The provider-caused complication: Case presentation. Trauma Subspecialty Day. POSNA Annual Meeting. Online May-December 2020.

Tougas CM. The systems-caused complication: Case presentation. Trauma Subspecialty Day. POSNA Annual Meeting. Online May-December 2020.

Tougas CM. Early appropriate care of the multiply injured child - An orthopedic perspective. Surgery Grand Rounds. Children's Mercy Kansas City. October 2020.

Tougas CM. Differences in trauma care of pediatric patients. Stormont Vail Health Trauma Symposium. October 2020.

Tougas CM. Pediatric orthopedic emergencies. Pediatric Trauma Conference. Children's Mercy Kansas City. September 2020.

Tougas CM, Ballester AM, Morgan RD, Ebramzadeh E, Sangiorgio S, Zionts. How much dorsiflexion should you expect to see in corrected clubfeet? Annual Meeting of the American Academy of Orthopaedic Surgeons. Orlando. March 2020.

Ballester AM, **Tougas CM**, Morgan RD, Ebramzadeh E, Sangiorgio S, Zionts. Decreased ankle dorsiflexion in clubfeet corrected using Ponseti's method. Orthopedic Research Society Annual Meeting. Phoenix. February 2020.

Books/Book Chapters

Anderson JT. Spinal epidural abscess. In: Schwend and Hennrikus, eds. Back Pain in the Young Child and Adolescent – A Case-based Guide. Springer US. In press.

2020 Smith J, **Canty G.** Case of a middle school student with back pain due to heavy backpack. In: Back Pain in the Young Child and Adolescent - A Case Based Guide. 1st ed.; Springer. Schwend RM, Hennrikus WL, editors.

Latz K, Lacher M, et al. (Eds): Pearls and tricks in pediatric surgery. In Orthopedic Trauma and Sports Injuries, Chapter 58. Springer Nature publishing 2020.

Schwend RM, Hennrikus WL. Back Pain in the Young Child and Adolescent - A Case-Based Guide. Springer. Switzerland. 2020.

Bachman D, **Schwend RM,** Singh L. Intra-operative lateral rib-pelvis distraction treating severe neuromuscular scoliosis. Submitted to Spine Deformity. Published online doi:10.1001/jamapediatrics.2017.5585.

Sinclair MR, Scherl SA. Disaster response and the pediatric orthopaedic surgeon. In Orthopaedic Knowledge Update-6: Pediatrics. American Academy of Orthopaedic Surgeons. 2021.

Sinclair MR. Section Editor: Trauma. In: Orthopaedic Knowledge Update-6: Pediatrics. Ed. Jeffrey E. Martus. American Academy of Orthopaedic Surgeons. 2021.

Sinclair MK, Sibbel SE. Pediatric upper extremity disorders. Parvizi J, ed. In Orthopaedic Knowledge Update. Vol 1. 13th ed. Wolters Kluwer; 2020; e718-e729. <https://bookshelf.vitalsource.com/books/9781975135522>.

Tougas CM, Thompson R. Pediatric neuromuscular disorders. In: Orthopedic Knowledge Update, 13th Edition. American Academy of Orthopedic Surgeons, Wolters Kluwer Health.

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Children's Mercy Kansas City is an independent, non-profit, 386-bed pediatric health system, providing over half a million patient encounters each year for children from across the country. Children's Mercy is ranked by U.S. News & World Report in nine specialties. We have received Magnet® recognition five times for excellence in nursing services. In affiliation with the University of Missouri-Kansas City, our faculty of more than 800 pediatric specialists and researchers is actively involved in clinical care, pediatric research and educating the next generation of pediatricians and pediatric subspecialists. The Children's Mercy Research Institute (CMRI) integrates research and clinical care with nationally recognized expertise in genomic medicine, precision therapeutics, population health and health care innovation. In 2021 the CMRI will move into a nine-story, 375,000-square-foot space emphasizing a translational approach to research in which clinicians and researchers work together to accelerate the pace of discovery that enhances care.



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