ANNUAL MEETING
CHARLOTTE, NORTH CAROLINA
MAY 15–18, 2019

PROGRAM CHAIR
MICHIELLE CAIRD, MD

PRE-COURSE CHAIR
BRIAN SCANNELL, MD

SUBSPECIALTY DAY CHAIR
JEFFREY MARTUS, MD

LOCAL HOSTS
BRIAN BRIGHTON, MD
VIRGINIA CASEY, MD
Fearless leadership

Congratulations to Stanford Children’s Steven Frick, MD, on a successful POSNA presidency. That’s just one example of our faculty’s leadership in pediatric orthopedics:

- **New scoliosis treatments.** A Stanford preliminary study found that 3-D printed scoliosis braces were as effective as traditional braces and patients said they were more comfortable and easier to take on and off. We are one of the few hospitals in the country testing this approach. Our surgeons also use innovative MAGEC spine-lengthening rods.

- **More research.** Our faculty are engaged in more than 80 ongoing research projects on topics including VR use in the clinic, shoulder pain in swimmers, and activity levels and bracing compliance in clubfoot patients, and have published almost 50 papers in 2019.

- **Better imaging.** Our EOS low-dose imaging system helps reduce radiation exposure. And we use custom technology to obtain high-resolution 4D MRI of knees and ankles, which takes only 10 minutes but yields detailed thinner slices that enable viewing anatomic structures in any orientation.

- **Smarter return-to-sport decisions.** Our Motion Analysis Laboratory captures the body’s motion and force and translates it into actionable data and custom recovery plans.

Learn more at ortho.stanfordchildrens.org or by calling (844) 41-ORTHO.
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POSNA extends sincere appreciation to **NuVasive** for their support of the production of the Final Program Book.
Pre-Course Committee

Chair
Brian Scannell, MD

Committee
Lindsay Andras, MD         A. Noelle Larson, MD         Wudbhav (Woody) Sankar, MD

Program Committee

Chair
Michelle Caird, MD

Committee
Jeffrey Martus, MD         Wudbhav (Woody) Sankar, MD         Jeffrey Sawyer, MD

About POSNA

The Pediatric Orthopaedic Society of North America (POSNA) is a group of professionals comprised mostly of pediatric orthopaedic surgeons. We are board certified in orthopaedic surgery and have participated in additional training to become specialized in the care of children’s musculoskeletal health and our practice reflects this dedication.

We, as a group, strive to become the authoritative source on such care through appropriate research that will lead to the best evidence-based patient care.

POSNA Mission Statement

To improve the care of children with musculoskeletal disorders through education, research, and advocacy.

Connect with POSNA during the Meeting

And Share Your Experiences

#POSNA2019

@POSNA_org  Pediatric Orthopaedic Society of North America (POSNA)
Websites:  POSNA.org and orthokids.org
Dear Colleagues,

Gear up and get ready for the 2019 POSNA Annual Meeting and Pre-Course! On behalf of our local co-hosts Brian Brighton and his wife, Erin Brighton, and Virginia Casey and her husband, Kevin Casey, our Program Chair Michelle Caird and the Program Committee Jeffrey Martus, Wudbhav (Woody) Sankar, and Jeffrey Sawyer, our Executive Director Teri Stech and her staff, as well as the numerous POSNA volunteers who have worked to make this meeting a success, we welcome you. The meeting will be at the Charlotte Convention Center, from May 15 to 18, 2019, with the primary meeting hotel The Westin across the street.

Take a spin around the POSNA Annual Meeting track and check out all the meeting has to offer this year:

• The meeting kicks off with the Pre-Course entitled “Improving Patient Care through Wellness, Teamwork, and Organizational Changes”, developed and chaired by Brian Scannell. Wayne Sotile, a physician with decades of experience assisting physicians with work-life issues, Surgeon Master Jeffrey Smith, and some of our own POSNA experts share knowledge that will help you take better care of yourself so you can take better care of your patients.

• The Opening Ceremony will take place on Wednesday evening, highlighted with the Howard Steel Lecture presented by Aric Almirola, nicknamed The Cuban Missile”, an American NASCAR professional race car driver. It also allows us to recognize our industry partners and honor Dick Gross for the Humanitarian Award and Wudbhav (Woody) Sankar for the Special Effort and Excellence Award. A cocktail welcome reception will follow the Opening Ceremony.

• A diverse Symposia Program will cover many topics: Refugee Health (COUR), Strategies for Pediatric Orthopedic Education in the Modern Era (Educate the Educator), Innovation and Technology, Coding and Documentation Guidelines (POPS), QSVI and Industry debates (Research Symposium) and finally meeting the guidelines of the ACS Committee on Trauma in your practice (Trauma).

• The Fifth Annual Arabella Leet, MD Young Member Forum will be held Thursday over lunchtime, developed and chaired by Jennifer Weiss.

• Friday morning will begin with the Basic Science and Clinical Awards Papers followed by the presentation of the Distinguished Achievement Award. The awards committee has selected Perry Schoenecker for the Distinguished Achievement Award. Peter Waters will be the Presidential Speaker and will be sharing his perspective from a lifetime of experience as a leader, thinker and mentor in pediatric orthopaedics. Friday morning will also be the presidential transfer, to incoming POSNA President, Steve Albanese.

• Friday’s Subspecialty Day led by experts and leaders in pediatric orthopaedics will highlight sessions in Foot & Ankle/Hand, Hip, Lower Extremity/Neuromuscular, Sports, Spine, and Trauma.

• The closing night celebration will be at NASCAR Hall of Fame, just a short walk from the Westin. Food, Drink and entertainment will be provided. Remember to dress for a day at the NASCAR track! You will not want to miss out on this memorable evening with your friends and family.

• Be sure to make a pit stop at the Video Abstracts, which are new to POSNA this year, along with the returning Posters and ePosters.

As part of POSNA’S Physician Wellness initiative, Thursday afternoon will be free for attendees to refuel and explore Charlotte. Check the POSNA website for a long list of activity options. Thursday evening, as always, is reserved for family, friends and fellowship reunions, with a wide variety of outstanding restaurants to experience in Charlotte.

The educational and social program for this 2019 POSNA Annual Meeting is outstanding. Ladies and Gentlemen, Start Your Engines. Welcome to the POSNA Annual Meeting!
Dr. Frick is Professor of Orthopaedic Surgery and Pediatric Endocrinology (Courtesy) and Vice Chairman – Education at Stanford University School of Medicine Department of Orthopaedic Surgery, and Chief of Pediatric Orthopaedics at Stanford Children’s Health. A native of Greenville, South Carolina, he graduated from The George Washington University and the Medical University of South Carolina. He completed orthopaedic surgery residency and a basic science research fellowship at Carolinas Medical Center in Charlotte NC, and a fellowship in pediatric orthopaedic surgery at Children’s Hospital San Diego. He served from 1998-2012 on the faculty and as Residency Program Director in the Department of Orthopaedic Surgery at Carolinas Medical Center. He was the founding Chairman of the Department of Orthopaedic Surgery at Nemours Children’s Hospital in Orlando, FL from 2012-2016, and also served as Surgeon-in-Chief and Chairman of the Department of Surgery. His academic interests include clubfoot and foot/ankle disorders, trauma, hip dysplasia, growth, leadership, professionalism, and graduate medical education. He is a member of the Eastside High School and The George Washington University Athletic Halls of Fame, and has been honored by the AOA as a North American Traveling Fellow (2001) and an American-British-Canadian Traveling Fellow (2007), and as an AAOS Leadership Fellow (2002-3). He is active in organized medicine, currently serving as the President of the Pediatric Orthopaedic Society of North America. He has previously chaired different committees for both the American Orthopaedic Association and the American Academy of Orthopaedic Surgeons as well as Pediatric Orthopaedic Society of North America.

He lives in Redwood City, CA with his wife of 32 years, Lisa. Their son Eric is an attorney in Charlotte, NC, and daughter Rachel is an occupational therapist in Philadelphia, PA. Current favorite interests outside orthopaedics include reading, cycling, golf, and hiking/exploring Northern California with Lisa and their Vizsla, Reese.

Stephen Albanese, MD is Professor of Orthopedic Surgery at SUNY Upstate Medical University in Syracuse, New York. He has been department chair and residency program director at Upstate since 2000. Dr. Albanese received his undergraduate degree in electrical engineering from Bucknell University and MD from SUNY Buffalo College of Medicine. He completed orthopedic surgery residency at SUNY Upstate Medical University and pediatric orthopedic surgery fellowship at the Hospital for Sick Children in Toronto, Ontario.

Dr. Albanese’s academic interests have focused on education, accreditation and certification. He has chaired the AAOS Committee on Evaluation (1996-2001), been a mentor in the AAOS leadership fellows program and completed two terms as a member of the AAOS Council on Education (1996-2001, 2005-09). Dr. Albanese has been a member at large on the AAOS Board of Directors (2002-2004). He served seven years (2005-2012) on the Accreditation Council for Graduate Medical Education (ACGME) Orthopaedic Surgery Residency Review Committee (RRC) and was chair the final 3 years. He served a 6 year term (2012-2018) on the ACGME Board of Directors and chaired the Program Requirements Committee (2016-2018). He served as a member of the American Orthopaedic Association Academic Leadership Committee (2006-2012). During his ten year term (2007-2017) on the American Board of Orthopaedic Surgery Board of Directors he chaired the Oral Examination Committee (2010-2012), was active in the question writing task force and served as President (2013-2014).

Dr. Albanese’s clinical interests are pediatric orthopaedics and spine deformity. He chaired the Scoliosis Research Society Morbidity and Mortality Committee (1998-2000). He served as a member at large on the POSNA Board of Directors (2004-06) and chaired the Education (2000-2002) and Health Care Delivery Councils (2014-2017). In addition, he has served on the Terminology and Nomenclature, Data Management, Education, and Practice Management Committees for POSNA.

His sister, Dr. Margaret Albanese, is also an active member of POSNA. Dr. Albanese lives in Upstate New York with Eileen, his wife of 33 years. They have two sons, Matt and Kevin, who are currently Orthopedic Surgery Residents.
BOARD OF DIRECTORS

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Palo Alto, CA

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Baltimore, MD

EDITOR IN CHIEF, JPO, Ex-officio
Robert Hensinger, MD
Ann Arbor, MI
ACKNOWLEDGMENTS

The Pediatric Orthopaedic Society of North America gratefully acknowledges the following for their generous financial support for 2019. We sincerely appreciate each of these companies for helping POSNA fulfill its goals of providing education and fostering research.

HOWARD STEEL FOUNDATION
ST. GILES FOUNDATION
ANGELA S.M. KUO MEMORIAL FUND

DOUBLE DIAMOND LEVEL

DIAMOND LEVEL

PLATINUM LEVEL
Zimmer Biomet

GOLD LEVEL
Arthrex
Globus Medical
BioMarin Pharmaceutical
Pega Medical

SILVER LEVEL
Children’s Mercy Kansas City
Stanford Children’s Health
Nemours/Alfred duPont Hospital for Children
Wright Medical

BRONZE LEVEL
7D Surgical
Gillette Children’s Specialty Healthcare
Merete Technologies, Inc.
Children’s Healthcare of Atlanta
Medicrea, USA
Dear friends and fellow pediatric orthopedic surgeons,

We are looking forward to having you visit Charlotte, North Carolina for the Annual POSNA meeting from May 15-18, 2019. This year’s scientific program under the direction of our president, Steve Frick and program chair, Michelle Caird promises to be nothing less than outstanding. We also will have a fantastic Pre-Course coordinated by Brian Scannell.

Charlotte is located in the Piedmont of North Carolina and is known as the “Queen City” after King George III’s wife, Queen Charlotte. Charlotte is the most populous city in North Carolina and is known for being second largest banking center in the United States.

Charlotte is also home to the US National Whitewater Center which boasts a wide variety of adventure sports and outdoor activities including rafting, kayaking, rock climbing, zip lining, mountain biking and hiking trails as well as food and entertainment. You can look forward to reconnecting with your fellow pediatric orthopedic surgeons from across the country/world while enjoying the activities of the Whitewater Center or a number of recreational activities offered in Charlotte including cycling, tennis, golf, and soccer on Thursday afternoon.

The NASCAR Hall of Fame is a short walk from the hotels and convention center located in “Uptown” Charlotte which is what Charlotteans call the central business district usually known as downtown. Assemble your best pit crew and compete for the top spot while visiting the simulated speedway experience at the NASCAR Hall of Fame for the Friday night reception. We welcome our POSNA friends to come to Charlotte and enjoy our abundant outdoor activities, delicious local barbeque, and a lively local brewery scene, while visiting with colleagues, and sharing new ideas and experiences.

Virginia Casey, Local Host
Brian Brighton, Local Host
GENERAL MEETING INFORMATION

LEARNING OBJECTIVES

OBJECTIVE 1: Learn about the latest advances in pediatric orthopaedic surgery
OBJECTIVE 2: Obtain opinions of world-renowned thought leaders in the field
OBJECTIVE 3: Use the information obtained to make improvements in their own practices
OBJECTIVE 4: Fulfill the annual meeting requirements for membership in POSNA

ACCREDITATION

This Annual Meeting of the Pediatric Orthopaedic Society of North America has been planned and implemented in accordance with the accreditation requirements and policies of the Accreditation Council for Continuing Medical Education (ACCME) through the joint providership of the American Academy of Orthopaedic Surgeons and POSNA.

The American Academy of Orthopaedic Surgeons is accredited by the ACCME to provide continuing medical education for physicians.

CONTINUING MEDICAL EDUCATION

The American Academy of Orthopaedic Surgeons designates this live activity for a maximum of 19 AMA PRA Category 1 Credits™. Physicians should claim only the credit commensurate with the extent of their participation in the activity.

- Scientific Program 12.75
- Subspecialty Day 3.00
- Symposia Program 2.00
- Young Member Forum 1.25

ONSITE REGISTRATION

POSNA MEETING REGISTRATION

- POSNA Member: $775
- Non-member: $1025
- Resident/Fellow**: $550
- RN/PA/Allied Health: $550

Delegates from Reduced Rate Countries:

- Low Income: $475
- Low-Middle Income: $550

Accompanying Person***: $325

Senior Members: $375

Children 13-17, per child: $100

Children 6-12, per child: $10

PRE-COURSE REGISTRATION

- Member: $150
- Non-member: $200
- RN/PA/Allied Health: $100
- Resident/Fellow**: $100

FRIDAY SUBSPECIALTY DAY REGISTRATION*

- Friday ONLY – Member: $250
- Friday ONLY – Non-member: $300
- Friday ONLY – Allied Health: $200
- Friday ONLY – Resident/Fellow: $200

* Friday Subspecialty Day registration is Friday only, and includes breakfast, the morning scientific paper sessions, afternoon sessions, and the Closing Reception in the evening.

** Residents/Fellows must have the phone number and signature of their Chief of Service on their registration form to qualify for the reduced fee. Without a signature and phone number, you will be charged the non-member fee.

*** Accompanying Persons must be registered in order to attend any function, including optional events.
GEnerAL Meeting Information

Badges
Badges are required for entrance to all POSNA functions and events, including scientific sessions and the Exhibit Hall. Lost badges may be replaced at the POSNA registration desk, located outside Richardson Ballroom AB. Green Friday Only

Event Cancellation
Due to circumstances beyond our control, the Pediatric Orthopaedic Society of North America may elect to cancel the Annual Meeting. These circumstances may include but are not limited to disaster, severe weather, civil commotion or government laws or regulations. In the event of such cancellation, all Annual Meeting registrants will be notified by email at the address noted in the POSNA database; and registration fees will be refunded in full. Other costs incurred by the registrant, such as airline or hotel penalties, are the responsibility of the registrant.

Disclosure
Each faculty member in this meeting has been asked to disclose if he or she has received something of value from a commercial company or institution, which relates directly or indirectly to the subject of their presentation.

An indication of the participant’s disclosure appears after his or her name as well as the commercial company or institution that provided the support. POSNA does not view the existence of these disclosed interests or commitments as necessarily implying bias or decreasing the value of the author’s participation in the meeting.

FDA Statement
Some drugs or medical devices demonstrated at this meeting may not have been cleared by the FDA or have been cleared by the FDA for specific purposes only. The FDA has stated that it is the responsibility of the physician to determine the FDA clearance status of each drug or medical device he or she wishes to use in clinical practice.

Academy policy provides that ‘off label’ uses of a drug or medical device may be described in the Academy’s CME activities so long as the “off label” use of the drug or medical device is also specifically disclosed (i.e., it must be disclosed that the FDA has not cleared the drug or device for the described purpose). Any drug or medical device is being used “off label” if the described use is not set forth on the product’s approval label.

♦ Indicates those faculty presentations in which the FDA has not cleared the drug and/or medical device for the use described (i.e. the drug or medical device is being discussed for an “off label” use).

Speaker Ready Room Information
POSNA Requires all electronic presentations to be made using the central computer system. No Laptop computers will be allowed.

Note: All presentations (including concurrent sessions) MUST be uploaded in the Speaker Ready Room located in the General Session room, Richardson Ballroom CD.

Hours of Operation:
Wednesday, May 15 6:30 AM – 5:00 PM  Friday, May 17 6:30 AM – 5:00 PM
Thursday, May 16 6:30 AM – 1:00 PM  Saturday, May 18 7:00 AM – 12:00 PM
GENERAL MEETING INFORMATION

VIDEO ABSTRACTS, PAPER POSTERS AND EPOSTERS

Video Abstracts, Paper Posters, and ePosters will be located in the hall outside Richardson Ballroom CD.

LANGUAGE

English will be the official language at POSNA.

LOST AND FOUND

Lost and found inquiries may contact security at (704) 339-6096.

NURSING ROOM

The nursing room is located in the women’s restroom near Ballroom B.

SAFETY INFORMATION

EMERGENCY NUMBERS

City Police Emergency: 911
City Police Non-Emergency: 311 (if outside Charlotte dial 704-336-7600)
Poison Control: (800)222-1222 (Nationwide)

NEAREST HOSPITAL AND URGENT CARE

Nearest Hospital and Urgent Care
Novant Health Presbyterian Medical Center
200 Hawthorne Ln, Charlotte, NC 28204
(704) 384-4000
2.0 miles

Atrium Health Urgent Care Morehead
1426 E Morehead St, Charlotte, NC 28204
(704) 446-6090
8 miles

CVS Pharmacy
210 E Trade St, Charlotte, NC 28202
(704) 971-1254
Operation Hours: M-F 8:00 AM-8:00 PM,
Saturday 10:00 AM-6:00 PM,
Sunday 12:00 PM-4:00 PM
.4 miles

Walgreens
101 S Tryon St Ste 22, Charlotte, NC 28280
(704) 334-6262
Operation Hours: 7:00 AM-10:00 PM
.4 miles
DISCLAIMER

The material presented at the Annual Meeting has been made available by the Pediatric Orthopaedic Society of North America for educational purposes only. The material is not intended to represent the only, nor necessarily best, method or procedure appropriate for the medical situations discussed, but rather is intended to present an approach, view, statement or opinion of the faculty which may be helpful to others who face similar situations.

POSNA disclaims any and all liability for injury or other damages resulting to any individual attending the Annual Meeting and for all claims which may arise out of the use of the techniques demonstrated therein by such individuals, whether these claims shall be asserted by physician or any other person.

INSURANCE/LIABILITIES

POSNA will not be held liable for personal injuries or for loss or damage to property incurred by participants or guests at the Pre-Course or Meeting, including those participating in tours and social events. Participants and guests are encouraged to take out insurance to cover losses incurred in the event of cancellation, medical expenses, or damage to or loss of personal effects when traveling outside their own country.

POSNA cannot be held liable for any hindrance or disruption of the Meeting arising from natural, political, social or economic events or other unforeseen incidents beyond its control. Registration of a participant implies acceptance of this condition.

PRIVACY POLICY – USE OF PERSONAL INFORMATION

Annual Meeting registration lists, including the registrant’s name and postal mailing address are provided to POSNA’s sponsors as a sponsor benefit.

REPRODUCTION POLICY

POSNA reserves any and all rights to materials presented at the Annual Meeting, including Video Abstracts, Paper Posters, and ePosters. Reproductions of any kind, by any person or entity, without prior written permission from POSNA, are strictly prohibited. Prohibited reproductions include, but are not limited to, audiotapes, videotape, and/or still photography. Cameras or video cameras may not be used in any portion of the scientific sessions. Persons violating this policy may have their badge confiscated and be escorted from the meeting. No unapproved surveys, handouts, or literature may be distributed at the meeting.

PHOTOGRAPHY

Registration and attendance at, or participation in, POSNA activities constitutes an agreement by the registrant to allow POSNA to capture, retain, and utilize (both now and in the future) the attendees’ image, likeness, voice, and actions, whether captured live or recorded and in any format, during the Annual Meeting, for display, exhibition, publication, or reproduction in any medium or context for any purpose, including but not limited to, POSNA member communications, commercial or promotional purposes.

NO SMOKING POLICY

Smoking is not permitted during any meeting or event.
# Levels of Evidence for Primary Research Questions

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<th>Study Type</th>
<th>Question</th>
<th>Level I</th>
<th>Level II</th>
<th>Level III</th>
<th>Level IV</th>
<th>Level V</th>
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</thead>
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<tr>
<td>Diagnostic— Investigating a diagnostic test</td>
<td>Is this (early detection) test worthwhile? Does this diagnostic or monitoring test accurate?</td>
<td>• Randomized controlled trial&lt;br&gt; • Testing of previously developed diagnostic criteria (consecutive patients with consistently applied reference standard and blinding)</td>
<td>• Prospective cohort study&lt;br&gt; • Development of diagnostic criteria (consecutive patients with consistently applied reference standard and blinding)</td>
<td>• Retrospective cohort study&lt;br&gt; • Case-control study&lt;br&gt; • Nonconsecutive patients&lt;br&gt; • No consistently applied reference standard</td>
<td>• Case series&lt;br&gt; • Poor or non-independent reference standard</td>
<td>• Mechanism-based reasoning&lt;br&gt; • Mechanism-based reasoning</td>
</tr>
<tr>
<td>Prognostic— Investigating the effect of a particular characteristic on the outcome of a disease</td>
<td>What is the natural history of the condition? Does this treatment help? What are the harms?</td>
<td>• Inception cohort study (all patients enrolled at an early, uniform point in the course of their disease)&lt;br&gt; • Control arm of randomized trial</td>
<td>• Prospective cohort study&lt;br&gt; • Case series&lt;br&gt; • Historically controlled study</td>
<td>• Retrospective cohort study&lt;br&gt; • Case series&lt;br&gt; • Mechanism-based reasoning</td>
<td>• Mechanism-based reasoning&lt;br&gt; • Mechanism-based reasoning</td>
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<tr>
<td>Therapeutic— Investigating the results of a treatment</td>
<td>Does the intervention offer good value for dollars spent?</td>
<td>• Randomized controlled trial&lt;br&gt; • Computer simulation model (Monte Carlo simulation, Markov model) with inputs derived from Level I studies, lifetime time horizon, outcomes expressed in dollars per quality-adjusted life years (QALYs) and uncertainty examined using probabilistic sensitivity analysis</td>
<td>• Prospective cohort study&lt;br&gt; • Observational study with dramatic effect&lt;br&gt; • Computer simulation model (Monte Carlo simulation, Markov model) with inputs derived from Level II studies, lifetime time horizon, outcomes expressed in dollars per QALYs and stochastic multi-level sensitivity analysis</td>
<td>• Retrospective cohort study&lt;br&gt; • Case series&lt;br&gt; • Mechanism-based reasoning</td>
<td>• Case series&lt;br&gt; • Mechanism-based reasoning&lt;br&gt; • Decision tree over the short time horizon with input data from original Level I and II studies and uncertainty examined by univariate sensitivity analyses</td>
<td>• Decision tree over the short time horizon with input data informed by prior economic evaluation and uncertainty examined by univariate sensitivity analyses</td>
</tr>
<tr>
<td>Economic</td>
<td></td>
<td>• Computer simulation model (Monte Carlo simulation, Markov model) with inputs derived from Level I studies, lifetime time horizon, outcomes expressed in dollars per QALYs and stochastic multi-level sensitivity analysis</td>
<td>• Computer simulation model (Monte Carlo simulation, Markov model) with inputs derived from Level II studies, lifetime time horizon, outcomes expressed in dollars per QALYs and stochastic multi-level sensitivity analysis</td>
<td>• Decision tree over the short time horizon with input data from original Level I and II studies and uncertainty examined by univariate sensitivity analyses</td>
<td>• Decision tree over the short time horizon with input data informed by prior economic evaluation and uncertainty examined by univariate sensitivity analyses</td>
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1. This chart was adapted from OCEBM Levels of Evidence Working Group, “The Oxford 2011 Levels of Evidence,” Oxford Centre for Evidence-Based Medicine, http://www.oebm.net/ocebmllevels-of-evidence/. A glossary of terms can be found here: http://www.cebm.net/glossary/.
2. Level I through IV studies may be graded downward on the basis of study quality, precision, indirectness, or inconsistency between studies or because the effect size is very small; these studies may be graded upward if there is a dramatic effect size. For example, a high-quality randomized controlled trial (RCT) should have 80% follow-up, blinding, and proper randomization. The Level of Evidence assigned to systematic reviews reflects the ranking of studies included in the review (i.e., a systematic review of Level II studies is Level II). A complete assessment of the quality of individual studies requires critical appraisal of all aspects of study design.
3. Investigators formulated the study question after the first patient was enrolled.
4. In these studies, “cohort” refers to a nonrandomized comparative study. For therapeutic studies, patients treated one way (e.g., cemented hip prosthesis) are compared with those treated differently (e.g., cementless hip prosthesis), 5. Investigators formulated the study question after the first patient was enrolled.
6. Patients identified for the study on the basis of their outcome (e.g., failed total hip arthroplasty), called “cases,” are compared with those who did not have the outcome (e.g., successful total hip arthroplasty), called “controls.”
7. Sufficient numbers are required to rule out a common harm (affects >20% of participants). For long-term harms, follow-up duration must be sufficient.

## References

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## MEETING AT A GLANCE

### TUESDAY, MAY 14

<table>
<thead>
<tr>
<th>Event</th>
<th>Time</th>
<th>Location</th>
</tr>
</thead>
<tbody>
<tr>
<td>Board of Directors Meeting</td>
<td>7:00 AM–3:00 PM</td>
<td>Westin, Providence Ballroom 1</td>
</tr>
<tr>
<td>Registration</td>
<td>4:00 PM–6:00 PM</td>
<td>CC Richardson Ballroom Foyer</td>
</tr>
<tr>
<td>POPS Meeting</td>
<td>8:00 AM–5:00 PM</td>
<td>Westin, Grand Ballroom AB</td>
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### WEDNESDAY, MAY 15

<table>
<thead>
<tr>
<th>Event</th>
<th>Time</th>
<th>Location</th>
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</thead>
<tbody>
<tr>
<td>Fellowship Directors Meeting</td>
<td>6:30 AM–7:30 AM</td>
<td>Westin, Uptown III</td>
</tr>
<tr>
<td>Registration</td>
<td>6:30 AM–5:00 PM</td>
<td>CC Richardson Ballroom Foyer</td>
</tr>
<tr>
<td>Pre-Course Breakfast/Exhibits</td>
<td>7:00 AM–8:00 AM</td>
<td>CC Richardson Ballroom AB</td>
</tr>
<tr>
<td>Pre-Course</td>
<td>8:00 AM–12:00 PM</td>
<td>CC Richardson Ballroom CD</td>
</tr>
<tr>
<td>Coffee Break/Exhibits</td>
<td>9:35 AM–9:55 AM</td>
<td>CC Richardson Ballroom AB</td>
</tr>
<tr>
<td>Scientific Program</td>
<td>1:00 PM–3:05 PM</td>
<td>CC Richardson Ballroom CD</td>
</tr>
<tr>
<td>Coffee Break/Exhibits</td>
<td>3:05 PM–3:30 PM</td>
<td>CC Richardson Ballroom CD</td>
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<tr>
<td>Concurrent Session 1</td>
<td>3:30 PM–5:05 PM</td>
<td>CC Richardson Ballroom CD</td>
</tr>
<tr>
<td>Concurrent Session 2</td>
<td>3:30 PM–5:05 PM</td>
<td>CC Rm 217 ABCD</td>
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### EVENING

<table>
<thead>
<tr>
<th>Event</th>
<th>Time</th>
<th>Location</th>
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<tbody>
<tr>
<td>Opening Ceremony</td>
<td>6:30 PM–8:00 PM</td>
<td>CC Richardson Ballroom CD</td>
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<tr>
<td>Welcome Reception</td>
<td>8:00 PM–9:30 PM</td>
<td>CC Ballroom Terrace</td>
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### THURSDAY, MAY 16

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<tr>
<th>Event</th>
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<th>Location</th>
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<tbody>
<tr>
<td>Registration</td>
<td>6:30 AM–12:00 PM</td>
<td>CC Richardson Ballroom Foyer</td>
</tr>
<tr>
<td>Breakfast/Exhibits</td>
<td>6:30 AM–7:30 AM</td>
<td>CC Richardson Ballroom AB</td>
</tr>
<tr>
<td>Scientific Program</td>
<td>7:30 AM–9:33 AM</td>
<td>CC Richardson Ballroom CD</td>
</tr>
<tr>
<td>Coffee Break/Exhibits</td>
<td>9:33 AM–10:00 AM</td>
<td>CC Richardson Ballroom AB</td>
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### SYMPOSIAS PROGRAM

<table>
<thead>
<tr>
<th>Course</th>
<th>Time</th>
<th>Location</th>
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</thead>
<tbody>
<tr>
<td>Educate the Educator</td>
<td>10:00 AM–12:00 PM</td>
<td>CC Room 207ABCD</td>
</tr>
<tr>
<td>Innovation and Technology</td>
<td>10:00 AM–12:00 PM</td>
<td>CC Richardson Ballroom CD</td>
</tr>
<tr>
<td>POPS</td>
<td>10:00 AM–2:00 PM</td>
<td>CC Room 211AB/212AB</td>
</tr>
<tr>
<td>Research</td>
<td>10:00 AM–12:00 PM</td>
<td>CC Room 219AB/219AB</td>
</tr>
<tr>
<td>Trauma</td>
<td>10:00 AM–12:00 PM</td>
<td>CC Room 217ABCD</td>
</tr>
<tr>
<td>Young Member Forum</td>
<td>12:15 PM–1:30 PM</td>
<td>CC Room 217ABCD</td>
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### FRIDAY, MAY 17

<table>
<thead>
<tr>
<th>Event</th>
<th>Time</th>
<th>Location</th>
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<tbody>
<tr>
<td>Registration</td>
<td>6:00 AM–3:30 PM</td>
<td>CC Richardson Ballroom Foyer</td>
</tr>
<tr>
<td>Breakfast/Exhibits</td>
<td>6:00 AM–7:00 AM</td>
<td>CC Richardson Ballroom AB</td>
</tr>
<tr>
<td>Scientific Program Award Papers</td>
<td>7:00 AM–10:00 AM</td>
<td>CC Richardson Ballroom CD</td>
</tr>
<tr>
<td>Coffee Break/Exhibits</td>
<td>9:05 AM–9:25 AM</td>
<td>CC Richardson Ballroom AB</td>
</tr>
<tr>
<td>Distinguished Achievement Award</td>
<td>10:15 AM–10:30 AM</td>
<td>CC Richardson Ballroom CD</td>
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</tbody>
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**FULL PROGRAM CAN BE FOUND IN THE 2019 MEETING APP**

Access the meeting app by downloading My POSNA from the Apple App or Google Play store.
Lunch will be served at the Member Business Meeting

Annual Business Meeting
All POSNA members are urged to attend the Annual Business Meeting held at the Charlotte Convention Center in Room 217ABCD. The meeting will be held Friday, May 17th from 11:30 AM-1:00 PM. Lunch will be provided.

2019 Nominating Committee
In May 2018, the membership elected five members by ballot to serve on the 2019 Nominating Committee. President, Steven Frick, MD appointed the Chair of Nominating Committee.

The members of the 2019 Nominating Committee are: Richard Schwend, MD, Chair, Howard Epps, MD, Lori Karol, MD, James Beaty, MD, Jennifer Weiss, MD, and Peter Waters, MD (alternate).

The 2019 Nominating Committee will present its slate of nominees for each vacancy during the business meeting, Friday, May 17th.

2020 Nominating Committee
Nominations for the 2020 Nominating Committee will be accepted from the floor during the business meeting. All members will receive an electronic ballot after the 2019 Annual Meeting, with an opportunity to cast their votes for nominees to fill the elected positions on the 2020 Nominating Committee.

MEETING AT A GLANCE

FRIDAY, MAY 17 (CONTINUED)

<table>
<thead>
<tr>
<th>Event</th>
<th>Time</th>
<th>Location</th>
</tr>
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<tbody>
<tr>
<td>2020 Meeting Announcements</td>
<td>10:31 AM–10:38 AM</td>
<td>CC Richardson Ballroom CD</td>
</tr>
<tr>
<td>Presidential Speaker</td>
<td>10:39 AM–10:59 AM</td>
<td>CC Richardson Ballroom CD</td>
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<tr>
<td>Presidential Transfer</td>
<td>11:00 AM–11:10 AM</td>
<td>CC Richardson Ballroom CD</td>
</tr>
<tr>
<td>Member Business Meeting</td>
<td>11:30 AM–1:00 PM</td>
<td>CC Room 217ABCD</td>
</tr>
<tr>
<td><strong>SUBSPECIALTY DAY</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Hand/Foot</td>
<td>1:30 PM–5:00 PM</td>
<td>CC Room 211AB/212AB</td>
</tr>
<tr>
<td>Hip</td>
<td>1:30 PM–5:00 PM</td>
<td>CC Richardson Ballroom CD</td>
</tr>
<tr>
<td>LE/Neuromuscular</td>
<td>1:30 PM–5:00 PM</td>
<td>CC Room 213ABCD</td>
</tr>
<tr>
<td>Spine</td>
<td>1:30 PM–5:00 PM</td>
<td>CC Room 217ABCD</td>
</tr>
<tr>
<td>Sports</td>
<td>1:30 PM–5:00 PM</td>
<td>CC Room 207ABCD</td>
</tr>
<tr>
<td>Trauma</td>
<td>1:30 PM–5:00 PM</td>
<td>CC Room 218AB/219AB</td>
</tr>
<tr>
<td>Coffee Break/Exhibits</td>
<td>3:05 PM–3:25 PM</td>
<td>CC Richardson Ballroom AB</td>
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<tr>
<td><strong>EVENING</strong></td>
<td></td>
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<tr>
<td>Closing Reception</td>
<td>7:30 PM–11:00 PM</td>
<td>NASCAR Hall of Fame</td>
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SATURDAY, MAY 18

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<thead>
<tr>
<th>Event</th>
<th>Time</th>
<th>Location</th>
</tr>
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<tbody>
<tr>
<td>Registration</td>
<td>7:00 AM–12:00 PM</td>
<td>CC Richardson Ballroom Foyer</td>
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<tr>
<td>Breakfast</td>
<td>7:00 AM–8:00 AM</td>
<td>CC Richardson Ballroom AB</td>
</tr>
<tr>
<td>POSNA Board Meeting</td>
<td>8:00 AM–10:00 AM</td>
<td>Westin, Providence Ballroom III</td>
</tr>
<tr>
<td>Scientific Program</td>
<td>8:00 AM–12:04 PM</td>
<td>CC Richardson Ballroom CD</td>
</tr>
<tr>
<td>Coffee Break</td>
<td>10:06 AM–10:26 AM</td>
<td>CC Richardson Ballroom Foyer</td>
</tr>
</tbody>
</table>

*CC denotes Convention Center

*Lunch will be served at the Member Business Meeting
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* incision to suture
PRE-COURSE
IMPROVING PATIENT CARE THROUGH WELLNESS, TEAMWORK, AND ORGANIZATIONAL CHANGES

Chair: Brian Scannell, MD

WEDNESDAY, MAY 15, 2019
8:00 AM – 12:00 PM

DESCRIPTION
As pediatric orthopaedic surgeons, we are constantly trying to improve care for our patients. Often, we overlook important areas that can improve the care of our patients: our own wellness, our team environment and practice efficiency, and our organizational culture.

The purpose of this Pre-Course is to discuss and offer practical improvement strategies for our own personal resilience, efficiency of practice, and organization cultural changes. This will inform our membership and provide a springboard for discussion on wellness within POSNA.

LEARNING OBJECTIVES
Upon completion of this program, participants should be able to:

OBJECTIVE 1: Appreciate issues surrounding physician burnout and discuss practical tools for improved physician wellness and resiliency

OBJECTIVE 2: Develop improved strategies to enhance team performance, patient safety through teamwork, and efficiency of practice

OBJECTIVE 3: Understand how to build a culture of wellness/change within your organization

ACCREDITATION
This activity has been planned and implemented in accordance with the accreditation requirements and policies of the Accreditation Council for Continuing Medical Education (ACCME) through the joint providership of the American Academy of Orthopaedic Surgeons and the Pediatric Orthopaedic Society of North America. The American Academy of Orthopaedic Surgeons is accredited by the ACCME to provide continuing medical education for physicians.

CONTINUING MEDICAL EDUCATION
The American Academy of Orthopaedic Surgeons designates this live activity for a maximum of 3.75 AMA PRA Category 1 Credits™. Physicians should claim only the credit commensurate with the extent of their participation in the activity.
PRE-COURSE
IMPROVING PATIENT CARE THROUGH WELLNESS, TEAMWORK, AND ORGANIZATIONAL CHANGES
Convention Center Richardson Ballroom CD

WEDNESDAY, MAY 15

8:00 AM–8:05 AM  WELCOME AND OVERVIEW
Brian Scannell, MD

INTRODUCTION
Moderator: Brian Scannell, MD

8:05 AM–8:11 AM  What is Wellness, Why Talk About Burnout
Vishwas Talwalkar, MD

8:11 AM–8:17 AM  Drivers of Burnout
Jennifer Weiss, MD

8:17 AM–8:25 AM  Compassionate Care: Making It a Priority and the Science Behind It
Michael Goldberg, MD

PART I: PERSONAL RESILIENCE AND WELLBEING
Moderator: Henry (Hank) Chambers, MD

8:25 AM–8:45 AM  Physician Resiliency and Tools for Improved Wellness
Wayne Sotile, PhD

8:45 AM–9:05 AM  Surgeon Coaching: Why and How
Jeffrey Smith, MD, FACS, CPC

9:05 AM–9:20 AM  Self-Compassion
Wayne Sotile, PhD

9:20 AM–9:35 AM  Panel Q&A with
Jeffrey Smith, MD, FACS, CPC;
Wayne Sotile, PhD

9:35 AM–9:55 AM  Break

PART II: PERSONAL RESILIENCE AND WELLBEING
Moderator: Cordelia Carter, MD

John (Jack) Flynn, MD

10:05 AM–10:15 AM Second Victim Phenomenon: Managing Surgical Complications
John (Tony) Herring, MD
10:15 AM–10:25 AM Panel Q&A with
John (Jack) Flynn, MD;
John (Tony) Herring, MD

TEAM COMPASSION, COLLABORATION, AND EFFICIENCY OF PRACTICE
Moderator: Wudbhav (Woody) Sankar, MD

10:25 AM–10:35 AM Strategies and Tools to Enhance Team Performance
Daniel Sucato, MD, MS

10:35 AM–10:45 AM Strategies and Tools to Enhance Patient Safety
Kevin Shea, MD

10:45 AM–10:55 AM Improving Efficiency of Practice through Deliberate Incremental Adjustments
Jeffrey Smith, MD, FACS, CPC

10:55 AM–11:10 AM Panel Q&A with
Kevin Shea, MD;
Daniel Sucato, MD, MS;
Jeffrey Smith, MD, FACS, CPC

ORGANIZATIONAL LEADERSHIP AND CULTURE
Moderator: Michael Goldberg, MD

11:10 AM–11:30 AM Building a Culture of Wellness Within your Organization and Managing Systems that Don’t Allow Collaborative Care
Harris Baden, MD

11:30 AM–11:40 AM Building a Culture of Wellness in an Orthopaedic Department/Group
Virginia Casey, MD

11:40 AM–11:50 AM Panel Q&A with
Harris Baden, MD;
Virginia Casey, MD

11:50 AM–12:00 PM POSNA’S PLAN WHAT POSNA IS DOING – Wellness Committee
Vishwas Talwalkar, MD
Jennifer Weiss, MD

12:00 PM CLOSING
Brian Scannell, MD

POSNA extends sincere appreciation to NuVasive for their support of the Pre-Course program.
OPENING CEREMONY

Convention Center Richardson Ballroom CD

WEDNESDAY, MAY 15

6:30 PM–6:35 PM WELCOME
POSNA President: Steven Frick, MD
Local Hosts: Brian Brighton, MD and Virginia Casey, MD

6:35 PM–6:45 PM INTRODUCTIONS OF DISTINGUISHED GUESTS
♦ International Presidents
♦ Members of POSI
♦ New Members (2018 and 2019)
♦ Distinguished Achievement Award Recipient
♦ Presidential Guest Speaker
♦ EPOS Traveling Fellows
♦ POSNA Traveling Fellows
♦ COUR Visiting Scholars

6:45 PM–6:50 PM INTRODUCTION OF INAUGURAL POSNA HALL OF FAME INDUCTEES

6:50 PM–7:15 PM PRESENTATION POSNA AWARDS
St. Giles Young Investigator Award – Donald Huene, MD
Arthur H. Huene Award – Donald Huene, MD
Angela S.M. Kuo Memorial Award – Ken Kuo, MD and Christina Kuo, MD
POSNA Humanitarian Award – Steven Frick, MD
POSNA Special Effort and Excellence Award – Steven Frick, MD

7:15 PM–7:30 PM RECOGNITION OF INDUSTRY SPONSORS
Steven Frick, MD

7:30 PM INTRODUCTION STEEL LECTURER
Brian Brighton, MD

7:35 PM–8:00 PM 2019 STEEL LECTURE
“Congrats! We’ve Made It, Now What?”
Aric Almirola, NASCAR Race-Car Driver

8:00 PM–9:30 PM WELCOME RECEPTION
SPeAKERS and AWARD RECIPIEnts

PERRY SCHEONECKER, MD
DISTINGUISHED ACHIEVEMENT AWARD

Perry Schoenecker, MD is a professor of orthopedic surgery at Wash U School of Med and practices at St. Louis Shriners, St. Louis Children’s and Barnes Jewish Hospitals. He is a past chairman of the division of pediatric orthopedic surgery at Washington U, Chief of staff at the St. Louis Shriners Hospital and orthopedic surgeon in chief at St. Louis Children's Hospital.

Dr. Schoenecker’s practice focus on pediatric orthopedics in the care of infants on up to young adults. He has a special interest includes congenital and developmental deformities of the lower extremity, hip, knee, foot and ankle as well as adolescent and young adult hip problems. He also cares for patients with traumatic, neuromuscular, arthrogrypotic and syndromic associated musculoskeletal deformities.

He is the author of 190 peer reviewed manuscripts, a reviewer for JPO, JCO, CORE and JBJS. He is a regular participant in the annual meetings of POSNA, AAOS and EPOS. He is a frequent visiting professor in North America and a very active participant in out of country symposiums/workshops particularly in South America and Asia. He is a POSNA past president (2006-07). He received the AAP Distinguished Service Award in 2014. He has been the recipient of the Washington University Department of Surgery Distinguished Palma Chironis Award as Clinical Teacher of the Year on 4 occasions, the Distinguished Clinician Award in 2012, and also the Jerome Gilden Distinguished Clinical Surgeon of the year on 3 occasions.

He and Sally were married while in med school in 1967. They have two children, Chris (and his wife Lisa) with three grandchildren living in St. Louis and Jon (and his wife Susan) with two grandchildren living in Nashville.

Credentials: • Medical Degree, University of Wisconsin, Madison
• Internship, Parkland Memorial Hospital, Dallas
• General Surgery Residency, Strong Memorial Hospital, Rochester
• Orthopedic Residency, Barnes Hospital, St. Louis
• Barnes, Children’s & Shriners Staff 1975-present

PETER WATERS, MD
2019 PRESIDENTIAL GUEST SPEAKER

Dr. Peter Waters was raised in Syracuse, NY and graduated college and medical school from Tufts University in Boston, MA. Post-graduate residency training included general pediatric training at the Massachusetts General Hospital and orthopedic surgery residency in the Harvard Combined Orthopaedic Residency Program. He completed his fellowship training in both pediatric orthopedic surgery and sports medicine at Boston Children’s Hospital; and, hand surgery in the Harvard Hand Surgery program. He believes education is transformative and has gained post-graduate certificates and degrees from programs in leadership, management, and education from Harvard’s Business, Public Health, and Medical Schools along with Middlebury Breadloaf Writers Conference.

Peter is presently Director of the Hand Surgery Program and Orthopaedic Surgeon-in-Chief at Boston Children’s Hospital as well as the John E. Hall Professor of Orthopedic Surgery at the Harvard Medical School. He was the president of the Pediatric Orthopaedic Society of North America from 2011-2012. He is the author of over 225 publications and book chapters, co-author of Surgery of the Pediatric Hand and Upper Limb and co-editor of Fractures in Children. Dr. Waters is known for his expertise in pediatric hand and upper extremity surgery and in particular, care of children with brachial plexus birth palsies.

Outside of orthopaedics, Peter has deep passion and commitment for coaching and has led diverse youth athletic programs in Boston/Brookline as well as Curry College. On a personal note, he has two wonderful kids - Rebecca and James who were foolish enough to engage him in all activities; along with two Charlotte based grandchildren Izzy and Elle. And most importantly, his great wife, Janet, who keeps everything and everyone together.
WUDHAV (WOODY) SANKAR, MD
SPECIAL EFFORTS AND EXCELLENCE AWARD

Wudbhav (Woody) N. Sankar, MD is an Associate Professor at the Perelman School of Medicine at the University of Pennsylvania and an attending surgeon at the Children's Hospital of Philadelphia.

He is director of the hip disorders program and the young adult hip preservation program at CHOP and the University of Pennsylvania. He also serves as co-director of the pediatric orthopaedic fellowship at CHOP. Dr. Sankar is a graduate of Cornell University's college of engineering and the University of Pennsylvania School of Medicine. He completed his orthopaedic surgical training at the University of Pennsylvania, followed by two pediatric orthopaedic fellowships at Children's Hospital Los Angeles and the Shriners Hospitals for Children in Los Angeles. He then pursued advanced training in the area of adolescent and young adult hip preservation at Boston Children's Hospital.

He has been on staff at CHOP since 2009, where he specializes in the area of hip and spinal deformity. Dr. Sankar is active in a number of professional societies, including the American Academy of Orthopaedic Surgeons (AAOS), American Orthopaedic Association (AOA), Scoliosis Research Society (SRS), and the Pediatric Orthopedic Society of North America (POSNA) where he has previously served on the board of directors as a junior member-at-large and currently chairs the fellowship training/qualifications for practice committee. He is co-medical director of the International Hip Dysplasia Institute (IHDI) and is an active member of several other multi-center research groups, including the International Perthes Study Group (IPSG) and the Academic Network of Conservational Hip Outcomes Research (ANCHOR). He also serves on the board of directors for the Legg-Calvé-Perthes Foundation. He has published over 120 peer-reviewed articles and chapters, and has written and edited two textbooks.

RICHARD GROSS, MD
HUMANITARIAN AWARD

The son of a theologian/minister and schoolteacher, Richard Gross grew up in western New York and Pennsylvania. In 1961, he graduated from Alfred University, where he was a forgettable Division III athlete (football, wrestling), but compensated for that with an undistinguished academic record. He then went south to Duke for his MD degree, exposing him to the “son, if you can’t get your work done in 24 hours, you better work nights too” culture of that time. Having been commissioned on graduation from Alfred’s ROTC program and deferred to attend medical school, he went on active duty in 1965 for his postgraduate training, including a rotating internship at Ft Lewis (Tacoma, Wa), then what he considers a most valuable PG2 year of general surgery at Ft Knox (Kentucky), and adult orthopaedics at Ft Bliss (El Paso, Tx). Those years involved care of an overwhelming number of Vietnam casualties, and the respite from that during his last year of residency at Carrie Tingley Hospital for Crippled Children in Truth or Consequences, NM, convinced him that pediatric orthopaedics was his future. Following residency, he was stationed at Ft Jackson, SC, until 1973, when he returned to Carrie Tingley as a staff surgeon. He used his leave during his last year of active duty to visit the Scottish Rite in Atlanta, DuPont institute in Delaware, and Duke as he had no fellowship training. Subsequently, he went to Oklahoma where he was the first pediatric orthopaedist in the state, and had a great partner in Andy Sullivan. Paul Griffin lured him back east to Boston, where he and Jim Kasser started work at the same time. In 1986, he started at the Medical University on Charleston, where his partners included the Staniskis, Jim Mooney; and for a magical few years, Paul Griffin rejoined him in Charleston.

He spent a lot of time away from work, with 16 “working” trips overseas, including 3 to Vietnam. As the first graduating resident in his residency not to be immediately assigned to Vietnam, that fulfilled something missing. He coached soccer in some form for 25 years, the last 15 as goalkeeper coach at his community’s high school; where he learned more about educational principles from a remarkable
head coach than in any hospital. During those 15 years, 3 of his goalkeepers were All State. He took a month off from work to write the first POSNA study guide, moderated debates on the local public radio station for 4 years, was an AMA delegate for 5 years, and a mentor in the AAOS Leadership Training program for 2 years. For the past 6 years, he has served on the board of Pattison’s Academy, a charter school for children with multiple disabilities, including 3 as board chair. He considers his major academic accomplishment as being (what he thinks) the only orthopaedic surgeon to publish editorials in the NEJM, Lancet, and Small Wars Journal. He’s also served on a number of AAOS, POSNA, and SRS committees. He was shocked, but immensely gratified, to learn he would be receiving this award.

ARIC ALMIROLA
STEEL LECTURE

Aric Almirola is a Cuban American race-car driver at the elite level of NASCAR. He was born on Eglin Air Force base in Fort Walton Beach, Florida and grew up in Tampa, Florida. Aric’s father came to America from Cuba with his family in 1966. Aric, at the age of 8 years old, began his racing career with go-karts. After many years of winning local, state, and national championships in karting he moved up to stock car racing at age 15. In 2004 while studying mechanical engineering at the University of Central Florida, Almirola got a call from Joe Gibbs to start his professional career as a racer. Since 2004 Almirola has been on a journey through the NASCAR ranks finally landing his first full time season in 2012 at NASCAR’s elite level of the Cup Series driving for the legendary Richard Petty. Almirola drove for the “King” Richard Petty from 2012-2017 being the first driver in 20 years to bring the famed number 43 back to Victory Lane at Daytona International Speedway. 2018 saw Almirola move to Stewart-Haas racing where he achieved the best year of his career. He won a NASCAR Cup series race at Talladega Superspeedway propelling him into the penultimate round of the championships. Almirola finished the year 5th in the standings and had a career best in every NASCAR measurable statistics.
National leaders in spine outcomes

Our pediatric Spine Program’s collaboration and research is instrumental in standardizing spinal fusion post-operative care and establishing best practices nationwide. And, our pathway has proven results with length of stay decreasing by 25 percent—all with no increase in complications and high patient satisfaction.

Visit choa.org/spineresearch to learn more about our Spine Program and advances in research.
**PODIUM PRESENTATIONS**

**WEDNESDAY, MAY 15**

1:00 PM–1:05 PM  
**Introduction and Opening Remarks**

**Trauma General Session**  
Moderator: Susan Scherl, MD  
Co-Moderator: Jeffrey Sawyer, MD  
Presider: Simon Kelley, MBChB, FRCS

1  
1:06 PM-1:10 PM  
**Registry of Orthopaedic Trauma in Children (ROTC): A Pilot Study**  
*Brian Brighton, MD; Kelly Vanderhave, MD; Rachel Seymour, PhD; Jeffrey Cassidy, MD; Jeffrey Martus, MD; Brian Scannell, MD; Susan Scherl, MD; Mauricio Silva, MD; Mark Sinclair, MD; Christine Churchill, BA; Meghan Wally, MSPH; Edward Hardison, BA*  
Atrium Health, Charlotte, NC

2  
1:11 PM-1:15 PM  
**Do Patient- or Fracture-Specific Factors Predict the Development of Acute Compartment Syndrome after Pediatric Tibial Shaft Fractures?**  
*Benjamin Sheffer, MD; Eric Villarreal, MD; Jesse Wrenn, PhD; Jeffrey Sawyer, MD; David Spence, MD; Derek Kelly, MD*  
Campbell Clinic, Germantown, TN

3  
1:16 PM-1:20 PM  
**Delayed unions and Functional Outcomes of Pediatric Lateral Condyle Humerus Fractures: A Prospective Study**  
*Alexander Nazareth, MS; Curtis VandenBerg, MD; Rachel Goldstein, MD MPH; Natalya Sarkisova, BS; Lindsay Andras, MD; Nina Lightdale-Miric, MD; J. Lee Pace, MD; Paul Choi, MD; David Skaggs, MD, MMM*  
Children’s Hospital Los Angeles, Los Angeles, CA

1:21 PM-1:29 PM  
Discussion

4  
1:30 PM-1:34 PM  
**Nonoperative Versus Operative Treatment for Displaced Midshaft Clavicle Fractures in Adolescents: A Comparative Study**  
*Mi Hyun Song, MD; Yeo-Hon Yun, MD; J.ungwook Lim; Hae Ryong Song, MD*  
Korea Medical Center Guro Hospital, Seoul, Korea, Republic of

5  
1:35 PM-1:39 PM  
**The Song Classification is Reliable and Guides Prognosis and Treatment for Pediatric Lateral Condyle Fractures: An Independent Validation Study with Treatment Algorithm**  
*Brandon Ramo, MD; Shawn Funk, MD; Marilyn Elliott, BS; Chan-Hee Jo, PhD*  
Texas Scottish Rite Hospital for Children, Dallas, TX

*may be used for external trauma-related CMEs.
Displaced Fractures of the Proximal Humerus In Children Cause Long-Term Sequelae
Luis Cuadrado Rubio, MD; Joaquín Núñez de Armas, MD; Israel Rubio Sáez, MD; Alfonso Vaquero Picado, MD; Luis Moraleda, MD
Hospital Universitario La Paz, Madrid, Madrid, Spain

1:40 PM-1:44 PM

Discussion

1:45 PM-1:53 PM

Does Time to Treatment of Pediatric Femoral Shaft Fractures Impact Clinical Outcomes?
Anthony Stans, MD; Jennifer Grauberger, BA; Todd Milbrandt, MD; William Shaughnessy, MD; A. Noelle Larson, MD
Mayo Clinic, Rochester, MN

1:54 PM-1:58 PM

Observation Versus Cast Treatment of Toddler’s Fractures
Joseph Fox, MD; Brianna Enriquez, MD; Viviana Bompadre, PhD; Kristen Carlin, MPH; Mark Dales, MD
Seattle Children’s Hospital, Seattle, WA

1:59 PM-2:03 PM

Metaphyseal Fracture Displacement is Predictive of Intra-Articular Diastasis in Adolescent Triplane Ankle Fractures
Jose Romero, MD; Surya Mundluru, MD; Dustin Greenhill, MD; Marilyn Elliott; Robert Wimberly, MD; Anthony Riccio, MD
Texas Scottish Rite Hospital for Children, Dallas, TX

2:04 PM-2:08 PM

Discussion

Infection/Tumors: General Session
Moderator: Alexandre Arkader, MD
eModerator: Ying Li, MD
Presider: Howard Epps, MD

C-reactive Protein Level at Time of Discharge is not Predictive of Risk of Reoperation or Readmission in Children with Septic Arthritis
Maryse Bouchard, MD; Lara Shefelbine, BA; Viviana Bompadre, PhD
Seattle Children’s Hospital, Seattle, WA

2:18 PM-2:22 PM

The Use of Cytokines and Biomarkers in the Work-Up of Septic Arthritis: A Pilot Study
Scott Luhmann, MD; Alexis Elward, MD; Kirsten Brouillet, BA; Dominic Thompson, MA; Farshid Guilak, PhD
Washington University School of Medicine, Saint Louis, MO

2:23 PM-2:27 PM

* may be used for external trauma-related CMEs.
12  
2:28 PM-2:32 PM  
A Clinical Care Algorithm Resulted in Improved Care for Children with Hematogenous Osteomyelitis  
Eric Robinette, MD; Laura Brower, MD; Samir Shah, MD; Patrick Whitlock, MD; Joshua Schaffzin, PhD  
Cincinnati Children’s Hospital Medical Center, Cincinnati, OH

2:33 PM-2:41 PM  
Discussion

13  
2:42 PM-2:46 PM  
Vertebra Plana in Children: Other Etiologies than Just Eosinophilic Granuloma?  
Matthew Houdek, MD; Fady Baky; Todd Milbrandt, MD; A. Noelle Larson, MD  
Mayo Clinic, Rochester, MN

14  
2:47 PM-2:51 PM  
Survival in Allograft Reconstruction for Children and Teenagers After Resectio Due to Bone Sarcoma in Femur and Humerus  
Fernando Escámez Fernández, MD; Joaquín Núñez de Armas, MD; Alfonso Vaquero Picado, MD; Irene Barrientos Ruiz, MD  
Hospital Universitario La Paz, Madrid, Madrid, Spain

15  
2:52 PM-2:56 PM  
Treatment of Symptomatic Extremity Venous Malformations with Single-Stage Combined Glue Embolization and Surgical Excision  
Antoinette Lindberg, MD; Eric Monroe, MD; Kevin Koo, MD; Giridhar Shivaram, MD  
Seattle Children’s Hospital, Seattle, WA

2:57 PM-3:05 PM  
Discussion

3:05 PM-3:30 PM  
Break

Concurrent Session: Spine
Moderator: Laurel Blakemore, MD  
eModerator: Christina Hardesty, MD  
Presider: Nicholas Fletcher, MD

16  
3:30 PM-3:34 PM  
Restoration of Thoracic Kyphosis in Adolescent Idiopathic Scoliosis over a Twenty Year Period: Are We Getting Better?  
Blake Bodendorfer, MD; Suken Shah, MD; Tracey Bastrom, MA; Baron Lonner, MD; Burt Yasay, MD; Amer Samdani, MD; Firoz Miyanji, MD; Patrick Cahill, MD; Paul Sponseller, MD; Randal Betz, MD; David Clements, MD; Lawrence Lenke, MD; Harry Shufflebarger, MD; Peter Newton, MD  
Nemours/Alfred I. duPont Hospital for Children, Wilmington, DE
A Matched Cohort of Large AIS Curves: Do Ponte Osteotomies Improve Coronal Plane and Sagittal Plane Correction?  
**Lorena Floccari, MD; Dustin Greenhill, MD; Kiley Poppino, BS; Daniel Sucato, MD, MS**  
*Texas Scottish Rite Hospital for Children, Dallas, TX*

10-Year Natural History of the Uninstrumented Compensatory Curve in Selectively Fused AIS  
**Craig Louer, MD; Burt Yaszay, MD; Madeline Cross, MPH; Carrie Bartley, MA; Tracey Bastrom, MA; Suken Shah, MD; Baron Lonner, MD; Patrick Cahill, MD; Amer Samdani, MD; Vidyadhar Upasani, MD; Peter Newton, MD**  
*Rady Children’s Hospital - San Diego, San Diego, California*

Discussion

T1 Tilt and Clavicle Angle are the Best Predictors of Postoperative Shoulder Balance  
**Vishal Sarwahi, MBBS; Jesse Galina, BS; Saankritya Ayan, MBBS; Beverly Thornhill, MD; Abhijit Pawar, MD; Yungtai Lo, PhD; Terry Amaral, MD**  
*Cohen Children’s Medical Center, New Hyde Park, NY*

Do Intraoperative Lateral Radiographs During Scheuermann Kyphosis Correction Predict the Standing Radiographic Outcome?  
**Dustin Greenhill, MD; Kiley Poppino, BS; Chan-Hee Jo, PhD; Daniel Sucato, MD, MS**  
*Texas Scottish Rite Hospital for Children, Dallas, Texas*

Do Patients with “Less than Ideal” Outcomes at 2 Years Continue to Have Suboptimal Outcomes in the Long-Term Following Surgery of Adolescent Idiopathic Scoliosis?  
**Jessica Hughes, MD; Burt Yaszay, MD; Tracey Bastrom MA; Carrie Bartley MA; Stefan Parent, MD; Patrick Cahill, MD; Baron Lonner, MD; Suken Shah, MD; Amer Samdani, MD; Peter Newton, MD; Harms Study Group**  
*Rady Children’s Hospital, San Diego, CA*

Discussion

Prophylactic Application of Local (Intra-wound) Antibiotic Does not Decrease Acute Surgical Site Infections (SSI) in AIS Patients  
**Amy McIntosh, MD; Kiley Poppino, BS**  
*Texas Scottish Rite, Dallas, TX*
Wednesday, May 15, 2019, continued

23 4:23 PM-4:27 PM
Development and Validation of a Risk Severity Score Identifying Patients with Cerebral Palsy at High-Risk for Developing Surgical Site Infection After Spinal Surgery
Hiroko Matsumoto, MA; Megan Campbell, BA; Benjamin Roye, MD; David Roye, MD; Lawrence Lenke, MD; Paul Sponseller, MD; John (Jack) Flynn, MD; David Skaggs, MD, MMM; Michael Glotzbecker, MD; Michael Vitale, MD, MPH
Columbia University Medical Center, New York, NY

24 4:28 PM-4:32 PM
♦ Liposomal Bupivacaine is Both Safe and Effective in Controlling Post-Operative Pain Following Spinal Surgery in Children: A Controlled Cohort Study
Morad Chughtai, MD; Assem Sultan, MD; Brittany Patterson, BS; Ryan Goodwin, MD; John Seif, MD; Anton Khlopas, MD; Nipun Sodhi, BA; James Bena, MS; Yuxuan Jin; David Gurd, MD; Thomas Kuivila, MD; Robert Ballock, MD
The Cleveland Clinic, Cleveland, OH

25 4:33 PM-4:41 PM
Discussion

26 4:42 PM-4:46 PM
♦ Two Year Follow up of Vertebral Body Tethering for Adolescent Idiopathic Scoliosis - Which Curve Types are Responding to Growth Modulation?
Daniel Hoernschemeyer, MD; John Worley, MD; Christopher Loftis, MD; Madeline Robertson, BS; Nicole Tweedy, NP; Sumit Gupta, MD
University of Missouri-Columbia, Columbia, MO

27 4:47 PM-4:51 PM
♦ A Prospective, Multicenter Analysis of the Efficacy of Anterior Vertebral Body Tethering in the Treatment of Idiopathic Scoliosis
Firoz Miyanji, MD; Jeff Pawelek; Luigi Nasto, MD; Stefan Parent, MD
BC Children’s Hospital, Vancouver, BC, Canada

28 4:52 PM-4:56 PM
Correlation Between Spine and Chest Wall Deformities and Pulmonary Function in Marfan’s Syndrome
Hila Otremski, MD; Dror Ovadia, MD; Mary Di Maio, MD; Roger Widmann, MD
Hospital for Special Surgery, New York, NY

29 4:57 PM-5:05 PM
Discussion

♦ Indicates those faculty presentations in which the FDA has not cleared the drug and/or medical device for the use described (ie. the drug or medical device is being discussed for an “off label” use).
Concurrent Session: Sports

Moderator: Jennifer Weiss, MD
eModerator: Kevin Dale, MD
Presider: Eric Edmonds, MD

28  
3:30 PM-3:34 PM  
Long-term Follow-up of Skeletally Immature Patients with Physeal-Sparing Combined Extra-/Intra-articular Iliotibial Band ACL Reconstruction: 3-D Motion Analysis  
Dai Sugimoto; Amy Whited, MS; Jeff Brodeur, BS; Elizabeth Liotta; Kathryn Williams, MS; Mininder Kocher, MD, MPH; Lyle Micheli, MD; Benton Heyworth, MD  
Boston Children’s Hospital, Boston, MA

29  
3:35 PM-3:39 PM  
Can Combined Trans-physeal and Lateral Extra-Articular Pediatric ACL Reconstruction Techniques Be Employed to Reduce ACL Re-Injury While Allowing for Growth?  
Henry Ellis, MD; Nathan Boes, MD; Parker Mitchell, BS; Charles Wyatt, NP; Philip Wilson, MD  
Texas Scottish Rite Hospital for Children, Dallas, TX

30  
3:40 PM-3:44 PM  
Quadriceps Tendon Autografts Have a Lower Early Graft Failure Rate than Hamstring Tendon Autografts when Performing Transphyseal ACL Reconstructions  
Andrew Pennock, MD; Kristina Johnson, ATC; Henry (Hank) Chambers, MD; Tracey Bastrom, MA; Raghav Badrinath, MD; Robby Turk; M. Morgan Dennis, BS; Eric Edmonds, MD  
Rady Children’s Hospital, San Diego, CA

31  
3:45 PM-3:53 PM  
Discussion

32  
3:54 PM-3:58 PM  
The Physeal-Sparing Combined Extra-/Intra-Articular Iliotibial Band ACL Reconstruction in Children: A Long-Term Strength, Balance, and Functional Analysis  
Lyle Micheli, MD; Benton Heyworth, MD; Elizabeth Liotta; Dai Sugimoto; Kathryn Williams, MS; Nicole Goldhaber, MA; Mininder Kocher, MD, MPH  
Boston Children’s Hospital, Boston, MA

33  
3:59 PM-4:03 PM  
Outcomes of Revision ACL Reconstructions  
Henry (Hank) Chambers, MD; Ryan Ouillette, BA; Eric Edmonds, MD; Tracey Bastrom, MA; Andrew Pennock, MD  
Rady Children’s Hospital, San Diego, CA

34  
4:04 PM-4:08 PM  
Which Children are at Risk for Contralateral Anterior Cruciate Ligament Injury After Ipsilateral Reconstruction?  
Neeraj Patel, MD; Nakul Talathi, BS; Joshua Bram, BS; Christopher Defrancesco, MD; J. Todd Lawrence, MD, PhD; Theodore Ganley, MD  
Children’s Hospital of Philadelphia, Philadelphia, PA

Wednesday, May 15, 2019, continued
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<tr>
<th>Time</th>
<th>Session</th>
<th>Title</th>
<th>Authors</th>
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<tr>
<td>4:09 PM-4:17 PM</td>
<td>Discussion</td>
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<tr>
<td>4:18 PM-4:22 PM</td>
<td>Suture Versus Screw Fixation of Tibial Spine Fractures: A Comparative Study</td>
<td>Mininder Kocher, MD, MPH; Judd Allen, MD; Mark Callanan, MD; Frances Tepolt, MD; Brett Flutie</td>
<td>Boston Children's Hospital, Boston, MA</td>
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<tr>
<td>4:23 PM-4:27 PM</td>
<td>Which Psychological Measure Should Be Used to Identify Athletes at Risk for Prolonged Recovery Following ACL Reconstruction?</td>
<td>Henry Ellis, MD; K. John Wagner, BS; Aaron Zynda, BS; Meagan Sabatino, BA; Philip Wilson, MD</td>
<td>Texas Scottish Rite Hospital for Children, Dallas, TX</td>
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<td>4:28 PM-4:32 PM</td>
<td>Prospectively Calculated Utility Values in Children with Osteochondritis Dissecans of the Knee</td>
<td>Joshua Adjei, BA; Benedict Nwachukwu; Yi Zhang, MS; Daniel Green, MD; Emily Dodwell, MD; Peter Fabricant, MD</td>
<td>Hospital for Special Surgery, New York, NY</td>
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<td>4:33 PM-4:41 PM</td>
<td>Discussion</td>
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<td>4:42 PM-4:46 PM</td>
<td>Youth Marathon Training: Injury Epidemiology and Risk Factors</td>
<td>Joshua Goldman; Emily Miller, MD; Summer Runestad, ATC; Rebecka Serpa; Jennifer Beck, MD</td>
<td>Orthopaedic Institute for Children, Los Angeles, CA</td>
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<td>4:47 PM-4:51 PM</td>
<td>Youth Ice Hockey Concussions Reported at US Emergency Departments from 2002-2016: A Peak in 2011 and the Impact of Rule Modifications</td>
<td>Patrick Morrissey, BA; Neil Shah, MD; Andrew Hayden, MD; Jack Zhou, BS; Lee Bloom, MD; Alexandr Aylyarov, MD; Dipal Chatterjee, MD; Jared Newman, MD; Matthew McCarthy; Khalid Hesham, MD; William Urban, MD</td>
<td>SUNY Downstate Medical Center, Brooklyn, NY</td>
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<td>4:52 PM-4:56 PM</td>
<td>Delivery of Patient-Reported Outcome Instruments by Automated Mobile Phone Text Messaging in Pediatric Sports Medicine</td>
<td>J. Todd Lawrence, MD, PhD; Xochitl Mellor, BS; Matthew Buczek, BS; Theodore Ganley, MD; Alexander Adams, BS; Apurva Shah, MD, MBA</td>
<td>Children's Hospital of Philadelphia, Philadelphia, PA</td>
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<td>4:57 PM-5:05 PM</td>
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<td>7:30 AM</td>
<td>Welcome Remarks</td>
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| 7:30 AM    | QSVI General Session                                                    | **Moderator:** Brian Brighton, MD, MPH  
**eModerator:** Benjamin Shore, MD, MPH, FRCSC  
**Presider:** Julie Samora, MD, PhD                                                                                      |                                                                                                         |
<p>| 7:34 AM    | Deciding Without Data: Clinical Decision Making in Pediatric Orthopaedic  | Steven Frick, MD; Karthik Nathan BS; Jacinta Leyden, BS; Onyemaechi Uzosike, BA; Alexander Karius; Uriel Sanchez, BS; Nicole Segovia, BS; Sara Eppler, MPH; Robin Kamal, MD   | Stanford University, Stanford, CA                                                                      |
|            | Surgery                                                                  |                                                                                                                             |                                                                                                         |
| 7:39 AM    | What is the evidence Behind the US News &amp; World Report Rating, and        | Smitha Mathew, MBBS; A. Noelle Larson, MD; Todd Milbrandt, MD                                                                                         | Mayo Clinic, Rochester, MN                                                                               |
|            | Does It Make Us Better Surgeons?                                         |                                                                                                                             |                                                                                                         |
| 7:44 AM    | Pediatric Orthopaedists are not Immune: Characterizing Self-reported      | Cordelia Carter, MD; Vishwas Talwalkar, MD; Jennifer Weiss, MD; Richard Schwend, MD; Michael Goldberg, MD                          | POSNA Wellness Committee, Rosemont, IL                                                                    |
|            | Burnout Rates Amongst POSNA Members                                       |                                                                                                                             |                                                                                                         |
| 7:49 AM    | Discussion                                                                |                                                                                                                             |                                                                                                         |
| 7:58 AM    | Implementation of Standardized Discharge Regimen and Education           | Craig Birch, MD; Kerry Wilder; Charu Sharma; Stacie Bukowsky, MSPH; Sandi Greenberg; Brandon Ramo, MD                              | Texas Scottish Rite Hospital for Children, Dallas, TX                                                      |
|            | Reduces Narcotic Prescribing Following Adolescent Idiopathic Scoliosis    |                                                                                                                             |                                                                                                         |
|            | (AIS) Surgery: A Quality Value Safety Initiative (QVSI)                   |                                                                                                                             |                                                                                                         |
| 8:03 AM    | Intraoperative Red Blood cell Salvage in Posterior Spinal Fusions for     | Scott Luhmann, MD; Garrett Wahl, BS                                                                                                   | Washington University School of Medicine, Saint Louis, MO                                               |
|            | Idiopathic Scoliosis: Guidelines for Selective Use                       |                                                                                                                             |                                                                                                         |
| 8:08 AM    | Surgical Site Infections in Pediatric Spinal Surgery over a Decade of     | Bradley Hammoor, BS; Hiroko Matsumoto, BA; Gerard Marciano; Kevin Wang, BA; Lucas Dziesinski, BS; Michael Vitale, MD, MPH       | Columbia University Medical Center, New York, NY                                                         |
|            | Serial and Iterative Efforts to Eradicate Infection: Timing Matters       |                                                                                                                             |                                                                                                         |</p>
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<td>8:13 AM-8:21 AM</td>
<td>Discussion</td>
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| **46** 8:22 AM-8:26 AM | Appropriate Use Criteria for Treatment of Pediatric Supracondylar Humerus Fractures with Vascular Injury: Do Recommendations Follow Current Clinical Practice?  
  Aaron Brandt, MD; Meghan Wally, MSPH; Virginia Casey, MD; Christian Clark, MD; Michael Paloski, DO; Brian Scannell, MD; Brian Brighton, MD  
  Levine Children’s Hospital, Charlotte, NC |
| **47** 8:27 AM-8:31 AM | Perioperative Ketorolac for Supracondylar Humerus Fracture in Children Decreases Postoperative Pain, Opioid Usage, Hospitalization Cost, and Length of Stay  
  Alexander Adams, BS; Matthew Buczek, BS; John (Jack) Flynn, MD; Apurva Shah, MD, MBA  
  Children’s Hospital of Philadelphia, Philadelphia, PA |
| **48** 8:32 AM-8:36 AM | Safe Transport of Spica Casted Children in Passenger Vehicles is Possible: A Frontal Crash Test Analysis of Child Restraint Systems Using Spica Casted Crash Test Dummies  
  Jeffrey Peck, MD; Angela Collins, MD; Sean Caskey, DO; Theresa Atkinson, PhD; Norman Walter, MD; Patrick Atkinson, PhD  
  McLaren-Flint, Flint, MI |
| 8:37 AM-8:45 AM | Discussion |
| **49** 8:46 AM-8:50 AM | ♦ Can Real Time Monitoring with a Controlled Advancement Drill Decrease Plunge Depth?  
  Stephen Wallace, MD; Alexander Cherkashin, MD; Mikhail Samchukov, MD; Robert Wimberly, MD; Anthony Riccio, MD  
  Texas Scottish Rite Hospital for Children, Dallas, TX |
| **50** 8:51 AM-8:55 AM | Getting the Message: The Declining Trend in Opioid Prescribing for Minor Orthopaedic Injuries in Children and Adolescents over the Past 14 Years  
  Jigar Gandhi; Divya Talwar, MPH; John (Jack) Flynn, MD; Arielle Krakow, BA  
  Children’s Hospital of Philadelphia, Philadelphia PA |
| **51** 8:56 AM-9:00 AM | Are We Overprescribing Opioids for Adolescents with Lower Extremity Fractures? Preliminary Results from a Randomized Controlled Trial at a Level I Pediatric Trauma Facility  
  Arianna Trionfo, MD; Matthew Buczek, BS; Keith Baldwin, MD; Apurva Shah, MD, MBA  
  Children’s Hospital of Philadelphia, Philadelphia, PA |

♦ Indicates those faculty presentations in which the FDA has not cleared the drug and/or medical device for the use described (i.e., the drug or medical device is being discussed for an “off label” use).
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<tr>
<td>9:01 AM-9:09 AM</td>
<td>Discussion</td>
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<td>9:10 AM-9:14 AM</td>
<td>Expanding Practice Boundaries: Delivery of Fracture Care Using Telemedicine in Pediatric Orthopaedics&lt;br&gt;Neha Sinha, MD; Max Cornell; Benjamin Wheatley, BS; Mark Seeley, MD&lt;br&gt;Geisinger Medical Center, Danville, PA</td>
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<tr>
<td>9:15 AM-9:19 AM</td>
<td>Pacific Ocean’s Eleven: The Cost-Effectiveness of Pediatricians Splinting Injuries in Their Office&lt;br&gt;Byron Izuka, MD&lt;br&gt;University of Hawaii Division of Orthopaedic Surgery, Honolulu, HI</td>
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<td>9:20 AM-9:24 AM</td>
<td>Where are the Women leaders? A Look at POSNA Committee and Leadership Positions&lt;br&gt;Sharul Saxena; Jennifer Weiss, MD; Joshua Abzug, MD; Michelle Caird, MD; Marilan Luong, MPH; Selina Poon, MD&lt;br&gt;Shriners for Children Medical Center, Pasadena, CA</td>
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<tr>
<td>9:25 AM-9:33 AM</td>
<td>Discussion</td>
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<td>9:33 AM-10:00 AM</td>
<td>Break</td>
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Symposia Program

Children's Orthopaedics in Under-Resourced Environments (COUR)

10:00 AM-12:00 PM
Co-Chairs: Eric Fornari, MD & Coleen Sabatini, MD, MPH

Caring for Refugee Communities as an Orthopaedic Surgeon

This year’s COUR Symposium is focused on the health and musculoskeletal needs of refugee communities throughout the world. We will review the current status of the refugee crisis and learn from orthopaedic surgeons who have been caring for displaced communities in a variety of settings in the Middle East and Africa. Real-life experiences will be shared and the musculoskeletal issues seen in these populations discussed. Resources for those interested in becoming involved will be addressed as well as time for an open discussion about the role that orthopaedic surgeons can play in caring for refugee communities.

10:00 AM-10:05 AM: Welcome
Eric Fornari, MD

10:05 AM-10:10 AM: Introduction of COUR Scholars
Eric Fornari, MD; Coleen Sabatini, MD, MPH

10:10 AM-10:15 AM: Introduction to the Symposium
Coleen Sabatini, MD, MPH

10:15 AM-10:35 AM: Understanding the World’s Refugee Crisis
Fatima Karaki, MD

10:35 AM-11:00 AM: Overview of the Palestine Refugee Populations and an Integrated Approach to Addressing their Ongoing Pediatric Musculoskeletal Needs
Anna Vergun, MD

11:00 AM-11:30 AM: Principles of War Surgery: The Syrian Field Hospital Experience
Samer Attar, MD

11:30 AM-11:40 AM: Resources for Orthopaedic Surgeons Interested in Helping
Eric Fornari, MD; Coleen Sabatini, MD, MPH

11:40 AM-12:00 PM: Discussion
Teach the Teacher – Strategies for Pediatric Orthopedic Education in the Modern Era

10:00 AM-12:00 PM
Co-Chairs: Craig Eberson, MD & Todd Milbrandt, MD

Education of residents and fellows in Pediatric Orthopedics remains an evolving science. Today’s learners continue to require new strategies to impart the knowledge required for success in our field. In the era of reduced work hours, today’s educators must be able to efficiently transfer their experience and skill to their students, while at the same time coping with the increasing administrative burden of modern practice. This symposium brings to bear the expertise of a collection of seasoned educators, program directors, and academicians who will share their tips for efficient teaching, providing and receiving meaningful feedback, and for allowing graduated autonomy in the clinics and the operating room.

10:00 AM-10:10 AM: Introduction
Craig Eberson, MD; Todd Milbrandt, MD

SETTING UP YOUR PEDS ORTHO ROTATION FOR EDUCATION-PRACTICAL TIPS
10:10 AM-10:17 AM: Teaching the Curriculum-Techniques for Modern Learners
Todd Milbrandt, MD

10:18 AM-10:25 AM: How to Encourage Learning in the Clinic, Yet Still Go Home on Time
Steven Frick, MD

10:26 AM-10:33 AM: Surgical Teaching: Pre-Op Planning to Handing Over the Knife
Anthony Riccio, MD

10:34 AM-10:44 AM: Panel Discussion
Moderator: Craig Eberson, MD
Panel: Steven Frick, MD; Todd Milbrandt, MD; Anthony Riccio, MD

EVALUATION
10:45 AM-10:52 AM: Usable Feedback for Residents-How to Give It
Ryan Muchow, MD

10:53 AM-11:00 AM: Remediation of the Struggling Learner-Head, Heart, and Hands
Craig Eberson, MD

11:01 AM-11:08 AM: Are YOU the Problem? Understanding and Changing Bad Evaluations
Michelle Caird, MD

11:09 AM-11:14 AM: Panel Discussion
Moderator: Todd Milbrandt, MD
Panel: Michelle Caird, MD; Craig Eberson, MD; Ryan Muchow, MD

LESSONS FROM THE EDUCATION PROFESSIONAL OUTSIDE OUR FIELD
11:15 AM-11:45 AM: Special POSNA Invited Guest Lecturer
What Should You Know About Learning Theories to be Great Teachers?
Sandra Jarvis-Selinger, PhD

11:45 AM-11:55 AM: Discussion

11:55 AM-12:00 PM: Wrap Up and Final Comments
Craig Eberson, MD; Todd Milbrandt, MD
Innovation and Technology

10:00 AM-12:00 PM

Co-Chairs: Jonathan Schoenecker, MD, PhD; Benjamin Shore, MD, MPH, FRCSC; & Bryan Tompkins, MD

This session will explore technology and innovation in the OR, teaching methods, and practice management. We will touch on imaging in virtual reality, 3D modeling, advances in stimulation, using social media in practice, and telehealth. There will also be a demo on the OSSO Virtual Reality SCFE model.

PERIOD 1
Technology and Innovation in the OR

10:00 AM-10:15 AM: Imaging in Virtual Reality
Bryan Tompkins, MD

10:15 AM-10:30 AM: 3D Modeling
Brian Haus, MD

PERIOD 2
Technology and Innovation in Teaching

10:30 AM-10:45 AM: Changing How We Teach
Jonathan Schoenecker, MD, PhD

10:45 AM-11:00 AM: Advances in Simulation
Benjamin Shore, MD, MPH, FRCSC

11:00 AM-11:30 AM: OSSO VR SCFE Demo
Benjamin Shore, MD, MPH, FRCSC; Bryan Tompkins, MD

PERIOD 3
Technology and Innovation in Practice Management

11:30 AM-11:45 AM: Social Media in Practice
Bryan Tompkins, MD

11:45 AM-12:00 PM: NextGen Telehealth
Robert Cho, MD
Thursday, May 16, 2019, continued

**Attendance to this symposium requires the purchase of a $40 workbook that is NOT part of the registration fee.**

10:00 AM-2:00 PM

Co-Chairs: Amanda Fletcher & Tracy Warhoover MSN, RN, CPNP

Coding and Documentation for Pediatric Orthopaedic Practitioners

This four-hour symposium will provide advanced practice providers with the knowledge of coding and documentation guidelines in addition to how to navigate between coding specifics, process issues, and payor policies. Margaret Maley with Karen Zupko and Associates will lead the discussion on properly selecting an evaluation and management code and correctly supporting it with documentation, coding accurately and ethically, appropriate documentation of level of service, recognizing the correct use of ICD 10 codes and CPT codes, and the proper use of EM levels of service.

Learning Objectives

1. Use E/M modifiers accurately
2. List what is included in global fracture care
3. Define “incident to” reporting to Medicare and how this translates to other payors

10:00 AM-10:30 AM E/M Categories of Service and When to Use Them
New vs. Established Patient
What is a consultation?
Can a PA request one? Perform one?
What do you use when you go to the ER?

10:30 AM-10:45 AM Medical Necessity
Just because it is in the note, doesn’t mean it was necessary to make a diagnosis or treat a problem! How does the diagnosis code impact medical necessity?

10:45 AM-11:45 AM E/M Levels of Service and How to Document Them
History-What’s NEW in 2019?
Physical Examination, Medical Decision Making

11:45 AM-12:15 PM Physician Assistant/APP Billing in Orthopaedics
Direct, Incident-to, Split/Shared

12:15 PM-1:00 PM Global Surgical Package
Pre-operative H&P - can this be billed if the PA does it?
E&M modifiers
• Modifier 24- unrelated E&M service
• Modifier 57- E/M resulting in urgent decision to operate.
  When is it needed? When isn’t it needed?
• Modifier 25-significant separate E/M service

1:00 PM-1:30 PM Fracture Care
What’s included and what is separately reportable
Does your state have restrictions on global care by a PA?

1:30 PM-1:45 PM Assisting in Surgery- Modifier AS
What needs to be documented

1:45 PM-2:00 PM Are You Tracking Your Production?
Do you know your value- the basics of RVUs
In this symposium, we will debate the role of QSVI studies and industry involvement in furthering pediatric orthopedic research, followed by short presentations from POSNA-funded researchers. Finally, pediatric orthopedic thought leaders will provide succinct snapshots regarding how they approached a major personal or professional achievement, i.e. bringing a device to market, reserving protected time, or obtaining NIH funding for a clinical study.

PERIOD 1
DEBATES: QSVI & INDUSTRY

Debate: Is QSVI Bringing Up the Quality of Pediatric Orthopaedic Research or Dragging It Down?
We will discuss the advantages and disadvantages of the recent trend in pediatric orthopedics to perform quality studies testing multiple variables simultaneously, rather than traditional research.

10:00 AM-10:05 AM: Pro QSVI
Kevin Shea, MD

10:05 AM-10:10 AM: Con QSVI
Matthew Halanski, MD

10:10 AM-10:15 AM: Rebuttals

10:15 AM-10:20 AM: Discussion

Debate: Does Working with Industry Help or Hurt the Scientific Process?
We will discuss the role of industry involvement in pediatric orthopedic research.

10:20 AM-10:25 AM: Pro Industry
Suken Shah, MD

10:25 AM-10:30 AM: Con Industry
Matthew Oetgen, MD

10:30 AM-10:35 AM: Rebuttals

10:35 AM-10:40 AM: Discussion

PERIOD 2
POSNA SUPPORTED RESEARCH HIGHLIGHTS

10:40 AM-10:45 AM: A Prospective, Multi-centered Comparative Study of Non-operative and Operative Containment Treatments in Children Presenting with Late-stage Legg-Calve-Perthes Disease
Benjamin Martin, MD, 2015 POSNA Research Grant
<table>
<thead>
<tr>
<th>Time</th>
<th>Presentation Title</th>
<th>Presenter(s)</th>
<th>Grant Information</th>
</tr>
</thead>
<tbody>
<tr>
<td>10:45 AM-10:50 AM</td>
<td>Uncoupling Cell Signaling and Mineralization Defects in Neurofibromin Deficient Tibial Pseudoarthrosis</td>
<td>Jonathan Rios, PhD</td>
<td>2015 POSNA Research Grant</td>
</tr>
<tr>
<td>10:50 AM-10:55 AM</td>
<td>Spinal and Vertebral Dimension Charts: Precise and Accurate Characterization for Decision Support</td>
<td>Stefan Parent, MD</td>
<td>2015 Biomet Spine Research Grant</td>
</tr>
<tr>
<td>10:55 AM-11:00 AM</td>
<td>Discussion</td>
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<tr>
<td>11:00 AM-11:05 AM</td>
<td>Effects of Standing on Non-Ambulatory Children with Neuromuscular Conditions</td>
<td>Walter Truong, MD</td>
<td>2015 St. Giles Young Investigator Award</td>
</tr>
<tr>
<td>11:05 AM-11:10 AM</td>
<td>Assessing the Burden of Childhood Musculoskeletal Conditions</td>
<td>Kevin Shea, MD</td>
<td>2015 POSNA Directed Research Grants</td>
</tr>
<tr>
<td>11:10 AM-11:15 AM</td>
<td>PLUTO (Pediatric ACL: Understanding Treatment Operations): A Multi-Center Prospective Cohort Study</td>
<td>Mininder S. Kocher, MD, MPH</td>
<td>2015 Arthur H. Huene Award</td>
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<td>11:15 AM-11:20 AM</td>
<td>Discussion</td>
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PERIOD 3
HOW I MADE THE WORLD/MY LIFE BETTER

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<thead>
<tr>
<th>Time</th>
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<tbody>
<tr>
<td>11:20 AM-11:26 AM</td>
<td>How I Brought a Medical Device to Clinical Practice</td>
<td>Peter Stevens, MD</td>
</tr>
<tr>
<td>11:26 AM-11:32 AM</td>
<td>How I Secured Development Funding for Our Orthopedic Research Program</td>
<td>David Roye, MD</td>
</tr>
<tr>
<td>11:32 AM-11:38 AM</td>
<td>♦ How to Do Research with Nationalized Healthcare</td>
<td>Firoz Miyanji, MD</td>
</tr>
<tr>
<td>11:38 AM-11:44 AM</td>
<td>How I Negotiated Protected Research Time with my Department</td>
<td>Michelle Caird, MD</td>
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<tr>
<td>11:44 AM-11:50 AM</td>
<td>How I Obtained NIH Funding for an RCT</td>
<td>Lori Dolan, PhD</td>
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<tr>
<td>11:50 AM-12:00 PM</td>
<td>Discussion</td>
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## Trauma – The Optimal Care of the Injured Pediatric Orthopaedic Patient

10:00 AM-12:00 PM  
**Co-Chairs:** Stephanie Holmes, MD & Mark Sinclair, MD

“The Optimal Care of the Injured Pediatric Orthopaedic Patient”:  
A session focused on providing great care of the pediatric orthopaedic trauma patient and meeting American College of Surgeons-Committee on Trauma (ACS-COT) guidelines while doing it!

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<tr>
<th>Time</th>
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<tr>
<td>10:00 AM-10:10 AM</td>
<td>Overview of ACS-COT and Why It Matters to Your Pediatric Orthopaedic Trauma Patient</td>
<td>Allan Beebe, MD</td>
</tr>
<tr>
<td>10:10 AM-10:20 AM</td>
<td>Best Practice Guidelines for Supracondylar Humerus Fractures</td>
<td>Heather Kowalski, MD</td>
</tr>
<tr>
<td>10:20 AM-10:30 AM</td>
<td>Best Practice Guidelines for Open Fracture Management in Children and Adolescents</td>
<td>Scott Yang, MD</td>
</tr>
<tr>
<td>10:30 AM-10:40 AM</td>
<td>Questions and Discussion</td>
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<tr>
<td>10:40 AM-10:50 AM</td>
<td>Pelvis Fractures and Massive Transfusion Protocols and the Pediatric Orthopaedic Trauma Patient</td>
<td>Keith Bachmann, MD</td>
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<tr>
<td>10:50 AM-11:00 AM</td>
<td>Comprehensive Pain Management in the Pediatric Orthopaedic Trauma Patient</td>
<td>Claire Shannon, MD</td>
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<tr>
<td>11:00 AM-11:10 AM</td>
<td>DVT Prophylaxis in the Pediatric Orthopaedic Trauma Patient</td>
<td>Grant Hogue, MD</td>
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<tr>
<td>11:10 AM-11:20 AM</td>
<td>Questions and Discussion</td>
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<tr>
<td>11:20 AM-11:30 AM</td>
<td>Compartment Syndrome Evaluation and Management in the Pediatric Orthopaedic Trauma Patient</td>
<td>Matthew Halsey, MD</td>
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<tr>
<td>11:30 AM-11:40 AM</td>
<td>Damage Control Surgery and the Mangled Extremity: What Does That Mean in the Management of Pediatric Orthopaedic Trauma Patients</td>
<td>Christopher Souder, MD</td>
</tr>
<tr>
<td>11:40 AM-11:50 AM</td>
<td>Extremity Injuries with Coexistent Vascular Trauma in the Pediatric Orthopaedic Trauma Patient</td>
<td>Shawn (Skip) Gilbert, MD</td>
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<tr>
<td>11:50 AM-12:00 PM</td>
<td>Questions and Discussion</td>
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YOUNG MEMBER FORUM

FIFTH ANNUAL ARABELLA LEE, MD
YOUNG MEMBER FORUM

12:15 PM-1:30 PM
Moderator: Jennifer Weiss, MD

12:15 PM-12:20 PM  Welcome
Jennifer Weiss, MD

12:21 PM-12:25 PM  Memorial to Arabella Leet
Margaret Murphy-Zane, MD

12:26 PM-12:34 PM  What Can POSNA Do For You?
Robert Cho, MD

12:35 PM-12:44 PM  What Can You Do For POSNA?
Todd Milbrandt, MD

12:45 PM-1:30 PM  Panel Q&A
Moderator: Jennifer Weiss, MD
Panel: Donald Bae, MD;
Robert Cho, MD;
Steven Frick, MD;
A. Noelle Larson, MD;
Todd Milbrandt, MD;
Coleen Sabatini, MD, MPH;
Margaret Murphy-Zane, MD
FRIDAY, MAY 17

7:00 AM–7:04 AM  Welcome Remarks

Clinical Awards Session
Moderator: Stephen Albanese, MD
eModerator: Amy McIntosh, MD
Presider: Matthew Oetgen, MD

55  7:05 AM-7:10 AM  ♦ The Effect of Intravenous Tranexamic Acid on Blood Loss and Transfusion After Periacetabular Osteotomy: A Double-Blinded, Randomized Controlled Trial
Ashley Levack, MD; Alexander McLawhorn, MD; Emily Dodwell, MD; Kathryn Delpizzo, MD; Joseph Nguyen, MPH; Ernest Sink, MD Hospital for Special Surgery, New York, NY

7:11 AM-7:16 AM  Discussion

56  7:17 AM-7:22 AM  * Two-Year Functional Outcomes of Operative vs. Non-Operative Treatment of Completely Displaced Clavicle Fractures in Adolescents: Results from the Prospective, Multicenter, Level 2 ‘Facts’ Study
Benton Heyworth, MD; Andrew Pennock, MD; Ying Li, MD; Leslie Kalish; Britanny Dragonetti, BA; Henry Ellis, MD; Jeffrey Nepple, MD; Samuel Willimon, MD; David Spence, MD; Nirav Pandya, MD; Mininder Kocher, MD, MPH; Eric Edmonds, MD; Philip Wilson, MD; Michael Busch, MD; Coleen Sabatini, MD, MPH; Donald Bae, MD Boston Children’s Hospital, Boston, MA

7:23 AM-7:28 AM  Discussion

57  7:29 AM-7:34 AM  The Mobility Sparing Benefits of Selective Thoracic Fusions in Adolescent Idiopathic Scoliosis are Evident at 10 Years Post-operatively
Peter Newton, MD; Masayuki Ohashi; Tracey Bastrom, MA; Michelle Marks, PT; Carrie Bartley, MA; Harms Study Group Rady Children’s Hospital, San Diego, CA

7:35 AM-7:40 AM  Discussion

58  7:41 AM-7:46 AM  ♦ The Rate of Mediastinal and Vascular Injury Following Acute Posterior Sternoclavicular Dislocation
Matthew Fournier, MD; Mark Sinclair, MD; Evan Zheng, BA; David Spiegel, MD; Anna Johnson, MD; Apurva Shah, MD, MBA; Anthony Riccio, MD; Marilyn Elliott; Donald Bae, MD; Jeffrey Sawyer, MD University of Tennessee - Campbell Clinic, Memphis, TN

7:47 AM-7:52 AM  Discussion

♦ may be used for external trauma-related CMEs.

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</table>
| 59      | 7:53 AM-7:58 AM | Intraoperative Neurologic Monitoring in Limb Surgery for Patients with Mucopolysaccharidoses | Andrew Georgiadis, MD; Kevin Walker, MD; Susan Novotny; Breana Siljander, MD  
Gillette Children's Specialty Healthcare, St. Paul, MN |
| 60      | 8:05 AM-8:10 AM | A Randomized Controlled Trial of Zoledronic Acid in Perthes Disease (ZAP)  | David Little, MD, MBBS, FRACS, PhD; Kamal Jamil, MD; Craig Munns, MBBS;  
Christopher Cowell, MBBS; Bruce Foster, MD; Michael Johnson, MD;  
Geoff Donald, MBChB; Colin Whitewood, MBBS  
The Childrens Hospital at Westmead, Sydney, NSW, Australia |
| 61      | 8:17 AM-8:22 AM | Chronic Recurrent Multifocal Osteomyelitis: Diagnosis and Treatment Pathways for a Large Patient Cohort | Nathan Donaldson, DO; Nathan Rogers, MPH; Ryan Mooney, PA-C;  
Shelley Dell’Orfano; Jennifer Soep, MD  
Children's Hospital Colorado, Aurora, CO |
| 62      | 8:29 AM-8:34 AM | Is it Growth or Natural History? Increasing Spinal Deformity after Sanders Stage 7 in Females with AIS | Ryan Muchow, MD; Olivia Grothaus, BA; Cale Jacobs, PhD;  
Vishwas Talwalkar, MD; Henry Iwinski, MD  
Lexington Shriners Hospital for Children, Lexington, KY |
| 63      | 8:41 AM-8:46 AM | The Addition of Continuous Nerve Blockade to General Anesthesia: An Effective Tool to Reduce Pain and Length of Stay in Pediatric Patients Undergoing Orthopedic Surgery | Anas Minkara, MD; Reid Chambers, DO; Turan Alparslan, MD; John Seif, MD;  
Ryan Goodwin, MD  
Cleveland Clinic Foundation, Cleveland, OH |

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## Friday, May 17, 2019, continued

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<th>Time</th>
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<tr>
<td>8:53 AM-8:58 AM</td>
<td>Major Perioperative Complications After Spinal Fusion Do Not Influence Health-Related Quality of Life Outcomes in Children with Cerebral Palsy Francisco Eguia, BA; Derek Nhan, BS; Suken Shah, MD; Amit Jain, MD; Amer Samdani, MD; Burt Yaszay, MD; Joshua Pahys, MD; Michelle Marks, PT; <strong>Paul Sponseller, MD</strong> Johns Hopkins Hospital, Baltimore, MD</td>
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<tr>
<td>8:59 AM-9:04 AM</td>
<td>Discussion</td>
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<tr>
<td>9:05 AM-9:25 AM</td>
<td>Break</td>
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### Basic Science Awards Session

**Moderator:** Matthew Halanski, MD  
**eModerator:** Michelle Welborn, MD  
**Presider:** Roger Cornwall, MD

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<tr>
<td>9:26 AM-9:30 AM</td>
<td>♦ Identifying and Pharmacologically Correcting the Molecular Pathophysiology of Contractures in Neonatal Brachial Plexus Injury Athanasia Nikolaou, PhD; Liangjun Hu, MS; <strong>Roger Cornwall, MD</strong> Cincinnati Children’s Hospital, Cincinnati, OH</td>
</tr>
</tbody>
</table>
| 9:31 AM-9:35 AM | Early Osteoarthritis Observed after Recovery from Neonatal Brachial Plexus Injury in a Mouse Model  
Lynn Ann Forrester, MD; **Benjamin Royle, MD**; Stavros Thomopoulos, PhD  
Columbia University Medical Center Department of Orthopedic Surgery, New York, NY |
| 9:36 AM-9:40 AM | ♦ Local Delivery of Anti-VEGF Following Physeal Injury Decreases Bony Bar Formation  
Christopher Erickson, BS; Jake Newsom, BS; Nathan Fletcher, PhD; Gavriel Feuer, BS; Yangyi Yu, MD; Francisco Rodriguez-Fontan, MD; **Nancy Miller, MD**; Melissa Krebs, PhD; Karin Payne, PhD  
University of Colorado Anschutz Medical Campus, Aurora, CO |
| 9:41 AM-9:49 AM | Discussion                                                              |
| 9:50 AM-9:54 AM | Identification of Plasma MicroRNA Signature to Predict Curve Progression in Adolescent Idiopathic Scoliosis (AIS) – A 6 Years Longitudinal Follow Up Study  
Jiajun Zhang, PhD; Ka-Yee Cheuk; Yujia Wang; **Tsz Ping Lam, MBBS**; Alec Lik Hang Hung; Bobby Ng, MD; Jack Cheng, MD; Wayne Lee, PhD  
Department of ORT, SH Ho Scoliosis Research Laboratory, The Chinese University of Hong Kong, Hong Kong, Hong Kong |

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| 9:55 AM-9:59 AM | Paraspinal Muscle Tissue Morphological Differences at the Curve Apex in Patients with Adolescent Idiopathic Scoliosis  
Peter Newton, MD; Andrew Yoo, MD; Bahar Shahidi, DPT; Mary Esparza, BS; Seth Johnson, BS; Jennifer Padwal, MS; Christine Farnsworth, MS; Richard Lieber, PhD; Samuel Ward, PhD  
Rady Children’s Hospital - San Diego, San Diego, CA |
| 10:00 AM-10:04 AM | Targeting Cholesterol Biosynthesis in Enchondromas  
Benjamin Alman, MD  
Duke University, Durham, NC |
| 10:05 AM-10:13 AM | Discussion |
| 10:15 AM-10:30 AM | DISTINGUISHED ACHIEVEMENT AWARD  
Perry Schoenecker, MD |
| 10:31 AM-10:38 AM | 2020 MEETING ANNOUNCEMENTS  
Peter Newton, MD |
| 10:39 AM-10:59 AM | PRESIDENTIAL SPEAKER  
Peter Waters, MD |
| 11:00 AM-11:10 AM | Presidential Transfer |
**Subspecialty Day**

**Foot & Ankle Subspecialty Day**

1:30 PM-3:05 PM  
Co-Chairs: Jennifer Laine, MD & Anthony Riccio, MD

**MANAGEMENT OF COMMON AND COMPLEX ADOLESCENT FOOT DEFORMITY…NO SMALL “FEET”**

As transitional medicine becomes increasingly important in both pediatric and adult orthopaedic practices, this year’s Foot and Ankle open time will consist of a symposium entitled “Management of Common and Complex Adolescent Foot Deformity…No Small ‘Feet’” during which four highly regarded adult and pediatric foot and ankle specialists will provide their insights into both common and complex adolescent foot deformities. Particular attention will be given by the adult specialists to sharing their perspective on the adult sequela of pediatric congenital foot deformities and the surgical treatment of those deformities. The attendee will better understand the controversies and variability surrounding foot and ankle deformity management in the adolescent patient.

1. The attendee will better understand that presumed standard of care practices may differ among pediatric and adult foot and ankle surgeons.
2. The attendee will learn treatment strategies and operative techniques for management of adolescent foot deformities.
3. The attendee will learn about the problems associated with the natural history and treatment of pediatric congenital foot deformities and the management of these sequela in the adult patient.

In this case based symposium, the approach to common and complex adolescent foot deformities will be discussed by adult and pediatric orthopaedic foot and ankle specialists to compare, contrast, and debate differing management strategies.

**PERIOD 1A**

1:30 PM-1:40 PM  
What We See That You Don’t: What Pediatric Orthopaedic Surgeons Should Know About Their Patients in Adulthood  
James Brodsky, MD

1:40 PM-1:50 PM  
Commentary/Rebuttal  
Vincent Mosca, MD

1:50 PM-2:15 PM  
Case Presentations  
Moderators: Jennifer Laine, MD  
Anthony Riccio, MD  
Panel: James Brodsky, MD  
Jaime Denning, MD  
Vincent Mosca, MD; Jacob Zide, MD

The moderators will present three or four cases highlighting the complexities and controversies surrounding various foot and ankle deformities with discussion of treatment techniques and management options by both the pediatric and adult foot and ankle “factions.” Audience participation will be highly encouraged during these discussions.
PERIOD 1B
FREE PAPERS
Moderators: Jennifer Laine, MD & Anthony Riccio, MD

71 2:16 PM-2:20 PM  Assessment of Quality Metrics in Clubfoot Clinics in an LMIC (Low-Middle Income Countries) Setting  
Christie Pettitt-Schieber, MPH; Jennifer Everhart, PT; Francesca Colloredo-Mansfeld, MPH; Alaric Aroojis, MD  
Bai Jerbai Wadia Hospital for Children, Mumbai, Maharashtra, India

Pamela Lang, MD; Kenneth Noonan, MD; Benjamin Giertych, BS; Sara Heintzman, MD  
University of Wisconsin & American Family Children's Hospital, Madison, WI

73 2:26 PM-2:30 PM  How Many Clubfoot Patients Undergo Foot or Ankle Surgery as Adults?  
Steven Frick, MD; Thompson Zhuang BA  
Stanford University, Stanford, CA

2:31 PM-2:40 PM  Discussion

74 2:41 PM-2:45 PM  Posterior Ankle Impingement – Why is there a Delay in Diagnosis in Pediatric and Adolescent Patients?  
Indranil (Neel) Kushare, MD; Matthew Ditzler, MD; Kristen Kastan; Siddharth Jadhav, MD  
Texas Children’s Hospital Houston, TX

75 2:46 PM-2:50 PM  A Randomized, Controlled Trial Comparing Stockinette Cast Padding and Webril Cast Padding for Treatment of Clubfoot by the Ponseti Method  
Kevin Smit, MD; Meaghan Marien, MD; Marcel Abouassaly, MD; Ken Kontio, MD; James Jarvis, MD  
Children’s Hospital of Eastern Ontario, Ottawa, Ontario, Canada

76 2:51 PM-2:55 PM  Algorithm in the Treatment of Ankle Valgus in MHE Patients  
David Feldman, MD; Melih Civan, MD; Troy Rand, PhD; Dror Paley, MD, FRCSC; Aaron Huser, DO  
The Paley Institute, West Palm Beach, FL

2:56 PM-3:05 PM  Discussion
**Hand Subspecialty Day**

3:25 PM-5:00 PM

**Co-Chairs:** Apurva Shah, MD, MBA & Christopher Stutz, MD

Challenging cases in pediatric upper extremity surgery including brachial plexus, complex elbow and wrist, and congenital limb differences will be presented to a panel of experts. Pre-operative evaluation, surgical techniques, and treatment algorithms will be explored, highlighting controversies in decision making for a variety of pediatric upper extremity conditions.

**PERIOD 2A**

3:25 PM-3:30 PM  
**Challenging Cases in the Pediatric Upper Extremity Case Presentation #1**  
*Apurva Shah, MD, MBA*

3:31 PM-3:47 PM  
**Discussion**  
Panel: Donald Bae, MD  
Robert Carrigan, MD  
Charles Goldfarb, MD

3:48 PM-3:53 PM  
**Challenging Cases in the Pediatric Upper Extremity Case Presentation #2**  
*Christopher Stutz, MD*

3:54 PM-4:10 PM  
**Discussion**  
Panel: Robert Carrigan, MD  
Charles Goldfarb, MD  
Allan Peljovich, MD, MPH

**PERIOD 2B**

**Free Papers**

**Moderators:** Apurva Shah, MD, MBA & Christopher Stutz, MD

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### Presentation 77

4:11 PM-4:15 PM  
**Treatment Variation in Brachial Plexus Birth Injury Across Academic Medical Centers in North America**  
*Carley Vuillermin, MBBS; Amina Kunnummal, BS; Andrea Bauer, MD; Roger Cornwall, MD; Ashley Tartarilla, MA; Patricia Miller, MS; Peter Waters, MD*  
**Boston Children’s Hospital, Boston, MA**

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### Presentation 78

4:16 PM-4:20 PM  
**Are Nerve Transfers Supplanting Nerve Grafting as the Primary Treatment Strategy for Brachial Plexus Birth Palsy?**  
*Jigar Gandhi; Divya Talwar, MPH; Rikesh Gandhi, MD; Joshua Abzug, MD; Apurva Shah, MD, MBA*  
**Children’s Hospital of Philadelphia, Philadelphia, PA**

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### Presentation 79

4:21 PM-4:25 PM  
**The Incidence and Epidemiology of BPBI in California: 1997-2016**  
*Mary Manske, MD; Lauren Agatstein BA; Michelle James, MD*  
**Shriners Hospital for Children Northern California, Sacramento, CA**
Friday, May 17, 2019, continued

4:26 PM-4:35 PM Discussion

80  4:36 PM-4:40 PM Seymour Fractures a Review of Treatment and Outcomes
     Dawn Goral, MD; Bryant Elrick, MS; Christopher Chen, MD; Andy Lalka, MPH; Sarah Sibbel, MD; Jessica Wingfield, MD; Frank Scott
     Children’s Hospital Colorado, Aurora, CO

81  4:41 PM-4:45 PM Exploring Demographics, Treatment, and Outcomes for Pediatric Bony Ulnar Collateral Ligament (UCL) Injuries
     Julie Samora, MD; Nina Livermore, BS
     Nationwide Children’s Hospital, Columbus, OH

82  4:46 PM-4:50 PM Outcomes of Syndactyly Reconstruction using Hyalomatrix®
     Charles Goldfarb, MD; Lindley Wall, MD; Katherine Velicki, BA; Summer Roberts, MA
     Shriner’s Hospital for Children, Saint Louis, MO

4:51 PM-5:00 PM Discussion

**Hip Subspecialty Day**

1:30 PM-5:00 PM

Co-Chairs: Travis Matheney, MD & Vidyadhar Upasani, MD

The Hip Subspecialty Day sessions will be a combination of scientific papers and debates centered around case presentations. We sought to include cases that we feel are some of the more challenging hip problems in children and adolescents. In session one we will discuss how to manage symptomatic whole-head involvement avascular necrosis. In the second session, we will dive into a debate of when to treat infant hip dislocations that have failed bracing- operate early versus wait until patient is old enough to undergo open reduction and osteotomy.

**ADOLESCENT HIP**

**PERIOD 1A:**

**FREE PAPERS**

Moderator: Vidyadhar Upasani, MD

83  1:30 PM-1:34 PM Outcomes of Periacetabular Osteotomy for Mild Acetabular Dysplasia in Adolescent Patients
     Ishaan Swarup, MD; Ira Zaltz, MD; Stacy Robustelli, BS; Bryan Kelly, MD; Ernest Sink, MD
     Hospital for Special Surgery, New York, NY

* may be used for external trauma-related CMEs.
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<th>Time</th>
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<th>Authors</th>
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<tr>
<td>1:35 PM-1:39 PM</td>
<td>The Effect of Screw Position in Slipped Capital Femoral Epiphysis</td>
<td>Jillian Lee, MBChB; Tegan Cheng; David Little, MD, MBBS, FRACS, PhD</td>
<td>The Children's Hospital at Westmead, Sydney, New South Wales, Australia</td>
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<td>1:40 PM-1:44 PM</td>
<td>Predictors of Failure After Surgical Treatment of Femoroacetabular Impingement: Results of a Multicenter Prospective Cohort of 621 Hips</td>
<td>Jeffrey Nepple, MD; Asheesh Bedi, MD; Ira Zaltz, MD; Christopher Larson, MD; Daniel Sucato, MD, MS; Paul Beaule, MD; Young-Jo Kim, MD, PhD; ANCHOR Study Group; John Clohisy, MD</td>
<td>Washington University School of Medicine, Saint Louis, MO</td>
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<td>1:45 PM-1:54 PM</td>
<td>Discussion</td>
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<td>1:55 PM-1:59 PM</td>
<td>Does a Fascia Iliaca Pain Block Protocol Facilitate Earlier Mobilization and Shorter Hospital Stay than Epidural Anesthesia After Periacetabular Osteotomy</td>
<td>Patrick Whitlock, MD; Vidya Chidambaran; Megan Albertz, MD; Lili Ding, PhD; James McCarthy, MD, MHCM</td>
<td>Cincinnati Children’s Hospital Medical Center, Cincinnati, OH</td>
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<td>2:00 PM-2:04 PM</td>
<td>Naproxen Provides Safe and Effective Heterotopic Ossification Prophylaxis for Periacetabular Osteotomies</td>
<td>John Clohisy, MD; Adam Sassoon, MD; Gail Pashos; Sean Akers; Karla Crook, BSW; Michael Hellman, MD</td>
<td>Washington University School of Medicine, Saint Louis, MO</td>
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<td>2:05 PM-2:09 PM</td>
<td>Does Early Proximal Femoral Varus Osteotomy Shorten the Length of Fragmentation In lcPD? Lessons from a Prospective Multi-Center Cohort</td>
<td>Wudbhav (Woody) Sankar MD; Scott Lavalva, BA; Molly McGuire; Chan-Hee Jo, PhD; Harry Kim, MD</td>
<td>Children’s Hospital of Philadelphia, Philadelphia, PA</td>
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<td>2:10 PM-2:19 PM</td>
<td>Discussion</td>
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<td>2:20 PM-2:22 PM</td>
<td>Case 1: Management of Focal Femoral Head Avascular Necrosis</td>
<td>Vidyadhar Upasani, MD</td>
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<td>2:23 PM-2:27 PM</td>
<td>Allograft / Biologics</td>
<td>Patrick Whitlock, MD, PhD</td>
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<tr>
<td>2:28 PM-2:32 PM</td>
<td>Osteotomy</td>
<td>Courtney O’Donnell, MD</td>
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Friday, May 17, 2019, continued

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<tbody>
<tr>
<td>2:32 PM-2:42 PM</td>
<td>Discussion</td>
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</tbody>
</table>
| 2:43 PM-2:45 PM | **Case 2: Management of Whole Head Avascular Necrosis**  
Vidyadhar Upasani, MD |
| 2:46 PM-2:50 PM | **THA**  
John Masonis, MD |
| 2:51 PM-2:55 PM | **Non-Arthroplasty Options**  
David Podeszwa, MD |
| 2:55 PM-3:05 PM | Discussion                                                            |
| 3:05 PM-3:25 PM | Break                                                                |

**DEVELOPMENTAL DYSPLASIA OF THE HIP**  
**PERIOD 2A**  
**FREE PAPERS**  
Moderator: Travis Matheney, MD

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<tr>
<td>89</td>
<td>Comparison Between the Pavlik Harness and the Tübingen Splint for the Treatment of Developmental Dysplasia of the Hip in Infants</td>
<td>Xuemin Lyu, MD</td>
<td>Beijing Jishuitan Hospital, Beijing, China, People's Republic of</td>
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<td>90</td>
<td>The Fate of the Stubborn Hip in Bilateral Cases Where One Hip Reduces on Initial Treatment: How Many and What To Do?</td>
<td>Jose Herrera-Soto, MD; Emily Schaeffer, PhD; Kishore Mulpuri, MBBS; Wudbhav (Woody) Sankar, MD; Nicole Williams, FRACS; Travis Matheney, MD; Vidyadhar Upasani MD</td>
<td>BC Children’s Hospital, Vancouver, BC, Canada</td>
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<tr>
<td>91</td>
<td>Perfusion MRI after Closed and Open Reduction may not Predict Proximal Femoral Growth Disturbance at Long-term Followup in Developmental Dysplasia of the Hip</td>
<td>Florian Schmaranzer, MD; Young-Jo Kim, MD, PhD; Mariana Ferrer, MD; David Williams, PhD; Sarah Bixby, MD; Eduardo Novais, MD</td>
<td>Boston Children's Hospital, Boston, MA</td>
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<tr>
<td>92</td>
<td>Anterior Open Reduction of the Hip in Walking Age Children. What is the Role of Bony Surgery?</td>
<td>Alpesh Kothari, MD; Angela Tatay, MD; Sarah Lancaster, MD; Tim Theologis</td>
<td>Oxford University Hospitals NHS Trust, Oxford, Oxfordshire, United Kingdom</td>
</tr>
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</table>
93
3:55 PM-3:59 PM  Hip Morphology Differs on Post-reduction MRI Between Hips with and without Residual Dysplasia at Long-term: A Pilot Study with a Minimum 10 year Followup
Florian Schmaranzer, MD; Mariana Ferrer, MD; Young-Jo Kim, MD, PhD; David Williams, PhD; Sarah Bixby, MD; Eduardo Novais, MD
Boston Childrens Hospital, Boston, MA

94
4:00 PM-4:04 PM  Predictors of Total Hip Arthroplasty Following Surgical Treatment of Pediatric Developmental Hip Dysplasia
Ernest Young, MD; Paul Sousa, MD; William Shaughnessy, MD; Anthony Stans, MD; Todd Milbrandt, MD; A. Noelle Larson, MD
Mayo Clinic, Rochester, MN

4:05 PM-4:15 PM  Discussion

PERIOD 2B
4:15 PM-4:17 PM  Case 1: Persistent Dislocation, Failed Bracing
Travis Matheney, MD

4:18 PM-4:22 PM  Attempt Closed Reduction/Open Reduction Early (Early Treatment)
Andreas Roposch, MD, MSc, FRCS

4:23 PM-4:27 PM  Wait for Open Reduction/Osteotomies
Charles Price, MD

4:27 PM-4:37 PM  Discussion

4:38 PM-4:40 PM  Case 2: Residual Dysplasia with Open Triradiate Cartilage
Travis Matheney, MD

4:41 PM-4:45 PM  Intervene Now
Scott Rosenfeld, MD

4:46 PM-4:50 PM  Wait and See/PAO is Best
Eduardo Novais, MD

4:50 PM-5:00 PM  Discussion
Lower Extremity Subspecialty Day

1:30 PM-3:05 PM
Co-Chairs: Christopher Iobst, MD & Raymond Liu, MD

This session will be a mixture of scientific papers, debates and panel discussion regarding lower extremity deformity issues. The debate will attempt to answer the question of whether isolated femoral anteversion should be corrected or not. With the recent paradigm shift away from pediatric external fixation in limb deformity correction, a panel will discuss techniques to correct distal femoral deformity that do not require an external fixator post-operatively.

Period 1A
Free Papers
Moderator: Christopher Iobst, MD

95
1:30 PM-1:34 PM
Vitamin D Level of Toddlers with “Physiologic” Genu Varum is Lower than That of Control Toddlers: 1:2 Case-Control Study
Yuko Sakamoto, MD
Juntendo University Nerima Hospital, Tokyo, Japan

96
1:35 PM-1:39 PM
Recurrence of Varus Following Guided Growth for Infantile Tibia Vara
Allison Scott, MD
Shriners Hospital for Children, Houston, Houston, TX

97
1:40 PM-1:44 PM
Distal Tibial Osteotomy to Address Internal Tibial Torsion – Should the Fibula be Cut?
Emily Cidambi, MD; Megan Jeffords, MS; Christine Farnsworth, MS; Jessica Hughes, MD; Kevin Parvaresh, MD; Thomas Sullivan, MD; Burt Yaszay, MD; Eric Edmonds, MD
Rady Children’s Hospital - San Diego, San Diego, CA

1:45 PM-1:54 PM Discussion
Moderator: Raymond Liu, MD

98
1:55 PM-1:59 PM
Posterior Neurovascular Bundle Location Is Variable in Fibular Hemimelia
David Feldman, MD; Aaron Huser, DO; Troy Rand, PhD; Dror Paley, MD, FRCSC
The Paley Institute, West Palm Beach, FL

99
2:00 PM-2:04 PM
♦ Extramedullary Motorized Lengthening of the Femur in Pediatric Patients
Andrew Georgiadis, MD; Jennifer Laine, MD; Susan Novotny; Mark Dahl, MD
Gillette Children’s Specialty Healthcare, St. Paul, MN

♦ Indicates those faculty presentations in which the FDA has not cleared the drug and/or medical device for the use described (ie. the drug or medical device is being discussed for an “off label” use).
Friday, May 17, 2019, continued

100  
2:05 PM-2:09 PM  
Results of Physeal Bar Resection at a Single Pediatric Institution  
*John Birch, FRCSC; Kshitij Manchanda, MD; David Podeszwa, MD; Yassine Kanaan, MD; Chan-Hee Jo, PhD; Jennifer Rodgers, MA*  
*Texas Scottish Rite Hospital for Children, Dallas, TX*

2:10 PM-2:19 PM  
Discussion

PERIOD 1B  
DEBATE: Should Isolated Femoral Anteversion Be Corrected?  
Moderator: *Christopher Iobst, MD*

2:20 PM-2:25 PM  
Pro  
*J. Eric Gordon, MD*

2:25 PM -2:30 PM  
Con  
*Richard Davidson, MD*

2:30 PM-2:40 PM  
Discussion

CASE DISCUSSION: Surgical Approach for Distal Femoral Valgus with Shortening  
Moderator: *Raymond Liu, MD*

2:40 PM -2:45 PM  
Fixator Assisted Nailing  
*Christopher Iobst, MD*

2:45 PM -2:50 PM  
Fixator Assisted Plating and Proximal Lengthening  
*John Herzenberg, MD*

2:50 PM -2:55 PM  
Reverse Planning Method  
*Mark Dahl, MD*

2:55 PM-3:05 PM: Discussion
Neuromuscular Subspecialty Day

3:25 PM-5:00 PM
Co-Chairs: Emily Dodwell, MD & Vineeta Swaroop, MD

This session will be a mixture of scientific papers, debates and discussion regarding neuromuscular issues. The debate will focus on cerebral palsy surgery - percutaneous vs. open lengthenings. Presentations on different publications that may change your practice, operating on older teens with cerebral palsy, and a master technique on the early results of the trochanteric sparing proximal femoral resection for arthritic neuromuscular hip will also be presented.

PERIOD 2A
FREE PAPERS
Moderators: Emily Dodwell, MD & Vineeta Swaroop, MD

101
3:25 PM-3:29 PM  Impact of Hip Displacement on Health Related Quality of Life in Children with Cerebral Palsy
Unni Narayanan, FRCSC; Menal Hurow, BS; Clarissa Encisa, MPH; Ashley Ferkul, BA; Herbert Graham, MD; Kishore Mulpuri, MBBS; Michael Fehlings, MD
The Hospital for Sick Children, Toronto, Ontario, Canada

102
3:30 PM-3:34 PM  Hip Reconstruction in Children with Cerebral Palsy: What Predicts Failure?
Pooya Hosseinizadeh, MD; Arya Minaie, BA; Jaclyn Schipper, BA; Elizabeth Forsen, ST
Saint Louis Children’s Hospital, Saint Louis, MO

103
3:35 PM-3:39 PM  Additional Therapeutic Effects of Guided Growth In Spastic Hip Displacement
Chia-Hsieh Chang, MD; Huan Sheu, MD; Wen-E Yang, MD; Hsuan Kai Kao, MD
Chang Gung Memorial Hospital, Taoyuan City, Taiwan

3:40 PM-3:49 PM  Discussion

104
3:50 PM-3:54 PM  Anterior Guided Growth of the Distal Femur for Knee Flexion Contracture: Clinical, Radiographic, and Motion Analysis Results
Kemble Wang MD; Adam Rozumalski, PhD; Thomas Novacheck, MD; Andrew Georgiadis, MD
Gillette Children’s Specialty Healthcare, St. Paul, MN

105
3:55 PM-3:59 PM  A Thirteen-Year Longitudinal Outcome Study: Is Adolescent Mobility Function Preserved in Adults with Cerebral Palsy?
Freeman Miller, MD; Chris Church, PT; Nancy Lennon, PT; Faithe Kalisperis, DPT; Kristen Nicholson, PhD; Jose Salazar-Torres, PhD; John Henley, PhD; Daveda Taylor, DPT; Timothy Niiler, PhD; Julieanne Sees, DO; Michael Shrader, MD
Nemours duPont Hospital for Children, Wilmington, DE
Femoral Head Avascular Necrosis After Reconstructive Hip Surgery in Children with Cerebral Palsy
Pooya Hosseinzadeh, MD; Arya Minaie, BA; Jaclyn Schipper, BA; Elizabeth Forsen, ST
Saint Louis Children’s Hospital, Saint Louis, MO

PERIOD 2B
Moderators: Emily Dodwell, MD & Vineeta Swaroop, MD

DEBATE: Surgery in Cerebral Palsy- Percutaneous vs. Open Lengthenings

4:15 PM-4:20 PM Percutaneous
David Yngve, MD

4:21 PM-4:26 PM Open
Jon Davids, MD

4:27 PM-4:34 PM Discussion

4:35 PM-4:40 PM Publications This Year That Might Change Your Practice
Jill Larson, MD

4:41 PM-4:50 PM ♦ How/When to Operate on Older Teens/Young Adults with Cerebral Palsy
Henry (Hank) Chambers, MD

4:51 PM-5:00 PM Master Technique: Early Results of the Trochanteric Sparing Proximal Femoral Resection for Arthritic Neuromuscular Hip
Jonathan Schoenecker, MD, PhD

♦ Indicates those faculty presentations in which the FDA has not cleared the drug and/or medical device for the use described (ie. the drug or medical device is being discussed for an “off label” use).
Spine Subspecialty Day

1:30 PM-5:00 PM  
Co-Chairs: Lindsay Andras, MD & Ron El-Hawary, MD

**OPTIMIZING SPINAL DEFORMITY CARE: A DEEPER DIVE INTO BUILDING A SUCCESSFUL TEAM**  
As the importance of a collaborative effort in and out of the operating room has become apparent for patient safety and improving outcomes, we will look at ways to build a successful spine team. Participants can expect to gain pearls from some of the nation's top centers that will encourage dialogue with their own team members.

**PERIOD 1A**  
Moderators: Lindsay Andras, MD & Ron El-Hawary, MD

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| 1:30 PM-1:34 PM | How to Create a Positive Culture: From CEO to Circulators  
David Skaggs, MD, MMM                                           |
| 1:34 PM-1:38 PM | Secrets to Successful Anesthesia for Complex Spinal Deformity  
John (Jack) Flynn, MD                                           |
| 1:38 PM-1:42 PM | What Makes My Neuromonitoring Team Great  
Suken Shah, MD                                                  |
| 1:42 PM-1:46 PM | Tips from My Star Scrub Technician  
Brandon Ramo, MD                                                 |
| 1:46 PM-1:50 PM | Reining in the Radiation: How to Protect Your Patients and Staff with or without an O-arm  
A. Noelle Larson, MD                                             |
| 1:50 PM-1:55 PM | Discussion                                                                                      |
| 1:55 PM-1:59 PM | Safely Improving Speed: The 5 Biggest Factors That Have Made My Team Faster  
Peter Newton, MD                                                 |
| 1:59 PM-2:03 PM | Managing Pain and Expectations for an Accelerated Discharge-The Team Approach  
Nicholas Fletcher, MD                                            |
| 2:03 PM-2:07 PM | Why My PA is Critical to Patient Pre-and Postop Care  
Michael Glotzbecker, MD                                          |
| 2:07 PM-2:11 PM | Cutting Costs Not Corners: How to Lower Expenses without Sacrificing Care  
Laurel Blakemore, MD                                             |
| 2:11 PM-2:15 PM | Discussion                                                                                      |

♦ Indicates those faculty presentations in which the FDA has not cleared the drug and/or medical device for the use described (i.e. the drug or medical device is being discussed for an “off label” use).
PERIOD 1B
FREE PAPERS
Moderators: Patrick Cahill, MD & Amy McIntosh, MD

107 2:16 PM-2:20 PM  Accelerated Discharge Pathway Resulted in 50% Decrease in Length of Stay, Lower Pain at Discharge, and Earlier Return to School than a Traditional Discharge Pathway Following Posterior Spinal Fusion for Adolescent Idiopathic Scoliosis: A Prospective Study
Nicholas Fletcher, MD; Joshua Murphy, MD; Hilary Harris, BS; Jack Goldberg, BS; Thomas Austin, MD; Austin Yu, BS; Robert Bruce, MD; Michael Schmitz, MD; Dennis Devito, MD; Jorge Fabregas, MD; Firoz Miyanji, MD
Children’s Healthcare of Atlanta, Atlanta, GA

Jason Anari, MD; Aaron Tatad, MPH; Patrick Cahill, MD; John (Jack) Flynn, MD; Harms Study Group
Children’s Hospital of Philadelphia, Philadelphia, PA

109 2:26 PM-2:30 PM  It’s Not Just About the Frontal Plane: Sagittal Parameters Impact Curve Progression in AIS Patients undergoing Brace Treatment
Hiroko Matsumoto MA; Shay Warren MD; Megan Campbell BA; John Tunney; Nicole Bainton NP; Joshua Hyman MD; Benjamin Roye MD; David Roye MD; Michael Vitale, MD, MPH
Columbia University Medical Center, New York, NY

2:31 PM-2:40 PM  Discussion

110 2:41 PM-2:45 PM  Curve Flexibility is a Significant Predictor of Surgical Morbidity for Patients with Cerebral Palsy and Severe Scoliosis
Jessica Hughes, MD; Burt Yaszay, MD; Tracey Bastrom, MA; Carrie Bartley, MA; Paul Sponseller, MD; Patrick Cahill, MD; Mark Abel, MD; Suken Shah, MD; Firoz Miyanji, MD; Amer Samdani, MD; Peter Newton, MD; Harms Study Group
Alfred I Dupont Hosp for Children, Wilmington, DE

111 2:46 PM-2:50 PM  Of Cerebral Palsy Patients Fused Short of the Pelvis, What Predicts Good Radiographic Results?
Francisco Eguia, BA; Brian Sullivan, MD; Patrick Cahill, MD; David Spiegel, MD; Keith Baldwin, MD; Suken Shah, MD; Burt Yaszay, MD; Peter Newton, MD; Paul Sponseller, MD
Johns Hopkins Hospital, Baltimore, MD
Friday, May 17, 2019, continued

112
2:51 PM-2:55 PM  ♦ Implanted Reservoir for Intrathecal Administration of Nusinersen (Spinraza™) in Patients with Spinal Muscular Atrophy and Posterior Spinal Fusions
Burt Yaszay, MD; Chamindra Konersman, MD; Emily Ewing, MA; Andrew Skalsky, MD
Rady Children’s Hospital, San Diego, CA

2:56 PM-3:05 PM  Discussion

3:05 PM-3:25 PM  Break

EARLY ONSET SCOLIOSIS:
TWEENERS (8-10 YEAR OLDS WITH EOS)
There is equipoise as to the ideal treatment for older patients with early onset scoliosis.

PERIOD 2A
Moderators: Firoz Miyanji, MD & Jeffrey Sawyer, MD

3:25 PM-3:30 PM  Setting the Stage
Jeffrey Sawyer, MD

3:30 PM-3:35 PM  Non-Surgical Treatment
Lori Karol, MD

3:35 PM-3:40 PM  Growth Friendly Treatment
Michael Vitale, MD, MPH

3:40 PM-3:45 PM  ♦ Vertebral Body Stapling
Patrick Cahill, MD

3:45 PM-3:50 PM  Vertebral Body Tethering
Stefan Parent, MD

3:50 PM-3:55 PM  Spinal Fusion
Jaime Gómez, MD

3:55 PM-4:10 PM  Discussion

♦ Indicates those faculty presentations in which the FDA has not cleared the drug and/or medical device for the use described (i.e. the drug or medical device is being discussed for an “off label” use).
PERIOD 2B
FREE PAPERS
Moderators: Amer Samdani, MD & John Smith, MD

113
4:11 PM-4:15 PM
What is the Cost of a “Cast Holiday” in Treating Children with Early Onset Scoliosis (EOS) with Elongation Derotation Flexion (EDF, “Mehta”) Casting?
Graham Fedorak, MD; Hannah Dreksler, BS; Alexandra Nielson, BS; John Heflin, MD; Bruce MacWilliams; Jacques D’Astous, MD
Shriners Hospitals for Children - Salt Lake City, Salt Lake City, UT

114
4:16 PM-4:20 PM
Relationship Between Body Mass, Rod Diameter and Rod Fracture in Magnetically Controlled Growing Rods
Benjamin Roye, MD; Gerard Marciano; Megan Campbell, BA; Hiroko Matsumoto, MA; Klane White, MD; Jeffrey Sawyer, MD; John Smith, MD; Scott Luhmann, MD; Peter Sturm, MD; Paul Sponseller, MD; Michael Vitale, MD, MPH; Children’s Spine Study Group; Growing Spine Study Group
Columbia University Medical Center, New York, NY

115
4:21 PM-4:25 PM
Correlation Between Surgical Site Infection and Classification of Early Onset Scoliosis (C-EOS) in Patients Managed by Rib-based Distraction Instrumentation (VEPTR)
Patrick J. Cahill, MD; Mahmoud A. Mahmoud, MD; Elle M. MacAlpine, BA; Aaron Tatad, MPH; John (Jack) M. Flynn, MD
Children’s Hospital of Philadelphia, Philadelphia, PA

4:26 PM-4:35 PM Discussion

116
4:36 PM-4:40 PM
Limited Sequence MRI’s for Early Onset Scoliosis Patients Detected 100% of Neural Axis Abnormalities While Reducing MRI time by 68%
Rajan Murgai, BS; Benita Tamrazi, MD; Kenneth Illingworth, MD; David Skaggs, MD, MMM; Lindsay Andras, MD
Children’s Hospital Los Angeles, Los Angeles, CA

117
4:41 PM-4:45 PM
Intraspinal MRI Abnormalities in Early-Onset Scoliosis – Rates Across a Global Cohort
Brendan Williams, MD; Anna McClung, RN; Suken Shah, MD; Laurel Blakemore, MD; Jeff Pawelek; Paul Sponseller, MD; Stefan Parent, MD; John Emans, MD; Peter Sturm, MD; Burt Yaszay, MD; Behrooz Akbarnia, MD; Growing Spine Study Group
University of Florida at Gainesville, Gainesville, FL

118
4:46 PM-4:50 PM
One and Done Surgical Fusion for Juvenile Scoliosis: Leads to Equivalent PROs at Five Years Despite High Rates of Adding-On
Brandon Ramo, MD; Nathan Boes, MD; Dong-Phuong Tran, MS; David Thornberg
Texas Scottish Rite Hospital for Children, Dallas, TX

4:51 PM-5:00 PM Discussion
### Sports Subspecialty Day

1:30 PM-5:00 PM  
Co-Chairs: Cordelia Carter, MD & Benton Heyworth, MD

#### PERIOD 1A  
LOWER EXTREMITY SPORTS INJURIES/CONDITIONS

#### FREE PAPERS  
Moderator: Benton Heyworth, MD

| Session | Title                                                                 | Authors                                                                                     | Institution                                      |
|---------|-----------------------------------------------------------------------|--------------------------------------------------------------------------------------------|
| 119     | Four-in-One Extensor Realignment Procedure for the Treatment of Obligatory or Fixed, Lateral Patellar Instability | David Deliberato, DO; Oussama Abousamra, MD; Satbir Singh, BS; Kevin Klingele, MD          | Nationwide Children's Hospital, Columbus, OH     |
| 120     | Predicting Recurrent Patellar Instability with Novel MRI Measurements of Extensor Mechanism Containment  | Daniel Weltsch, MD; Calvin Chan; John Urwin, BS; R. Justin Mistovich, MD; Christopher Gajewski, BA; Peter Fabricant, MD; J. Todd Lawrence, MD, PhD | Children's Hospital of Philadelphia, Philadelphia, PA |
| 121     | The Utility of Stability and Tear Location in a Classification System for Discoid Meniscus Surgical Planning  | Brian Yang, BA; Catherine Logan, MD; Kathryn Williams, MS; Frances Tepolt, MD; Nikolaos Paschos, MD; Mininder Kocher, MD, MPH | Boston Children's Hospital, Boston, MA           |
| 122     | Race Independently Predicts Unsuccessful Healing of Osteochondritis Dissecans in the Pediatric Knee          | Neeraj Patel, MD; Jigar Gandhi; Andrew Helber, BA; Kevin Shea, MD; Theodore Ganley, MD       | Children's Hospital of Philadelphia, Philadelphia, PA |
| 123     | Meniscus Root Tears in Children and Adolescents                                                                 | Samuel Willimon, MD; Michael Busch, MD; Melissa Christino, MD; Crystal Perkins, MD          | Children's Healthcare of Atlanta, Atlanta, GA    |

Friday, May 17, 2019, continued

* may be used for external trauma-related CMEs.
PERIOD 1B
LE (HIP/KNEE/ANKLE) – CASE-BASED CONTROVERSIES

The invited speakers will debate different positions on some of the most controversial and common upper extremity conditions in pediatric sports medicine. Specifically, debates will include when to pursue non-operative treatment versus joint preservation technique in femoroacetabular impingement (FAI), what the best surgical treatment for unstable OCD of the patella, and what techniques offer the most successful outcomes for talar OCD.

FAI
6 months hip pain in adolescent soccer player with mild cam lesion w/ ‘possible small labrum tear’ on MR arthrogram

2:20 PM-2:25 PM  
Nonop/Injection/PT  
Andrew Pennock, MD

2:25 PM-2:30 PM  
Arthroscopic Osteoplasty and Labrum Repair  
Yi-Meng Yen, MD

2:30 PM-2:35 PM  
Discussion

Patellar OCD
6 weeks of knee pain in skeletally mature baseball player, worse with squatting, with 12x10x8mm unstable OCD with multiple chondral fissures

2:35 PM-2:40 PM  
Drilling and Fixation  
Jennifer Beck, MD

2:40 PM-2:45 PM  
Chondroplasty/Debridement and Drilling/Microfracture/Marrow Stimulation  
Gregory Schmale, MD

2:45 PM-2:50 PM  
Discussion
Talar OCD
Pre-adolescent female gymnast with non-healing 1x1cm posteromedial talar dome stable OCD despite 3 months crutches and boot

2:50 PM-2:55 PM  
**Trans-Articular Drilling**  
Jeremy Frank, MD

2:55 PM-3:00 PM  
**Retro-Articular Drilling and Bone Grafting**  
Shital Parikh, MD

3:00 PM-3:05 PM  
Discussion

3:05 PM-3:25 PM  
Break

PERIOD 2A  
UPPER EXTREMITY SPORTS INJURIES/CONDITIONS  
FREE PAPERS
Moderator: Cordelia Carter, MD

125  
3:25 PM-3:29 PM  
**Sports Specialization and Incidence of Shoulder Pain in American Youth**  
Peter Fabricant, MD; Madison Heath, BS; Jonathan Schachne, MD; Shevaun Doyle, MD; Roger Widmann, MD; Daniel Green, MD  
Hospital for Special Surgery, New York, NY

126  
3:30 PM-3:34 PM  
**Normal Glenoid Ossification in Pediatric and Adolescent Shoulders Mimics Bankart lesions: An MRI-Based Study**  
Peter Fabricant, MD; Harry Greditzer, MD; Joash Suryavanshi, BA; Sreetha Sidharthan, BS; Madison Heath, BS; Daniel Green, MD  
Hospital for Special Surgery, New York, NY

127  
3:35 PM-3:39 PM  
**Risk Factors for Recurrent Anterior Shoulder Instability after Arthroscopic Stabilization in Adolescent Athletes**  
Timothy Cheng, MD; Eric Edmonds, MD; Tracey Bastrom, MA; Andrew Pennock, MD  
Rady Children’s Hospital, San Diego, CA

3:40 PM-3:49 PM  
Discussion

128  
3:50 PM-3:54 PM  
**Posterior Shoulder Instability: Surgical Outcomes and Risk of Failure in Adolescence**  
Alicia Asturias, BA; Tracey Bastrom, MA; Andrew Pennock, MD; Eric Edmonds, MD  
Rady Children’s Hospital, San Diego, CA
Progressive Elbow MRI Abnormalities in Little League Baseball Players are Common: A 3-Year Longitudinal Evaluation
Joshua Holt, MD; Philip Henry Stearns NP; Tracey Bastrom MA; M. Morgan Dennis; Jerry Dwek, BS; Andrew Pennock, MD
Rady Children’s Hospital, San Diego, CA

Early Functional Outcomes and Radiographic Healing after Autologous Osteochondral Grafting for Osteochondritis Dissecans of the Elbow: Results from a Prospective Registry
Kemble Wang, MD; Kathryn Williams, MS; Katherine Eisenberg, BS; Donald Bae, MD
Boston Children’s Hospital, Boston, MA

Discussion

PERIOD 2B
UE (SHOULDER) – CASE-BASED CONTROVERSIES
Experts in shoulder surgery will provide their recommended approaches to two of the most frequent presentations in adolescent sports medicine: first time shoulder dislocation for a contact athlete and multidirectional instability with recurrent subluxations affecting activities of daily life. Debate will be focused on surgical indications and the techniques that minimize recurrence while allowing full return to activities, including competitive sports.

Traumatic Unidirectional Shoulder Instability: 1st time traumatic anterior GH dislocation in adolescent male football player

Nonop/PT/Bracing
Matthew Schmitz, MD

Op – Arthroscopic Bankart Repair
Paul Saluan, MD

Op – Open Bankart Repair
Henry Ellis, MD

Discussion

Multidirectional Instability: multiple subluxations, pain despite 6mo PT in adolescent female recreational athlete with ligamentous laxity

Nonop/PT
Donald Bae, MD

Op – Arthroscopic Capsulorrhaphy
Michael Busch, MD

* may be used for external trauma-related CMEs.
Friday, May 17, 2019, continued

Op – Open Inferior Capsular Shift
Mininder Kocher, MD, MPH

Discussion

Trauma Subspecialty Day

1:30 PM-5:00 PM
Co-Chairs: Andrew Howard, MD & Mark Sinclair, MD

This session will be a mixture of scientific papers, debates and case discussions regarding upper and lower extremity trauma. The debates and case discussions will specifically address distal radius, femoral and tibial shaft fractures where the patient, either due to age, size, or injury pattern, is in between pediatric and adult fracture treatment techniques. Through our (lively) discussion, we will attempt to decide the best course of treatment for these “tweener” cases. Audience participation will be encouraged.

Upper Extremity Trauma

Period 1A
Free Papers

Moderator: Andrew Howard, MD

131
1:30 PM-1:34 PM
Improving Quality in the Treatment of Pediatric Forearm Fractures: Minimizing the Need for Repeat Intervention
Todd Osterbur, PA-C; Kevin Neal, MD; Gary Kiebzak, PhD
Nemours, Jacksonville, FL

132
1:35 PM-1:39 PM
Post traumatic Growth Arrests of the Distal Radius in children and Adolescents
Patrick Tohmé, MD; Eric Desautels; Marie-Lyne Nault, MD; Nathalie Jourdain, MA; Marie Beausejour, PhD; Raphaëlle Blondin-Gravel, MSc; Constantin Stanciu; Mathilde Hupin, MD
CHU Ste-Justine, Montreal, Quebec, Canada

133
1:40 PM-1:44 PM
Vitamin D Status in Children with Forearm Fractures: Is Deficiency Associated with Fracture Severity?
Pooya Hosseinzadeh, MD; Gary Kiebzak, PhD; Charles Goldfarb, MD
Baptist Health South Florida, Miami, Florida

1:45 PM-1:54 PM
Discussion

134
1:55 PM-1:59 PM
Prospective Comparison of Operative versus Non-operative Treatment of Type IIA Supracondylar Humerus Fractures
Julia Sanders, MD; Andrew Pennock, MD; Eric Edmonds, MD; Olivia Hughes, BS; M. Morgan Dennis, BS; Christina Paik, PA-C; Philip Stearns, NP; Vidyadhar Upasani, MD
Rady Children’s Hospital, San Diego, CA

* may be used for external trauma-related CMEs.
135 2:00 PM-2:04 PM  Minimally Displaced Humeral Lateral Condyle Fractures: Is Prophylactic Stabilization Superior To Surgery After Displacement?  
_Dustin Greenhill, MD; Shawn Funk, MD; Marilyn Elliott; Chan-Hee Jo, PhD; Brandon Ramo, MD  
_Texas Scottish Rite Hospital for Children, Dallas, TX_

136 2:05 PM-2:09 PM  Pediatric Type II Supracondylar Humerus Fractures: Factors Associated with Successful Closed Reduction and Immobilization  
_Patrick Ojeaga; Christine Ho, MD; Charles Wyatt, NP; Philip Wilson, MD; Henry Ellis, MD  
_Texas Scottish Rite Hospital for Children, Dallas, TX_

2:10 PM-2:19 PM  Discussion

PERIOD 1B 2:20 PM-2:35 PM  Medial Epicondyle Factors: ORIF or Treat Closed?  
_Colin May, MD_

2:35 PM-2:50 PM  Open Forearm/Wrist Fractures: Emergency Department Irrigation vs. Formal Operative Debridement  
_Joseph (Jay) Janicki, MD_

2:50 PM-3:05 PM  Displaced Distal Radius Fractures: Reduce or Not Reduce? Pin or Not Pin?  
_Walter Truong, MD_

3:05 PM-3:25 PM  Break

LOWER EXTREMITY TRAUMA PERIOD 2A FREE PAPERS

Moderator: Mark Sinclair, MD

137 3:25 PM-3:29 PM  Open Reduction of Closed Pediatric Tibia Fractures Treated with Intramedullary Stabilization Does Not Increase Risk of Post-Operative Complications  
_Todd Blumberg, MD; Erik Magnusson, MD; Daniel Weltsch, MD; Keith Baldwin, MD  
_Seattle Children’s Hospital, Seattle, WA_

138 3:30 PM-3:34 PM  Treatment Outcomes of Displaced Adolescent Distal Third Tibia Fractures: Can We Do Better?  
_Wendy Ramalingam MD; Patrick Carry, MS; Christopher Brazell, BA; Ryan Calkins, BS; Sara Linza-Moscari; Jason Stoneback, MD; Nancy Miller, MD  
_Children’s Hospital of Colorado, Aurora, CO_
Secondary Surgeries Following Major Lower Extremity Amputations in the Pediatric Population
Christopher Joyce, MD; Jane Gralla, PhD; Ryan Calkins, BS; Anastasiya Trizno, BS; Colin Reisenauer, BS; Jason Stoneback, MD
University of Colorado, Aurora, CO

Discussion

Duration of Spica Cast Treatment for Childhood Femur Fracture
R. Dale Blasier, MD; Stacy Calloway, MD; Laura Meyer, RN; John Cale, BS; Katherine Travis, NP
University of Arkansas for Medical Sciences, Little Rock, AR

Does Obesity Increase the Complication Rate in Spica Casting for Pediatric Femur Fractures?
Robin Wolschendorf; Daniel Havlichek; Meghan Hill, BS; Amil Jayasuriya; Gerald Lilly, BS; Philip Nowicki, MD
Helen DeVos Children's Hospital, Grand Rapids, MI

Achieving Consensus on the Treatment of Pediatric Femoral Shaft Fractures
Matthew Oetgen, MD; Benjamin Martin, MD; Nicholas Fletcher, MD; Jeffrey Sawyer, MD
Children's National Health System, Washington, DC

Discussion

Pediatric Patients with Adult Trauma: Treating the “Tweener” Cases: Introduction and Presentation of the Femoral Tweener Case
Mark Sinclair, MD

Treatment of Femoral Tweener Case with IM Fixation
Eric Eisner, MD

Treatment of Femoral Tweener Case with Submuscular Plating
Paul Sponseller, MD

Audience Vote/Discussion

Case Follow Up
Mark Sinclair, MD
Friday, May 17, 2019, continued

4:40 PM-4:42 PM  Introduction and Presentation of the Tibial Tweener Case  
Mark Sinclair, MD

4:43 PM-4:48 PM  Treatment of Tibial Tweener Case with Rigid IM Nail  
Brian Brighton, MD

4:49 PM-4:54 PM  Treatment of Tibial Tweener Case with Physeal Sparring Technique  
Mark Lee, MD

4:54 PM-4:56 PM  Audience Vote/Discussion

4:56 PM-5:00 PM  Case Follow Up  
Mark Sinclair, MD

may be used for external trauma-related CMEs.

CLOSING RECEPTION AT NASCAR HALL OF FAME

LOCATION:  400 E. MLK Jr. Blvd.  
Charlotte

DATE:  May 17, 2019

TIME:  7:30 PM – 11:00 PM

7:30 PM   Doors Open
7:30 PM-8:00 PM  Cocktails
8:00 PM-9:30 PM  Dinner
9:30 PM-11:00 PM  DJ and Karaoke

The Friday Closing Reception will be held at the NASCAR Hall of Fame, which is conveniently located in Uptown Charlotte, across the street from the Convention Center. The NASCAR Hall of Fame is an interactive entertainment attraction honoring the history and heritage of NASCAR. The high-tech venue, designed to educate and entertain race fans and non-fans alike through its artifacts, hands-on exhibits, state-of-the-art theater, and the Hall of Honor. The goal of the facility is to honor NASCAR icons and create an enduring tribute to the drivers, crew members, team owners and others that have impacted the sport in the past, present and future.

Attire: Dress for a day at the NASCAR track! Casual attire including casual collared shirts, tops, jeans, cotton dresses, and baseball hats are encouraged.

*Included with attendee registration

Accompanying Persons must be registered to attend.
**Saturday, May 18**

<table>
<thead>
<tr>
<th>Time</th>
<th>Session Title</th>
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| 8:00 AM–8:05 AM | Welcome Remarks  
QSVI Award Paper presented by Peter Armstrong, MD  
Trauma Paper Award/Best Paper Awards |
| 8:06 AM-8:10 AM | **Prediction and Classification of Radial Head Subluxation and Forearm Deformity in MHE**  
*David Feldman, MD; Jaroslaw Deszczynski; Troy Rand, PhD; Dror Paley, MD, FRCSC; Tomasz Albrewczyński, MD*  
The Paley Institute, West Palm Beach, FL |
| 8:11 AM-8:15 AM | **Patient-reported Outcomes in congenital Radioulnar Synostosis: Does Forearm Position Matter?**  
*Donald Bae, MD; Jennifer Kallini, BS; David Williams, PhD; Lindley Wall, MD; Julie Samora, MD; Mary Manske, MD; Suzanne Steinman, MD; Deborah Bohn, MD; Douglas Hutchinson, MD*  
Boston Children’s Hospital, Boston, MA |
| 8:16 AM-8:20 AM | **Predicting Radial Head Subluxation in Multiple Hereditary Exostoses (MHE): the Impact of Ulnar Variance**  
*Blake Meza, BS; Nakul Talathi, BS; Apurva Shah, MD, MBA; Alexandre Arkader, MD*  
Children’s Hospital of Philadelphia, Philadelphia, PA |
| 8:21 AM-8:29 AM | Discussion |
| 8:30 AM-8:34 AM | **Cross Union for Congenital Pseudarthrosis of the Tibia: 100% Union; No Refractures**  
*Dror Paley, MD, FRCSC; Anna Hell, MD; David Feldman, MD*  
Paley Orthopedic and Spine Institute, West Palm Beach, FL |
| 8:35 AM-8:39 AM | **Ankle Deformity in children with congenital Pseudoarthrosis of the Fibula**  
*Carley Vuillermin, MBBS; Katherine Eisenberg, BS; Collin May, MD; James Kasser, MD*  
Boston Children’s Hospital, Boston, MA |
| 8:40 AM-8:44 AM | **Gait Analysis in Children with Proximal Femoral Focal Deficiency**  
*Lorena Floccari, MD; Kelly Jeans, MSc; John (Tony) Herring, MD; Charles Johnston, MD; Lori Karol, MD*  
Texas Scottish Rite Hospital, Dallas, TX |

♦ Indicates those faculty presentations in which the FDA has not cleared the drug and/or medical device for the use described (i.e. the drug or medical device is being discussed for an “off label” use).
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<th>Time</th>
<th>Session</th>
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<tbody>
<tr>
<td>8:45 AM-8:53 AM</td>
<td>Discussion</td>
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</table>
| 8:54 AM-8:58 AM | **149**  
Systematic Isolation of Key Parameters for Estimating Skeletal Maturity on Knee Radiographs  
Alex Benedick, MD; Derrick Knapik, MD; Dana Duren, PhD; James Sanders, MD; Daniel Cooperman, MD; Raymond Liu, MD  
Rainbow Babies and Children’s Hospital/Case Western Reserve University, Cleveland, OH |
| 8:59 AM-9:03 AM | **150**  
Cumulative Radiation Exposure for Low Dose Slot-Scanning Imaging (EOS) Versus Scanogram and Hip-to-Ankle Radiograph  
Anthony Stans, MD; Fady Baky; Todd Milbrandt, MD; William Shaughnessy, MD; Beth Schueller; A. Noelle Larson, MD  
Mayo Clinic, Rochester, MN |
| 9:04 AM-9:08 AM | **151**  
How Accurate Is the Multiplier Method in Predicting the Timing of Angular Correction after Hemiepiphysiodesis?  
John Herzenberg, MD; Hady Eltayeby, MBChB; Chukwuweike Gwam, MD  
International Center for Limb Lengthening, Sinai Hospital of Baltimore, Baltimore, MD |
| 9:09 AM-9:17 AM | Discussion                                                             |
| 9:18 AM-9:22 AM | **152**  
Radiographic Progression of Hip Disease in Morquio Syndrome Type A: A Natural History Study  
Klane White, MD; Yi-Ju Li, MD; Eveline Langereis, MD; I Jung Feng  
Seattle Children’s Hospital, Seattle, WA |
| 9:23 AM-9:27 AM | **153**  
Extremity Surgery in Achondroplasia: A Multicenter Study  
Nickolas Nahm, MD; Michael Bober; William Mackenzie, MD; Adekemi Alade, MBBS, MPH; Syed Hashmi, MD; Jacqueline Hecht, PhD; Janet Legare, MD; Mary Little; Peggy Modaff, MD; Richard Pauli; David Rodriguez- Buritica, MD; Elena Serna, MD; Cory Smid, MD; Julie Hoover Fong, MD  
Nemours - Alfred I duPont Hospital for Children, Wilmington, DE |
| 9:28 AM-9:32 AM | **154**  
Ultrasound Guided Percutaneous Bipolar Release of Sternocleidomastoid for Congenital Muscular Torticollis – A Retrospective Study of 22 Cases  
Bibi Dhanan; Taral Nagda, MD  
Institute of Paediatric Orthopaedic Disorders, Mumbai, Maharashtra, India |
<p>| 9:33 AM-9:41 AM | Discussion                                                             |</p>
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<th>Session</th>
<th>Time</th>
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<tbody>
<tr>
<td>155</td>
<td>9:42 AM-9:46 AM</td>
<td>Characteristics of Olecranon Fractures in Osteogenesis Imperfecta&lt;br&gt;Samantha Tayne, MD; Peter Smith, MD&lt;br&gt;Shriners Hospitals for Children - Chicago, Chicago, IL</td>
</tr>
<tr>
<td>156</td>
<td>9:47 AM-9:51 AM</td>
<td>Femoral Fassier-Duval Rodding in Osteogenesis Imperfecta:&lt;br&gt;Long Term Results in 27 Patients with a Minimum 10 Year Follow Up&lt;br&gt;Francois Fassier, MD; Abdullah Addar, MBBS; Fan Jiang; Yousef Marwan, MD; Nizar Algarni, MD; Kathleen Montpetit, OT; Reggie Hamdy, MD&lt;br&gt;Shriners Hospitals for Children - Canada, Montreal, Quebec, Canada</td>
</tr>
<tr>
<td>157</td>
<td>9:52 AM-9:56 AM</td>
<td>Bone Density and Hardware Failure in Pediatrics&lt;br&gt;Althea Perez; Mallory Rowan; Amanda Whitaker, MD&lt;br&gt;Nationwide Children’s Hospital, Columbus, OH</td>
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<td></td>
<td>9:57 AM-10:05 AM</td>
<td>Discussion</td>
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<td>10:06 AM-10:26 AM</td>
<td>Break</td>
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**Hip General Session**

Moderator: Ernest Sink, MD<br>eModerator: Rachel Goldstein, MD<br>Presider: Kishore Mulpuri, MD

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<th>Session</th>
<th>Time</th>
<th>Title</th>
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<tbody>
<tr>
<td>158</td>
<td>10:27 AM-10:31 AM</td>
<td>Should I Plan to Open? Predicting the Need for Open vs. Closed Reduction in the Surgical Treatment of Developmental Dysplasia of the Hip&lt;br&gt;Nakul Talathi, BS; Arianna Trionfo, MD; Neeraj Patel, MD; Vidyadhar Upasani, MD; Travis Matheney, MD; Kishore Mulpuri, MBBS; Wudbhav (Woody) Sankar, MD&lt;br&gt;Children’s Hospital of Philadelphia, Philadelphia, PA</td>
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<td>159</td>
<td>10:32 AM-10:36 AM</td>
<td>Predictors of Avascular Necrosis of the Femoral Head Following Closed or Open Reduction in the Treatment of Developmental Dysplasia of the Hip&lt;br&gt;Emily Schaeffer, PhD; Jeffrey Bone, MSc; Wudbhav (Woody) Sankar, MD; Travis Matheney, MD; Kishore Mulpuri, MBBS&lt;br&gt;BC Children’s Hospital, Vancouver, BC, Canada</td>
</tr>
<tr>
<td>160</td>
<td>10:37 AM-10:41 AM</td>
<td>Evolution of Concentric Reduction after Closed Reduction in Developmental Dysplasia of the Hip: A Prospective Series of Magnetic Resonance Imaging Studies&lt;br&gt;Weizheng Zhou, MD; Lianyong Li&lt;br&gt;Shenjing Hospital of China Medical University, Shenyang, Liaoning Province, China, People’s Republic of China</td>
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<th>Session</th>
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<th>Presenters</th>
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<tr>
<td>10:42 AM-10:50 AM</td>
<td>Discussion</td>
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<tr>
<td>10:51 AM-10:55 AM</td>
<td>161</td>
<td>The Natural History of Unilateral Versus Bilateral Immature Hips – What are the Factors that Lead to Persistently Abnormal Exams?</td>
<td>Katherine Schroeder, MD; Ashley Startzman, DO; Kolby Buckner, PA; Hayley Peoples, MPH; Jaclyn Hill, MD</td>
<td>Texas Children's Hospital, Houston, TX</td>
</tr>
<tr>
<td>10:56 AM-11:00 AM</td>
<td>162</td>
<td>Significance of Asymmetry of Groin/Thigh Creases in Developmental Dysplasia of the Hip Revisited: A Myth or a Fact?</td>
<td>Hakan Omeroglu, MD; Suleyman Tatlici, MD; Nusret Kose</td>
<td>TOBB University of Economics and Technology, Sogutozu, Ankara, Turkey</td>
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<tr>
<td>11:01 AM-11:05 AM</td>
<td>163</td>
<td>The Duration of Pavlik Harness Wear Following Successful Reduction of Dislocated Hips Does Not Seem to Play a Role in Determining Radiographic Dysplasia at Two Years</td>
<td>Daniel Sucato, MD, MS; Hannah Worrall, MPH; Chan-Hee Jo, PhD</td>
<td>Texas Scottish Rite Hospital, Dallas, TX</td>
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<td>11:06 AM-11:14 AM</td>
<td>Discussion</td>
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<td>11:15 AM-11:19 AM</td>
<td>164</td>
<td>Comparison of Staged Vs. Single Event Timing of Bilateral Hip Surgery in Children with Spastic Quadriplegic Cerebral Palsy</td>
<td>Craig Louer, MD; Jason Nunez, BA; James Bomar; Henry (Hank) Chambers, MD; Vidyadhar Upasani, MD</td>
<td>Rady Children's Hospital, San Diego, San Diego, CA</td>
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<tr>
<td>11:20 AM-11:24 AM</td>
<td>165</td>
<td>Prolonged Non-Weightbearing treatment Decreases Femoral Head Deformity in Legg-Calve-Perthes Disease</td>
<td>Jeffrey Peck, MD; Dustin Greenhill, MD; Molly McGuire; Harry Kim, MD</td>
<td>Texas Scottish Rite Hospital for Children, Dallas, TX</td>
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<tr>
<td>11:25 AM-11:29 AM</td>
<td>166</td>
<td>Does Surgical Containment of Hips in Patients with Epiphyseal Dysplasia Impact Clinical Outcomes?</td>
<td>Vidyadhar Upasani, MD; Amelia Lindgren, MD; Dennis Wenger, MD; James Bomar, MPH</td>
<td>Rady Children's Hospital, San Diego, San Diego, CA</td>
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<td>11:30 AM-11:38 AM</td>
<td>Discussion</td>
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<td>167</td>
<td>11:39 AM-11:43 AM</td>
<td>Relative Contribution of Epiphyseal Tubercle and Peripheral Cupping to Capital Femoral Epiphysis Stability: New Insights to the Pathogenesis of SCFE and Cam-FAI Morphology</td>
<td>Eduardo Novais, MD; Daniel Maranho; Ata Kiapour, PhD; Ali Kiapour, PhD; Young-Jo Kim, MD, PhD</td>
<td>Boston Children’s Hospital, Boston, MA</td>
</tr>
<tr>
<td>168</td>
<td>11:44 AM-11:48 AM</td>
<td>Comparison of Prophylactic In-situ Screw Fixation Versus Observation of the Asymptomatic Contralateral Hip in Slipped Capital Femoral Epiphysis (SCFE)</td>
<td>Brian Haus, MD; Lauren Agatstein, MA; Akash Patel, BS; Alton Skaggs BS; Jennette Boakes, MD</td>
<td>Shriners Hospitals for Children Northern California, Sacramento, CA</td>
</tr>
<tr>
<td>169</td>
<td>11:49 AM-11:53 AM</td>
<td>Capital Femoral Epiphyseal Cupping and Extension May Be Protective in Slipped Capital Femoral Epiphysis: A Multicenter Matching Cohort Study</td>
<td>William Morris, MD; Raymond Liu, MD; Danielle Marshall, BA; Daniel Maranho; Roya Dastjerdi; Eduardo Novais, MD</td>
<td>Boston Children’s Hospital, Boston, MA</td>
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<td>11:54 AM-12:04 PM</td>
<td>Discussion</td>
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VIDEO ABSTRACTS

Video Abstract 1
Thumb Duplication: Reconstruction of a Wassel IV Deformity
David Westberry, MD; Ashley Carpenter, BS
Shriners Hospital for Children: Greenville, Greenville, SC

Video Abstract 2
Magnetic, Motorized Femoral Lengthening Nail: Antegrade Piriformis Insertion
John Herzenberg, MD
Sinai Hospital of Baltimore, Baltimore, MD

Video Abstract 3
Posterior Iliac Osteotomy for Bladder Exstrophy
Dana Weiss, MD; Douglas Canning, MD; Erin Steffe; Bernard David Horn, MD
The Children’s Hospital of Philadelphia, Philadelphia PA

Video Abstract 4
Pediatric ACL Reconstruction Using 7-Stranded Autologous Hamstring
Benjamin Forst, PA-C; Anju Thomas, PA; Dennis Hiller; Julien Aoyama, BA; Theodore Ganley, MD
The Children’s Hospital of Philadelphia, Philadelphia, PA

Video Abstract 5
Application of Mehta Cast Technique
Joseph Khoury, MD; Jacob Cox, MD; Rafael Serrano, MD
Shriners’ Hospital for Children, Tampa, FL

Video Abstract 6
Accessory Navicular: Evaluation and Operative Management
Philip Nowicki, MD; Grant Mathison, MD
Helen DeVos Children’s Hospital Pediatric Orthopaedics, Grand Rapids, MI

Video Abstract 7
Percutaneous Calcaneal Displacement Osteotomy in the Pediatric Population
Indranil (Neel) Kushare, MD; Jeffrey Shilt, MD
Texas Children’s Hospital, Houston, TX

Video Abstract 8
Revision Anterior Cruciate Ligament Reconstruction with Quadriceps Tendon Autograft & Anterolateral Ligament Reconstruction in a Pediatric Patient
Julian Sonnenfeld, MD; David Trofa, MD; Joseph Lombardi, MD; Forrest Anderson, MD; Christopher Ahmad, MD
NYP/Columbia University Medical Center, New York, NY

Video Abstract 9
Bracket Epiphysis Excision of the First Metatarsal
Anthony Riccio, MD; Alexander Carduff, BA; Christopher Stutz, MD
Texas Scottish Rite Hospital for Children, Dallas, TX
Video Abstract 10
Two Surgeon Approach to Posterior Spinal Fusion the Correction of Neuromuscular Scoliosis
Taylor Webb, MS; Hamdi Sukkarieh, MD; Patrick Wright, MD; Jaysson Brooks, MD
Children’s of Mississippi / University of Mississippi
Medical Center, Jackson, MS
PAPER POSTERS

Paper Poster 1
National Epidemiological Trends for Multiple Hereditary Exostosis Condition Among 44 Children’s Hospital
Divya Talwar, MPH; Mahmoud Abo Elmagd; Alay Shah, BS; Alexandre Arkader, MD
The Children’s Hospital of Philadelphia, Philadelphia, PA

Paper Poster 2
Coronal Remodeling Potential of Pediatric Distal Radius Fractures
Teresa Cappello, MD; Kyle Lynch, BS
Loyola University Medical Center, Maywood, IL

Paper Poster 3
Comparative Effectiveness of Nonoperative Versus Operative Treatment for Completely Displaced Clavicle Shaft Fractures in Children
Charles Mehlman, DO; Shital Parikh, MD; Tyler Ames, MD; Robert Toy, BA
Cincinnati Children’s Hospital Medical Center, Cincinnati, OH

Paper Poster 4
Complications and Revision Surgeries in Limb Salvage Reconstructions for Pediatric Lower Extremity Sarcoma
Colin Anderson, MD; Kristina Barber, BA; Patrick Carry, MS; Nathan Donaldson, DO
Children’s Hospital Colorado, Aurora, CO

Paper Poster 5
Gross Motor Function Classification System Specific Growth Charts – Utility as a Risk Stratification Tool for Surgical Site Infection Following Spine Surgery in children with cerebral Palsy
Eric Baranek, MD; Stephen Maier, BA; Hiroko Matsumoto, MA; Joshua Hyman, MD; Michael Vitale, MD, MPH; David Roye, MD; Benjamin Roye, MD
Columbia University Medical Center, New York, NY

Paper Poster 6
Effect of Intravenous ε-Aminocaproic Acid on Blood loss and transfusion Requirements after Bilateral Varus Rotational Osteotomy: A Prospective, Double-blinded, Randomized Controlled Trial
Ishaan Swarup, MD; Joseph Nguyen, MPH; Emily Dodwell, MD; David Scher, MD
Hospital for Special Surgery, New York, NY

Paper Poster 7
Are Precontoured Spinal Rods Mechanically Superior to Manually Contoured Rods?
Joshua Murphy, MD; Kenneth Shaw, DO; David Daniels; Dennis Devito, MD
Dwight D. Eisenhower Army Medical Center, Fort Gordon, GA

Paper Poster 8
Casting for Early Onset Scoliosis: Comparison of Three Different Materials
Muayad Kadhim, MD; Perry Merillat, DO; William Accousti, MD; Bryant Song; Andrew King, MD; Michael Heffernan, MD
Children’s Hospital of New Orleans, New Orleans, LA
**Paper Poster 9**  
*18% of Patients with MCGGR Experience Minimal Lengthening Episodes and the Majority Successfully Lengthen on Subsequent Attempts*  
Ali Siddiqui, BS; Alexander Nazareth, MS; Lindsay Andras, MD; Kenneth Illingworth, MD; Purnendu Gupta, MD; Michael Vitale, MD, MPH; John Smith, MD; Growing Spine Study Group; Children’s Spine Study Group; **David Skaggs, MD, MMM**  
Children’s Hospital Los Angeles, Los Angeles, CA

**Paper Poster 10**  
*Distal Radius Fracture Treatment: A Survey of POSNA Membership*  
Andrew Georgiadis, MD; Jamie Burgess, PhD; Walter Truong, MD; Joseph (Jay) Janicki, MD  
Gillette Children’s Specialty Healthcare, St. Paul, MN

**Paper Poster 11**  
*Skeletal Maturity of Various Skeletal Regions and Staging Systems and their Relationship to Peak Growth, Chronological Age, and Growth in Height, Spine and Lower Extremities*  
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A Pilot Investigation into the Genetics of Mild Bone Fragility
Sasha Carsen, MD

2017 POSNA Start-Up Research Grants
Scapular Motion Across the Spectrum: Brachial Plexus and Youth Pitchers
Stephanie Russo, MD, PhD; Tyler Richardson, PhD; Matthew Topley, BS; Ross Chafetz, DPT, PhD; James Richards, PhD; Dan Zlotolow, MD; Corinna Franklin, MD; Scott Kozin, MD

2017 POSNA/Zimmer Biomet Spine Research Grant
The Impact of 3D Spine and Ribcage Parameters on the Bracing Outcomes
Saba Pasha, PhD, MSc
Welcome to the Queen City, a Southern jewel whose one-of-a-kind attractions and unique beauty shine brightly throughout the city. From thrilling adventures to moving artistic performances to magnetic nightlife, see what the Queen City has to offer.

**Cuisine:** Charlotte’s rich culinary spectrum spans inventive tapas, international flavors, Southern staples and more. There are many restaurants in the Uptown area including, but not limited to, The Ashbury, Mert’s Heart and Soul, Roosters Uptown, and Stoke.

**Outdoors:** Visit Romare Bearden Park, which features two gardens, plenty of dining areas, and several waterfalls. Or take a bike ride on the Rail Trail, which is a 4.5-mile paved track that connects South End to Uptown. True to its name, this trail runs alongside the city’s light rail system making it an easily accessible hot spot for bars, restaurants, and cafés.

If you plan to venture outside of the city, the National Whitewater Center is a must visit. The NWC is an outdoor recreation facility for whitewater rafting, kayaking, canoeing, rock climbing, mountain biking, and hiking.

**Visit:** [Visit Charlotte](#)  
[101 Things to Do in Charlotte](#) [Charlotte City Guide](#) [Charlotte Restaurant Map](#)

**Cuisine**

**American:** Roosters Uptown, Fig Tree, Stoke, The Asbury, 300 East, Mimosa Grill, 5Church Restaurant, Alexander Michael’s, Cowbell Burger & Whiskey Bar, Fitzgerald’s, Libations Kitchen & Bar, McNinch House

**Italian:** Angeline’s, Aria Tuscan Grill, Vapiano Charlotte, Vivace, Stagioni, Zinicola, Ballantyne, Mama Ricotta’s, Zios

**Mexican:** Cantina 1511, La Revolucion, Que Onda Tacos & Tequila Uptown, RuRu’s Tacos, Paco’s Tacos

**Seafood/Steakhouse:** BLT at the Ritz, Oku Sushi, Beef n Bottle, Dressler’s, Del Frisco’s, Brio (Coastal Bar and Kitchen), Fin & Fino, Fleming’s, Sea Level NC

**Barbecue:** Midwood Smokehouse, Bill Spoon’s, Mert’s Heart and Soul, Queen City Q

**Ethnic:** Copper

**Rooftop Dining:** Fahrenheit, City Lights, Merchant and Trade

**Breweries:** Birdsong Brewing Co., NoDa Brewing Company, Rock Bottom Restaurant & Brewery, Triple C Brewery, Wooden Robot (gluten-free beer), Lenny Boy (kombucha and beer) Craft Tasting Room
EXPLORE CHARLOTTE, CONT’D

CUISINE, CONTINUED

SOUTH PARK DINING: Comida, Flour, Midwood Smokehouse, Burton’s, Dot Dot Dot, Upstream, Corkbuzz, Oak, Wolfgang Puck Kitchen, Amelie’s Coffee and Desserts, Yafo Kitchen, Dogwood Southern Table, Baku, Co, Rock Salt, Paco’s Taco’s, Rooster’s, George Brasserie

DESSERT: Amelie’s (locations in NoDa, downtown, Park Road, South Charlotte), Golden Cow Creamery, Two Scoops Creamery, Suarez Bakery, Elizabeth Creamery, Dean & DeLuca, Va Da Vie

COFFEE: Amelie’s, Parliament, Coco and the Director, 7th Street Public Market, Reid’s (South Park and Uptown), Dean & DeLuca (South Park and Uptown), Earl’s Grocery

MUSEUMS

Mint Museum, New Gallery of Modern Art, Bechtler Museum, Levine Museum of the New South, Discovery Place, NASCAR Hall of Fame

OUTDOORS

• Charlotte Rail Trail
• First Ward Park
• The Green
• Romare Bearden Park
• Freedom Park
• Whitewater Center

TOURS

• Carolina History & Haunts
• Funny Bus
• Queen City Rides
• FEAST Food Tours

SHOPPING

• BOA Plaza Retail Mall
• SouthPark Mall
• Steele Creek Outlets

NIGHTLIFE

• EPICENTRE
• Howl at the Moon
• The Imperial
• Rooftop 210
• The Roxy
• The Punch Room
• City Lights Rooftop

GETTING AROUND TOWN

You’ll find that many of Center City’s hotels, attractions, restaurants, and nightlife are located within comfortable walking distance of each other. If you prefer not to walk, CATS operates local bus routes and the Lynx light rail. Please visit www.ridetransit.org for schedules, fares, and other services. Ubers, Lyfts, and taxis are also readily available. Most hotels within Center City partner with limousine companies and will have town cars and other vehicles on-call for hotel guests. Please inquire with your hotel for more information. Charlotte also has bicycles and scooters available for rent including B-Cycle, Lime bike and scooter, and Bird. You may visit their websites for further information.
EXPLORE CHARLOTTE, CONT’D

FIRST WARD
1  7th Street Public Market
2  Blumenthal Performing Arts Center – Belk Theater / Booth Playhouse / Stage Door Theater
3  Charlotte Mecklenburg Library
4  First Ward Park
5  ImaginOn: The Joe & Joan Martin Center / Children’s Theatre of Charlotte
6  Levine Museum of the New South
7  Sonia and Isaac Luski Gallery at Foundation For The Carolinas
8  Spectrum Center
9  Spirit Square – McGlohon Theater / Duke Energy Theater
10  The University of North Carolina at Charlotte Center City
14  Marshall Park
15  NASCAR Hall of Fame
16  The Green
17  Wells Fargo History Museum

THIRD WARD
18  Bank of America Stadium
19  BB&T Ballpark
20  Bechtler Museum of Modern Art
21  Frazier Park
22  Johnson & Wales Univ. Charlotte
23  Knight Theater at Levine Center for the Arts
24  Latta Arcade / Brevard Court
25  Mint Museum Uptown
26  Romare Bearden Park

FOURTH WARD
27  AvidXchange Music Factory – Charlotte Metro Credit Union Amphitheatre / The Fillmore Charlotte
28  Discovery Place Science / The Charlotte Observer IMAX® Dome Theatre
29  Elmwood Cemetery
30  Fourth Ward Park
31  McCall Center for Art + Innovation
32  Ninth Street Park
33  Pinewood Cemetery
34  Ray’s Splash Planet
35  Settlers’ Cemetery

PUBLIC ART
A  The Writer’s Desk
B  Queen Charlotte Statue
C  Sculptures at Independence Square
D  II Disco Grande
E  Charlotte Sign on The Green
F  The Firebird
G  Carolina Panthers Statues
H  Spiral Odyssey

SECOND WARD
11  Charlotte Convention Center
12  EpiCentre
13  Harvey B. Gantt Center for African-American Arts + Culture

charlottsgotalot.com
7D Surgical

7D Surgical is a privately-owned Toronto based company that develops advanced optical technologies and machine vision-based registration algorithms to improve surgical workflow and patient care. 7D Surgical’s flagship FDA 510(k)-cleared and Health Canada approved MvIGS system delivers profound improvement to image guidance surgical workflows in spine and cranial surgery. The underlying technology provides the promise of similar future advancements for other surgical specialties.

American Board of Orthopaedic Surgery (ABOS)

Talk with an ABOS Certification Specialist about your Board Certification options, determine your Maintenance of Certification progress, and learn how to meet those requirements. You can also learn about the new Web-Based Longitudinal Assessment (ABOS WLA).

AquaCast Liner

AquaCast® Liner manufactures a complete line of waterproof cast padding and liners used in fracture care, replacing the old WL Gore Procel® and PANTALOON® products. Our newly remodeled Hipster® protective liner, used for hip and shoulder spicas, femur fractures and other body casts, makes application quicker and easier, reduces skin excoriation, and improves patient satisfaction – while lowering overall costs simultaneously. Stop by our table to review the new design and also see why pediatric orthopaedic surgeons and non-operating doctors prefer our “easier-to-apply” rolls over the Gore® Procel.

Biogen

Through cutting-edge science, Biogen discovers, develops and delivers to patients worldwide therapies for the treatment of neurodegenerative and rare diseases.

BioMarin Pharmaceuticals, Inc.

BioMarin develops and commercializes innovative biopharmaceuticals for serious diseases and medical conditions. Approved products include the first and only therapies for PKU, LEMS, MPS I, MPS VI, MPS IVA, and CLN2 disease. Clinical development programs include investigational therapies for Hemophilia A, Achondroplasia, MPS IIB, Friedreich’s Ataxia and other rare diseases.

BoneSupport

BONESUPPORT develops and markets CERAMENT®|BONE VOID FILLER, a radiopaque injectable osteoconductive bone graft substitute with a proven ability to heal defects by remodeling to host bone in six to twelve months. CERAMENT is effective in treating patients with fractures and bone voids caused by trauma, infection, disease or related surgery.
Children’s Hospital of Los Angeles

The mission of Children’s Hospital Los Angeles is to create hope and build healthier futures. Founded in 1901, CHLA is the top-ranked children’s hospital in California and among the top 10 in the nation, according to the prestigious U.S. News & World Report Honor Roll of children’s hospitals for 2018-19. The hospital is home to The Saban Research Institute and is one of the few freestanding pediatric hospitals where scientific inquiry is combined with clinical care devoted exclusively to children. Children’s Hospital Los Angeles is a premier teaching hospital and has been affiliated with the Keck School of Medicine of the University of Southern California since 1932.

DIERS

DIERS Medical Systems is an innovative company offering a radiation-free system for assessment of the spine and trunk. Using surface topography, the DIERS formetric system can provide a 3-D reconstruction of the spine as a static measurement or while the spine is in motion. The addition of lower extremity video analysis and foot pressure measurements from the integrated treadmill turns the spine system into a fully functional compact gait lab. The DIERS formetric system provides reliable outcomes data for clinicians who treat patients with scoliosis, kyphosis, neuromuscular disorders, gait abnormalities, or sports injuries.

DePuy Synthes Companies

DePuy Synthes Companies part of the Johnson & Johnson family of companies provides the most comprehensive orthopaedic and neurological solutions in the world. The company offers an unparalleled breadth of products, services, programs and research and development capabilities. DePuy Synthes Companies’ solutions in the specialties of joint reconstruction, trauma, neurological, craniomaxillofacial, spinal surgery and sports medicine are designed to advance patient care while delivering clinical and economic value to health care systems worldwide.

EOS Imaging

EOS imaging designs, develops and markets advanced imaging and image-based solutions for musculoskeletal pathologies and orthopedic surgical care. The EOS platform connects imaging to care by adding value along the entire patient care pathway from diagnosis to follow-up. Low dose and Micro Dose EOS exams provide full body, stereoradiographic images in weight-bearing positions. The biplanar images are acquired simultaneously in less than 20 seconds without magnification. The accompanying sterEOS workstation generates patient-specific 3D models, calculates over 100 clinical parameters and offers customizable patient reports. EOS imaging also provides 3D Services and 3D surgical planning solutions for spine, hip and knee.

Gillette Children’s Specialty Healthcare

Gillette Children’s Specialty Healthcare is an independent not-for-profit health system specializing in treating children who have complex conditions, rare disorders and traumatic injuries. Our experienced clinical staff collaborates to treat patients who have complex medical needs. This expertise makes us a resource and partner for health systems across Minnesota, the U.S., and throughout the world. Gillette’s skilled team of health care professionals work proactively with families to help children achieve their goals and discover what they CAN do. We know that with innovative medical and surgical intervention, proven therapies and assistive technology, and the support of compassionate health care professionals, children who have complex conditions can thrive and live happy, healthy, productive lives.
Global Help creates, distributes, and compiles free, relevant, non-commercial healthcare information that prioritizes affordable and effective healthcare solutions and promotes sustainability. The organization’s long-term goal is to create sustainable improvement in healthcare throughout the world by helping people help themselves.

Globus Medical is a leading musculoskeletal solutions company and is driving significant technological advancements across a complete suite of products ranging from spinal and trauma therapies to regenerative solutions, to robotics, navigation and imaging. Founded in 2003, Globus’ single-minded focus on advancing spinal surgery has made it the fastest growing company in the history of orthopedics. Globus is driven to utilize superior engineering and technology to achieve pain free, active lives for all patients with musculoskeletal disorders.

Implanet is a global company with a singular focus to provide novel solutions to complex spinal pathologies through the use of the JAZZ™ polyester band system. The JAZZ Band & Frame hybrid approach for complex deformity correction has been shown to reduce implant volume, decrease surgical cost, and reduce blood loss and OR time while demonstrating significant improvement in Sagittal Balance. JAZZ Lock is the first, and only, rodless band fixation device. JAZZ Lock allows for rapid posterior fixation of spinal fractures, is a low-profile tension band for top-of-construct protection and provides additional fixation options in compromised bone.

Inion is a medical device company focused on the development and commercialization of innovative biodegradable and bioactive implants for Spinal, Specialty Orthopaedic and Craniomaxillofacial applications. Inion’s proprietary blending technology enables application specific implants which have ‘custom-fit’ capabilities for patients that do not interfere with imaging.

K2M Group Holdings, Inc. is a global leader of complex spine and minimally invasive solutions focused on achieving three-dimensional Total Body Balance™. Since its inception, K2M has designed, developed and commercialized innovative complex spine and minimally invasive spine technologies and techniques used by spine surgeons to treat some of the most complicated spinal pathologies. K2M has leveraged these core competencies into Balance ACS™, a platform of products, services, and research to help surgeons achieve three-dimensional spinal balance across the axial, coronal and sagittal planes, with the goal of supporting the full continuum of care to facilitate quality patient outcomes. The Balance ACS platform, in combination with the Company’s technologies, techniques and leadership in the 3D-printing of spinal devices, enable K2M to compete favorably in the global spinal surgery market.
Life Bridge Health, Rubin Institute for Advanced Orthopedics

Rubin Institute for Advanced Orthopedics (RIAO) is home to some of the world’s most renowned orthopedic surgeons and offers state-of-the-art treatment in a variety of orthopedic services for children and adults. The Institute hosts an annual CME-accredited course in limb deformity correction and lengthening. Clinical and research fellowship opportunities are available. The Multiplier and Bone Ninja apps were developed here. The RIAO is located in Baltimore, Maryland, USA.

Medicrea, USA

The Medicrea Group is pioneering the transformation of spinal surgery through Artificial Intelligence, predictive modeling and patient specific implants with its UNiD™ ASI (Adaptive Spine Intelligence) proprietary software platform, services and technologies. MEDICREA®’s proprietary UNiD ASI™ technology is a surgeon-centric platform that provides a planning service staffed by biomedical engineers, precise intra-operative execution with personalized solutions, and insightful analytics of surgical results with the ultimate goal of improving clinical outcomes.

Medtronic

As a global leader in medical technology, services and solutions, Medtronic improves the lives and health of millions of people each year. We use our deep clinical, therapeutic, and economic expertise to address the complex challenges faced by healthcare systems today. Let’s take healthcare Further, Together. Visit our booth to learn more about our innovative solutions.

Merete Technologies, Inc.

Merete is Innovation. Our stated aim is to discover and react to market demands at any time. As a manufacturer, the health and the mobility of the patient is top priority. We offer an increasing product portfolio for foot and ankle surgery, the treatment of major bone defects in oncology as well as trauma, hip revision and pediatric implants. Our latest innovation for simpler and faster guided growth and growth arrest is PediatrOS FlexTack™ and RigidTack™. These novel staples correct leg length discrepancies and angular deformities through improved temporary epiphysiodesis. Merete’s PediatrOS staples offer a safer and more effective alternative for your patients.

MHE Research Foundation

The MHE Research Foundation is a nonprofit 501(c) (3) organization dedicated to the support of Researchers, Physicians & Families dealing with Multiple Hereditary Exostoses Syndrome (MHE) Multiple Osteochondroma Syndrome (MO) a rare genetic bone disease.
NuVasive, Inc.

NuVasive is transforming spine surgery and beyond with minimally invasive, procedurally-integrated solutions designed to deliver reproducible and clinically-proven surgical outcomes. The Company’s portfolio includes access instruments, implantable hardware, biologics, software systems for surgical planning, navigation and imaging solutions, magnetically adjustable implant systems for spine and orthopedics, and intraoperative monitoring service offerings.

nView Medical

nView medical unveils nView s1, a breakthrough surgical imaging system specifically designed for pediatrics. nView s1 provides instant 3D images based on low dose x-rays. Our mission is to make surgeries safer, faster and consistently accurate. nView s1 is 510(k) pending.

Ortho Care Casting, LLC

Ortho Care Casting, LLC is a manufacturer of a full line of FDA approved liner and casting products. Our full line allows healthcare providers to fulfill all of their casting needs in one place. Founded by a manufacturer of orthopedic products with over 10 years of experience, Ortho Care Casting is committed to providing the most up to date technology and products in the waterproof casting market. We are a woman owned enterprise who services leading hospitals as well as health care clinics and private practices.

Orthofix

Orthofix offers innovative and minimally invasive solutions for surgeons to help improve the quality of life of our patients. Our extremity fixation products are designed to address the lifelong bone-and-joint health needs of patients of all ages, helping them achieve a more active and mobile lifestyle. Our limb reconstruction and deformity correction products restore normal anatomy for patients with a physical deformity, either congenital or post-traumatic, as well as for patients needing limb lengthening. JuniOrtho™ is the range of products and resources created by Orthofix, dedicated to children and young adults with bone fractures and deformities.

OrthoPediatrics Corp.

Founded in 2006, OrthoPediatrics is an orthopedic company focused exclusively on providing a comprehensive product offering to the pediatric orthopedic market to improve the lives of children with orthopedic conditions. OrthoPediatrics currently markets 26 surgical systems that serve three of the largest categories within the pediatric orthopedic market. This offering spans trauma & deformity, scoliosis and sports medicine/other procedures. OrthoPediatrics’ global sales organization is focused exclusively on pediatric orthopedics and distributes its products in the United States and 38 countries outside the United States.
Pega Medical

For more than two decades, Pega Medical has been offering innovative deformity correction solutions. Pega’s family of IM Nails (Fassier-Duval Telescopic Rod, SLIM and GAP Endo-Exo Medullary Systems) are specifically designed for small bones, often seen with metabolic and genetic disease. Additional products such as the Hinge Plate and the Free-Gliding SCFE Screw complete our portfolio of growth modulating orthopedic devices. For limb deformity and length discrepancy, the Paley’s Osteotomy System offers unique instrumentation for complex procedures. Our latest innovation: The LolliPOP modular hip plating system, completes a portfolio of forward thinking technologies developed in collaboration with expert orthopedic surgeons from POSNA and from around the world.

Solution Matrix, Inc.

Solution Matrix, Inc. is a Veteran-Owned and Operated manufacturer of Cold Compression Therapy Products that revolutionize post-op patient care by allowing for effective non-pharmacological pain and edema control with products that are simple to use. In 2018, Solution Matrix brought the “Simple is Always Better” concept to the Pediatric market by developing cost-effective post surgical Cold Compression Therapy that is safe and effective for children of all ages.

Stryker

Stryker is one of the world’s leading medical technology companies and, together with our customers, is driven to make healthcare better. We offer innovative products and services in Orthopaedics, Medical and Surgical, and Neurotechnology and Spine that help improve patient and hospital outcomes.

Vilex in Tennessee, Inc.

Vilex is a high growth US based device manufacturer of precision engineered extremity solutions, specializing in internal and external fixation devices for foot and ankle, pediatrics, deformity correction, and reconstructive surgery. The Orthex ring system is the most advanced computer dependent hexapod, featuring the Orthex’s “Point & Click” based Ring Positioning System (RPS) and advanced HA Coated implants for large and small bone corrections.

WishBone

WishBone Medical is a Warsaw, Indiana, based pediatric orthopedic company focused globally on the unmet needs of children suffering from orthopedic issues. Our mission is to provide anatomically appropriate, innovative implants and instruments in sterile packed, single-use disposable kits to surgeons and their patients who are still growing... Because KIDS are not just little adults.
Wolters Kluwer

Wolters Kluwer Health is a leading global provider of information and point of care solutions for the healthcare industry. Our solutions are designed to help professionals build clinical competency and improve practice so that healthcare organizations can succeed in value-based care delivery models. Product solutions include Lippincott, Ovid®, and UpToDate®.

Wright Medical

Wright Medical Group N.V. is a global medical device company focused on Extremities and Biologics. We deliver innovative, value-added solutions improving quality of life for patients worldwide. We are a recognized leader of surgical solutions for the upper extremities (shoulder, elbow, wrist and hand), lower extremities (foot and ankle) and biologics markets, three of the fastest growing segments in orthopaedics.

Zimmer Biomet

Zimmer Biomet Spine is a leader in restoring mobility, alleviating pain, and improving the quality of life for patients around the world by delivering surgeons a comprehensive portfolio of quality spine technologies and procedural innovation, best-in-class training, and unparalleled service via a network of responsive team members and sales professionals.

ZipLine Medical

ZipLine Medical offers surgical (Zip Surgical Skin Closure) and chronic (PreLoc Wound Closure) solutions based on proven, non-invasive force distribution technology. Published clinical studies have demonstrated superior clinical and economic benefits vs. standard of care, including shorter procedure time, fewer wound-related complications and readmissions, and fewer post-operative provider visits.
Rod Link Reducer
3-Plane Deformity Correction System

Delivering innovative solutions to enhance patient care

Learn more at GlobusMedical.com/Deformity
POSNA ANTITRUST POLICY

It shall be the policy of the Pediatric Orthopaedic Society of North America (POSNA) to be in strict compliance with all Federal and State Antitrust laws, rules and regulations. Therefore: These policies and procedures apply to all membership, board, committee, and all meetings attended by representatives of the POSNA.

Discussions at POSNA meetings often cover a broad range of topics pertinent to the interests or concerns of orthopaedic surgeons. As a general rule, except as noted below, discussions at POSNA meetings can address topics without raising antitrust concerns if the discussions are kept scrupulously free of even the suggestion of private regulation of the profession. However, a number of topics that might be (and have been) discussed at POSNA meetings may raise significant complex antitrust concerns. These include:

- Membership admissions, rejections, restrictions, and terminations;
- Method of provision and sale of POSNA products and services to non-members;
- Restrictions in the selection and requirements for exhibitors at the POSNA Annual Meeting or in CME activities;
- Collecting and distributing certain orthopaedic practice information, particularly involving practice charges and costs;
- Obtaining and distributing orthopaedic industry price and cost information;
- Professional certification programs;
- Group buying and selling; and
- Inclusions or exclusion of other medical societies in organizational activities or offerings.

When these and related topics are discussed, the convener or members of the POSNA group should seek counsel from its General Counsel.

POSNA urges its Board, committees and other groups not to participate in discussions that may give the appearance of or constitute an agreement that would violate the antitrust laws. Notwithstanding this reliance, it is the responsibility of each POSNA Board or committee member to avoid raising improper subjects for discussion. This policy has been prepared to ensure that POSNA members and other participants in POSNA meetings are aware of this obligation.

The “Do Not’s” and “Do’s” presented below highlight only the most basic antitrust principles. POSNA members and others participating in POSNA meetings should consult with the General Counsel in all cases involving specific questions, interpretations or advice regarding antitrust matters.

Do Nots

1. Do not, in fact or appearance, discuss or exchange information regarding:
   a. Individual company prices, price changes, price differentials, mark-ups, discounts, allowances, credit terms, etc. or any other data that may bear on price, such as costs, production, capacity, inventories, sales, etc.
   b. Raising, lowering or “stabilizing” orthopaedic prices or fees;
   c. What constitutes a fair profit or margin level;
   d. The availability of products or services; or
   e. The allocation of markets, territories or patients.

2. Do not suggest or imply that POSNA members should or should not deal with certain other persons or companies.

3. Do not foster unfair practices regarding advertising, standardization, certification or accreditation.

4. Do not discuss or exchange information regarding the above matters during social gatherings, incidental to POSNA-sponsored meetings.

5. Do not make oral or written statements on important issues on behalf of POSNA without appropriate authority to do so.
POSNA ANTITRUST POLICY, CONTINUED

The Do’s

1. Do adhere to prepared agenda for all POSNA meetings. It is generally permissible for agendas to include discussions of such varied topics as professional economic trends, advances and problems in relevant technology or research, various aspects of the science and art of management, and relationships with local, state or federal governments.

2. Do object whenever meeting summaries do not accurately reflect the matters that occurred.

3. Do consult with General Counsel on all antitrust questions relating to discussions at POSNA meetings.

4. Do object to and do not participate in any discussions or meeting activities that you believe violate the antitrust laws; dissociate yourself from any such discussions or activities and leave any meeting in which they continue.

Special Guidelines for Collecting and Distributing Information

The collection and distribution of information regarding business practices is a traditional function of associations and is well-recognized under the law as appropriate, legal and consistent with the antitrust laws. However, if conducted improperly, such information gathering and distributing activities might be viewed as facilitating an express or implied agreement among association members to adhere to the same business practices. For this reason, special general guidelines have developed over time regarding association’s reporting on information collected from and disseminated to members. Any exceptions to these general guidelines should be made only after discussion with General Counsel. These general guidelines include:

1. Member participation in a statistical reporting program is voluntary. A statistical reporting program should be conducted without coercion or penalty. Non-members should be allowed to participate in a statistical reporting program if eligible; however, if a fee is involved, non-members may be charged a reasonably higher fee than members.

2. Information should be collected via a written instrument that clearly sets forth what is being requested.

3. The data that is collected should be about past transactions or activities; particularly if the survey deals with prices and price terms (including charges, costs, wages, benefits, discounts, etc.), it should be historic, i.e., more than three months old.

4. The data should be collected by either POSNA or an independent third party not connected with any one member.

5. Data on individual orthopaedic surgeons should be kept confidential.

6. There should be a sufficient number of participants to prevent specific responses or data from being attributable to any one respondent. As a general rule, there should be at least five respondents reporting data upon which any statistic or item is based, and no individual’s data should represent more than 25% on a weighted average of that statistic or item.

7. Composite/aggregate data should be available to all participants – both members and non-members. The data may be categorized, e.g., geographically, and ranges and averages may be used. No member should be given access to the raw data. Disclosure of individual data could serve to promote uniformity and reduce competition.

8. As a general rule, there should be no discussion or agreement as to how members and non-members should adjust, plan or carry out their practices based on the results of the survey. Each member should analyze the data and make business decisions independently.
2019 RESEARCH GRANT AND AWARD WINNERS

2019 KUO MEMORIAL RESEARCH AWARD
Matthew Oetgen, MD
“Modulation of the Injury Associated with Acute Compartment Syndrome”

2019 HUENE MEMORIAL RESEARCH AWARD
B. Stephen Richards, MD
“Opportunities to Optimize Ponseti Brace Wear Compliance and Success”

2019 ST. GILES YOUNG INVESTIGATOR RESEARCH AWARD
Rachel Thompson, MD
“Muscle Disease in Cerebral Palsy”

2019 POSNA DIRECTED RESEARCH GRANTS
Scott Luhmann, MD
“Biomarkers and Cytokines in the Work-Up of Septic Arthritis”
Selina Poon, MD
“Pedicle Screw Placement with a 3D Deformity Model”

2019 POSNA BASIC SCIENCE RESEARCH GRANTS
Roger Cornwall, MD
“Proteasome Inhibition for Contracture Prevention in NBPI”
Charles Johnston, MD
“Thoracic Volume Expansion by Ventral Directed Costa-sternoplasty”

2019 POSNA CLINICAL RESEARCH GRANTS
Todd Milbrandt, MD
“Anterior Vertebral Body Tethering vs. Fusion for Idiopathic Scoliosis”
David Podeszwa, MD
“Are Patients as Active as They Say: Subjective/Objective Activity Measures”

2019 POSNA START UP RESEARCH GRANTS
Juan Brito Campana, MD
“Shared Decision Making in the Treatment of Scoliosis”
Ryan Goodwin, MD
“Risser vs. Sanders in AIS: A Prospective Cohort Study Assessing Mismatch”
Mark Adamczyk, MD
“Primary Cilia Alterations in the Hypothyroid Porcine Growth Plate”
2019 RESEARCH GRANT
and AWARD WINNERS, CONTINUED

2019 POSNA/ZIMMER BIOMET SPINE RESEARCH GRANT
Daniel Hedequist, MD
“Reliability of the AOSpine Classification System in Children”

16th Annual
International Pediatric Orthopaedic Symposium
Presented by POSNA and AAOS
December 3 – 7, 2019
Loews Royal Pacific Hotel, Orlando, FL

ipos.posna.org
“Our overall volume lends us a degree of clinical expertise that isn’t seen in other institutions in the region or the state.” —Tenner Guillaume, MD, spine surgeon at Gillette

Gillette Children’s Specialty Healthcare is internationally recognized for treating pediatric spine conditions. From innovative procedures to pioneering research—Gillette has the expertise to help kids.

Learn more: gillettechildrens.org/spineortho
To make an appointment: 651-290-8707
Expert Spine Care from Simple to Complex

"Our overall volume lends us a degree of clinical expertise that isn’t seen in other institutions in the region or the state."

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To make an appointment: 651-290-8707

Proud sponsor of POSNA 2019

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Alden’s 8-year diagnostic odyssey is not uncommon

“My bones weren’t growing properly, but none of my doctors could figure out why.”

Results in a poster presented at the American College of Medical Genetics 2018 Annual Meeting found that patients with MPS may have been initially misdiagnosed with skeletal dysplasia or spondyloepiphyseal dysplasia (SED)1

• 44% of MPS IVA patients had symptoms that raised concerns for or were misdiagnosed as SED prior to testing for MPS (8/18)

• 24% of positive MPS diagnoses had a current/past diagnosis of skeletal dysplasia or suspicion of another skeletal condition (13/54; MPS IVA [n=10], MPS VI [n=3])

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Grow Together
Because every millimeter counts in EOS, use a treatment that impacts a lifetime.

Strong Together
When AIS tests their confidence, choose a system with the strength to bring it back.

Visit the NuVasive booth to learn more about our deformity solutions today.

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FUTURE ANNUAL MEETINGS

May 13–16, 2020
San Diego, California

May 11–15, 2021
Dallas, Texas

May 11–14, 2022
Vancouver, BC, Canada

FUTURE IPOS MEETINGS

December 3–7, 2019
Orlando, FL

December 1–5, 2020
Orlando, FL

December 7–11, 2021
Orlando, FL