



2019 **POSNA**

ANNUAL MEETING

CHARLOTTE, NORTH CAROLINA

MAY 15 – 18, 2019

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**PRE-COURSE CHAIR**

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**SUBSPECIALTY DAY CHAIR**

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**POSNA**

PEDIATRIC ORTHOPAEDIC SOCIETY  
OF NORTH AMERICA



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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.
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OF NORTH AMERICA

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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](http://POSNA.org) and [orthokids.org](http://orthokids.org)

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# WELCOME

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!



Steve Frick, MD  
POSNA President



## STEVEN FRICK, MD PRESIDENT

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 INCOMING PRESIDENT



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



## POSNA

PEDIATRIC ORTHOPAEDIC SOCIETY  
OF NORTH AMERICA

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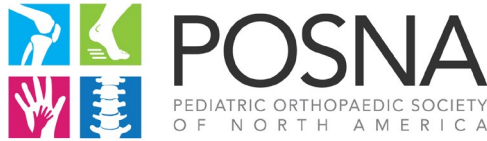
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# ACKNOWLEDGMENTS



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  
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## DIAMOND LEVEL



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Merete Technologies, Inc.

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Medicare, USA



# WELCOME

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

8.4 hours may be used for external trauma-related CMEs. Presentations denoted with  are eligible for these credits.

## ***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.

White	Annual Meeting Registration	Blue	Pre-Course Registration
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 (ie., 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 (ie. 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

# ANNUAL MEETING POLICIES

## **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

Levels of Evidence for Primary Research Question <sup>1,2</sup>						
Study Type	Question	Level I	Level II	Level III	Level IV	Level V
Diagnostic— Investigating a diagnostic test	Is this (early detection) test worthwhile?	• Randomized controlled trial	• Prospective <sup>3</sup> cohort <sup>4</sup> study	• Retrospective <sup>5</sup> cohort <sup>4</sup> study • Case-control <sup>6</sup> study	• Case series	• Mechanism- based reasoning
	Is this diagnostic or monitoring test accurate?	• Testing of previously developed diagnostic criteria (consecutive patients with consistently applied reference standard and blinding)	• Development of diagnostic criteria (consecutive patients with consistently applied reference standard and blinding)	• Nonconsecutive patients • No consistently applied reference standard	• Poor or nonindependent reference standard	• Mechanism- based reasoning
Prognostic— Investigating the effect of a patient characteristic on the outcome of a disease	What is the natural history of the condition?	• Inception <sup>3</sup> cohort study (all patients enrolled at an early, uniform point in the course of their disease)	• Prospective <sup>3</sup> cohort <sup>4</sup> study (patients enrolled at different points in their disease) • Control arm of randomized trial	• Retrospective <sup>5</sup> cohort <sup>4</sup> study • Case-control <sup>6</sup> study	• Case series	• Mechanism- based reasoning
Therapeutic— Investigating the results of a treatment	Does this treatment help? What are the harms? <sup>7</sup>	• Randomized controlled trial	• Prospective <sup>3</sup> cohort <sup>4</sup> study • Observational study with dramatic effect	• Retrospective <sup>5</sup> cohort <sup>4</sup> study • Case-control <sup>6</sup> study	• Case series • Historically controlled study	• Mechanism- based reasoning
Economic	Does the intervention offer good value for dollars spent?	Computer simulation model (Monte Carlo simulation, Markov model) with inputs derived from Level-I studies, lifetime time duration, outcomes expressed in dollars per quality-adjusted life years (QALYs) and uncertainty examined using probabilistic sensitivity analyses	Computer simulation model (Monte Carlo simulation, Markov model) with inputs derived from Level-II studies, lifetime time duration, outcomes expressed in dollars per QALYs and uncertainty examined using probabilistic sensitivity analyses	Computer simulation model (Markov model) with inputs derived from Level-II studies, relevant time horizon, less than lifetime, outcomes expressed in dollars per QALYs and stochastic multilevel sensitivity analyses	Decision tree over the short time horizon with input data from original Level-II and III studies and uncertainty is examined by univariate sensitivity analyses	Decision tree over the short time horizon with input data informed by prior economic evaluation and uncertainty is examined by univariate sensitivity analyses

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.cebm.net/ocbm-levels-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, imprecision, 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 before 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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# What comes to mind when you think about spinal image guidance?

too complicated

too  
expensive

too slow

too much  
radiation

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# MEETING AT A GLANCE

## TUESDAY, MAY 14

Board of Directors Meeting	7:00 AM–3:00 PM	Westin, Providence Ballroom 1
Registration	4:00 PM–6:00 PM	CC Richardson Ballroom Foyer
POPS Meeting	8:00 AM–5:00 PM	Westin, Grand Ballroom AB

## WEDNESDAY, MAY 15

Fellowship Directors Meeting	6:30 AM–7:30 AM	Westin, Uptown III
Registration	6:30 AM–5:00 PM	CC Richardson Ballroom Foyer
Pre-Course Breakfast/Exhibits	7:00 AM–8:00 AM	CC Richardson Ballroom AB
Pre-Course	8:00 AM–12:00 PM	CC Richardson Ballroom CD
Coffee Break/Exhibits	9:35 AM–9:55 AM	CC Richardson Ballroom AB
Scientific Program	1:00 PM–3:05 PM	CC Richardson Ballroom CD
Coffee Break/Exhibits	3:05 PM–3:30 PM	CC Richardson Ballroom AB
Concurrent Session 1	3:30 PM–5:05 PM	CC Richardson Ballroom CD
Concurrent Session 2	3:30 PM–5:05 PM	CC Rm 217 ABCD
<b>EVENING</b>		
Opening Ceremony	6:30 PM–8:00 PM	CC Richardson Ballroom CD
Welcome Reception	8:00 PM–9:30 PM	CC Ballroom Terrace

## THURSDAY, MAY 16

Registration	6:30 AM–12:00 PM	CC Richardson Ballroom Foyer
Breakfast/Exhibits	6:30 AM–7:30 AM	CC Richardson Ballroom AB
Scientific Program	7:30 AM - 9:33 AM	CC Richardson Ballroom CD
Coffee Break/Exhibits	9:33 AM–10:00 AM	CC Richardson Ballroom AB
<b>SYMPOSIA PROGRAM</b>		
COUR	10:00 AM–12:00 PM	CC Room 207ABCD
Educate the Educator	10:00 AM–12:00 PM	CC Richardson Ballroom CD
Innovation and Technology	10:00 AM–12:00 PM	CC Room 213ABCD
POPS	10:00 AM–2:00 PM	CC Room 211AB/212AB
Research	10:00 AM–12:00 PM	CC Room 218AB/219AB
Trauma	10:00 AM–12:00 PM	CC Room 217ABCD
Young Member Forum	12:15 PM–1:30 PM	CC Room 217ABCD

## FRIDAY, MAY 17

Registration	6:00 AM–3:30 PM	CC Richardson Ballroom Foyer
Breakfast/Exhibits	6:00 AM–7:00 AM	CC Richardson Ballroom AB
Scientific Program Award Papers	7:00 AM–10:00 AM	CC Richardson Ballroom CD
Coffee Break/Exhibits	9:05 AM–9:25 AM	CC Richardson Ballroom AB
Distinguished Achievement Award	10:15 AM–10:30 AM	CC Richardson Ballroom CD

**FULL PROGRAM CAN BE FOUND IN THE 2019 MEETING APP**

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Access the meeting app by downloading My POSNA  
from the Apple App or Google Play store.



# MEETING AT A GLANCE

## FRIDAY, MAY 17 (CONTINUED)

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

## SATURDAY, MAY 18

Registration	7:00 AM–12:00 PM	CC Richardson Ballroom Foyer
Breakfast	7:00 AM–8:00 AM	CC Richardson Ballroom AB
POSNA Board Meeting	8:00 AM–10:00 AM	Westin, Providence Ballroom III
Scientific Program	8:00 AM–12:04 PM	CC Richardson Ballroom CD
Coffee Break	10:06 AM–10:26 AM	CC Richardson Ballroom Foyer

\*CC denotes Convention Center

\*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.

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### + Faster Implantation

~ **22 min.\***

### + Even Faster Explantation

~ **4 min.\***

\* 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*

9:55 AM–10:05 AM **Mistakes Made and Lessons Learned: A Mid-Career Pediatric Orthopaedic Surgeon's Journey to Sustain Energy and Avoid Burnout**  
*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?"

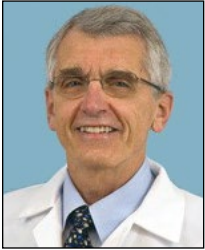
*Aric Almirola, NASCAR Race-Car Driver*

8:00 PM–9:30 PM

### WELCOME RECEPTION



# SPEAKERS and AWARD RECIPIENTS



## PERRY SCHOENECKER, 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, arthrogryptic and syndromic associated musculoskeletal deformities.

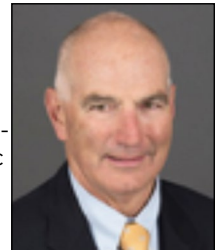
He is the author of 190 peer reviewed manuscripts, a reviewer for JPO, JCO, CORE and JBJS. He is a regular participant in the annual meetings of POSNA, AAOS and EPOS. He is a frequent visiting professor in North America and a very active participant in out of country symposiums/workshops particularly 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.



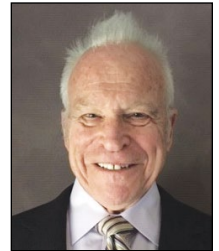
## WUDHAV (WOODY) SANKAR, MD SPECIAL EFFORTS AND EXCELLENCE AWARD

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

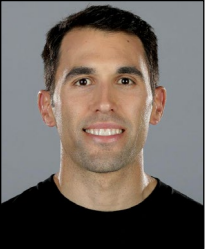


The son of a theologian/minister and schoolteacher, Richard Gross grew up in western New York and Pennsylvania. In 1961, he graduated from Alfred University, where he was a forgettable Division III athlete (football, wrestling), but compensated for that with an undistinguished academic record. He then 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.

Courtesy of charlottesgotalot.com





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Healthcare of Atlanta

**Orthopaedics &  
Sports Medicine**

# PODIUM PRESENTATIONS

## WEDNESDAY, MAY 15

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

### TRAUMA GENERAL SESSION

Moderator: Susan Scherl, MD

eModerator: 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; Yeon-Hon Yun, MD; Jungwook 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

# Wednesday, May 15, 2019, continued

6

1:40 PM-1:44 PM



## 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

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1:45 PM-1:53 PM

Discussion

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7

1:54 PM-1:58 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

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8

1:59 PM-2:03 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

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9

2:04 PM-2:08 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

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2:09 PM-2:17 PM

Discussion

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## **INFECTION/TUMORS GENERAL SESSION**

Moderator: *Alexandre Arkader, MD*

eModerator: *Ying Li, MD*

Presider: *Howard Epps, MD*

10

2:18 PM-2:22 PM

## 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

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11

2:23 PM-2:27 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

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## Wednesday, May 15, 2019, continued

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

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2:33 PM-2:41 PM

Discussion

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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

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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

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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

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2:57 PM-3:05 PM

Discussion

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3:05 PM-3:30 PM

Break

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## 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 Yaszay, 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

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## Wednesday, May 15, 2019, continued

17

3:35 PM-3:39 PM

### 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*

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18

3:40 PM-3:44 PM

### 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*

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3:45 PM-3:53 PM

Discussion

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19

3:54 PM-3:58 PM

### 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*

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20

3:59 PM-4:03 PM

### 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*

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21

4:04 PM-4:08 PM

### 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*

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4:09 PM-4:17 PM

Discussion

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22

4:18 PM-4:22 PM

### 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*

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## 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

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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

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4:33 PM-4:41 PM

Discussion

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25

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

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26

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

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27

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

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4:57 PM-5:05 PM

Discussion

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◆ 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).

Wednesday, May 15, 2019, continued

**CONCURRENT SESSION: SPORTS**

Moderator: Jennifer Weiss, MD

eModerator: Kevin Dale, MD

Presenter: 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, MD; 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*

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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*

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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*

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3:45 PM-3:53 PM

Discussion

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31

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*

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32

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*

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33

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*

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## Wednesday, May 15, 2019, continued

4:09 PM-4:17 PM

Discussion

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34

4:18 PM-4:22 PM



### Suture Versus Screw Fixation of Tibial Spine Fractures: A Comparative Study

**Mininder Kocher, MD, MPH**; Judd Allen, MD; Mark Callanan, MD;  
Frances Tepolt, MD; Brett Flutie  
Boston Children's Hospital, Boston, MA

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35

4:23 PM-4:27 PM

### Which Psychological Measure Should Be Used to Identify Athletes at Risk for Prolonged Recovery Following ACL Reconstruction?

**Henry Ellis, MD**; K. John Wagner, BS; Aaron Zynda, BS; Meagan Sabatino, BA;  
Philip Wilson, MD  
Texas Scottish Rite Hospital for Children, Dallas, TX

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36

4:28 PM-4:32 PM

### Prospectively Calculated Utility Values in Children with Osteochondritis Dissecans of the Knee

Joshua Adjei, BA; Benedict Nwachukwu; Yi Zhang, MS; Daniel Green, MD;  
Emily Dodwell, MD; **Peter Fabricant, MD**  
Hospital for Special Surgery, New York, NY

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4:33 PM-4:41 PM

Discussion

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37

4:42 PM-4:46 PM

### Youth Marathon Training: Injury Epidemiology and Risk Factors

Joshua Goldman; Emily Miller, MD; Summer Runestad, ATC; Rebecka Serpa;  
**Jennifer Beck, MD**  
Orthopaedic Institute for Children, Los Angeles, CA

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38

4:47 PM-4:51 PM



### Youth Ice Hockey Concussions Reported at US Emergency Departments from 2002-2016: A Peak in 2011 and the Impact of Rule Modifications

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  
SUNY Downstate Medical Center, Brooklyn, NY

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39

4:52 PM-4:56 PM

### Delivery of Patient-Reported Outcome Instruments by Automated Mobile Phone Text Messaging in Pediatric Sports Medicine

**J. Todd Lawrence, MD, PhD**; Xochitl Mellor, BS; Matthew Buczek, BS;  
Theodore Ganley, MD; Alexander Adams, BS; Apurva Shah, MD, MBA  
Children's Hospital of Philadelphia, Philadelphia, PA

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4:57 PM-5:05 PM

Discussion

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# THURSDAY, MAY 16

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7:30 AM–7:34 AM Welcome Remarks

## QSVI GENERAL SESSION

Moderator: *Brian Brighton, MD, MPH*

eModerator: *Benjamin Shore, MD, MPH, FRCSC*

Presider: *Julie Samora, MD, PhD*

40

7:34 AM–7:38 AM

**Deciding Without Data: Clinical Decision Making in Pediatric Orthopaedic Surgery**

*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*

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41

7:39 AM–7:43 AM

**What is the Evidence Behind the US News & World Report Rating, and Does It Make Us Better Surgeons?**

*Smitha Mathew, MBBS; A. Noelle Larson, MD; Todd Milbrandt, MD Mayo Clinic, Rochester, MN*

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42

7:44 AM–7:48 AM

**Pediatric Orthopaedists are not Immune: Characterizing Self-reported Burnout Rates Amongst POSNA Members**

*Cordelia Carter, MD; Vishwas Talwalkar, MD; Jennifer Weiss, MD; Richard Schwend, MD; Michael Goldberg, MD POSNA Wellness Committee, Rosemont, IL*

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7:49 AM–7:57 AM

Discussion

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43

7:58 AM–8:02 AM

**Implementation of Standardized Discharge Regimen and Education Reduces Narcotic Prescribing Following Adolescent Idiopathic Scoliosis (AIS) Surgery: A Quality Value Safety Initiative (QVSI)**

*Craig Birch, MD; Kerry Wilder; Charu Sharma; Stacie Bukowsky, MSPH; Sandi Greenberg; Brandon Ramo, MD Texas Scottish Rite Hospital for Children, Dallas, TX*

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44

8:03 AM–8:07 AM

**Intraoperative Red Blood Cell Salvage in Posterior Spinal Fusions for Idiopathic Scoliosis: Guidelines for Selective Use**

*Scott Luhmann, MD; Garrett Wahl, BS Washington University School of Medicine, Saint Louis, MO*

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45

8:08 AM–8:12 AM

**Surgical Site Infections in Pediatric Spinal Surgery over a Decade of Serial and Iterative Efforts to Eradicate Infection: Timing Matters**

*Bradley Hammor, BS; Hiroko Matsumoto, BA; Gerard Marciano; Kevin Wang, BA; Lucas Dziesinski, BS; Michael Vitale, MD, MPH Columbia University Medical Center, New York, NY*

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## Thursday, May 16, 2019, continued

8:13 AM-8:21 AM

Discussion

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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

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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

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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

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8:37 AM-8:45 AM

Discussion

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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

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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

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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

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 may be used for external trauma-related CMEs.

◆ 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).

## Thursday, May 16, 2019, continued

9:01 AM-9:09 AM

Discussion

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52

9:10 AM-9:14 AM



**Expanding Practice Boundaries: Delivery of Fracture Care Using Telemedicine in Pediatric Orthopaedics**

*Neha Sinha, MD; Max Cornell; Benjamin Wheatley, BS; Mark Seeley, MD*  
*Geisinger Medical Center, Danville, PA*

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9:15 AM-9:19 AM



**Pacific Ocean's Eleven: The Cost-Effectiveness of Pediatricians Splinting Injuries in Their Office**

*Byron Izuka, MD*  
*University of Hawaii Division of Orthopaedic Surgery, Honolulu, HI*

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54

9:20 AM-9:24 AM

**Where are the Women Leaders? A Look at POSNA Committee and Leadership Positions**

*Sharul Saxena; Jennifer Weiss, MD; Joshua Abzug, MD; Michelle Caird, MD; Marilan Luong, MPH; Selina Poon, MD*  
*Shriners for Children Medical Center, Pasadena, CA*

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9:25 AM-9:33 AM

Discussion

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9:33 AM-10:00 AM

Break

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Thursday, May 16, 2019, continued

## ***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:	<b>Welcome</b> <i>Eric Fornari, MD</i>
10:05 AM-10:10 AM:	<b>Introduction of COUR Scholars</b> <i>Eric Fornari, MD;</i> <i>Coleen Sabatini, MD, MPH</i>
10:10 AM-10:15 AM:	<b>Introduction to the Symposium</b> <i>Coleen Sabatini, MD, MPH</i>
10:15 AM-10:35 AM:	<b>Understanding the World's Refugee Crisis</b> <i>Fatima Karaki, MD</i>
10:35 AM-11:00 AM:	<b>Overview of the Palestine Refugee Populations and an Integrated Approach to Addressing their Ongoing Pediatric Musculoskeletal Needs</b> <i>Anna Vergun, MD</i>
11:00 AM-11:30 AM:	<b>Principles of War Surgery: The Syrian Field Hospital Experience</b> <i>Samer Attar, MD</i>
11:30 AM-11:40 AM:	<b>Resources for Orthopaedic Surgeons Interested in Helping</b> <i>Eric Fornari, MD; Coleen Sabatini, MD, MPH</i>
11:40 AM-12:00 PM:	Discussion

Thursday, May 16, 2019, continued

## **TEACH THE TEACHER – STRATEGIES FOR PEDIATRIC ORTHOPEDIC EDUCATION IN THE MODERN ERA**

10:00 AM-12:00 PM

Co-Chairs: *Craig Ebersson, 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 Ebersson, MD; Todd Milbrandt, MD*

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### **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*

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

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

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

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### **EVALUATION**

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

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

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

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

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### **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*

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11:45 AM-11:55 AM Discussion

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11:55 AM-12:00 PM **Wrap Up and Final Comments**  
*Craig Ebersson, MD; Todd Milbrandt, MD*

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Thursday, May 16, 2019, continued

## **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*

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

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### **PERIOD 2**

#### **TECHNOLOGY AND INNOVATION IN TEACHING**

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

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

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

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### **PERIOD 3**

#### **TECHNOLOGY AND INNOVATION IN PRACTICE MANAGEMENT**

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

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11:45 AM-12:00 PM: **NextGen Telehealth**  
*Robert Cho, MD*

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Thursday, May 16, 2019, continued

## POPS

10:00 AM-2:00 PM

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

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

### 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?

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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?

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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

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11:45 AM-12:15 PM

#### Physician Assistant/APP Billing in Orthopaedics

Direct, Incident-to, Split/Shared

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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

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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?

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1:30 PM-1:45 PM

#### Assisting in Surgery- Modifier AS

What needs to be documented

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1:45 PM-2:00 PM

#### Are You Tracking Your Production?

Do you know your value- the basics of RVUs

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Thursday, May 16, 2019, continued

## RESEARCH

10:00 AM-12:00 PM

**Co-Chairs:** *A. Noelle Larson, MD &  
Jonathan Schoenecker, MD, PhD*

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*

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

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10:10 AM-10:15 AM: **Rebuttals**

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10:15 AM-10:20 AM: Discussion

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**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*

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

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10:30 AM-10:35 AM: **Rebuttals**

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10:35 AM-10:40 AM: Discussion

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### 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*

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## Thursday, May 16, 2019, continued

- 10:45 AM-10:50 AM    **Uncoupling Cell Signaling and Mineralization Defects in Neurofibromin Deficient Tibial Pseudoarthrosis**  
*Jonathan Rios, PhD, 2015 POSNA Research Grant*
- 
- 10:50 AM-10:55 AM:    **Spinal and Vertebral Dimension Charts: Precise and Accurate Characterization for Decision Support**  
*Stefan Parent, MD, 2015 Biomet Spine Research Grant*
- 
- 10:55 AM-11:00 AM:    Discussion
- 
- 11:00 AM-11:05 AM:    **Effects of Standing on Non-Ambulatory Children with Neuromuscular Conditions**  
*Walter Truong, MD, 2015 St. Giles Young Investigator Award*
- 
- 11:05 AM-11:10 AM:    **Assessing the Burden of Childhood Musculoskeletal Conditions**  
*Kevin Shea, MD, 2015 POSNA Directed Research Grants*
- 
- 11:10 AM-11:15 AM:    **PLUTO (Pediatric ACL: Understanding Treatment Operations): A Multi-Center Prospective Cohort Study**  
*Mininder S. Kocher, MD, MPH, 2015 Arthur H. Huene Award*
- 
- 11:15 AM-11:20 AM    Discussion
- 

### PERIOD 3

#### HOW I MADE THE WORLD/MY LIFE BETTER

- 11:20 AM-11:26 AM:    **How I Brought a Medical Device to Clinical Practice**  
*Peter Stevens, MD*
- 
- 11:26 AM-11:32 AM:    **How I Secured Development Funding for Our Orthopedic Research Program**  
*David Roye, MD*
- 
- 11:32 AM-11:38 AM:    ♦ **How to Do Research with Nationalized Healthcare**  
*Firoz Miyanji, MD*
- 
- 11:38 AM-11:44 AM:    **How I Negotiated Protected Research Time with my Department**  
*Michelle Caird, MD*
- 
- 11:44 AM-11:50 AM:    **How I Obtained NIH Funding for an RCT**  
*Lori Dolan, PhD*
- 
- 11:50 AM-12:00 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).

Thursday, May 16, 2019, continued

## **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!

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

Thursday, May 16, 2019, continued

## ***YOUNG MEMBER FORUM***

### ***FIFTH ANNUAL ARABELLA LEET, MD YOUNG MEMBER FORUM***

12:15 PM-1:30 PM

Moderator: *Jennifer Weiss, MD*



12:15 PM-12:20 PM

**Welcome**  
*Jennifer Weiss, MD*

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12:21 PM-12:25 PM

**Memorial to Arabella Leet**  
*Margaret Murphy-Zane, MD*

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12:26 PM-12:34 PM

**What Can POSNA Do For You?**  
*Robert Cho, MD*

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12:35 PM-12:44 PM

**What Can You Do For POSNA?**  
*Todd Milbrandt, MD*

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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*

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# 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; Brittany 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.

◆ 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

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

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7:59 AM-8:04 AM

Discussion

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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

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8:11 AM-8:16 AM

Discussion

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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

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8:23 AM-8:28 AM

Discussion

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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

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8:35 AM-8:40 AM

Discussion

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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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8:47 AM-8:52 AM

Discussion

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44

- ◆ 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

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8:53 AM-8:58 AM

**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; Paul Sponseller, MD*  
*Johns Hopkins Hospital, Baltimore, MD*

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8:59 AM-9:04 AM

Discussion

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9:05 AM-9:25 AM

Break

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### **BASIC SCIENCE AWARDS SESSION**

Moderator: *Matthew Halanski, MD*

eModerator: *Michelle Welborn, MD*

Presider: *Roger Cornwall, MD*

65

9:26 AM-9:30 AM

◆ **Identifying and Pharmacologically Correcting the Molecular Pathophysiology of Contractures in Neonatal Brachial Plexus Injury**  
*Athanasia Nikolaou, PhD; Liangjun Hu, MS; Roger Cornwall, MD*  
*Cincinnati Children's Hospital, Cincinnati, OH*

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66

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 Roye, MD; Stavros Thomopoulos, PhD*  
*Columbia University Medical Center Department of Orthopedic Surgery, New York, NY*

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67

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*

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9:41 AM-9:49 AM

Discussion


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68

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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## Friday, May 17, 2019, continued

69

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

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70

10:00 AM-10:04 AM

### Targeting Cholesterol Biosynthesis in Enchondromas

*Benjamin Alman, MD*  
Duke University, Durham, NC

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10:05 AM-10:13 AM

Discussion

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10:15 AM-10:30 AM

### DISTINGUISHED ACHIEVEMENT AWARD

*Perry Schoenecker, MD*

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10:31 AM-10:38 AM

### 2020 MEETING ANNOUNCEMENTS

*Peter Newton, MD*

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10:39 AM-10:59 AM

### PRESIDENTIAL SPEAKER

*Peter Waters, MD*

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11:00 AM-11:10 AM

Presidential Transfer

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Friday, May 17, 2019, continued

## **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*

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1:40 PM-1:50 PM

**Commentary/Rebuttal**  
*Vincent Mosca, MD*

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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.*

## Friday, May 17, 2019, continued

### 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*

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72

2:21 PM-2:25 PM

#### Anterior Hemi-Epiphysiodesis of the Distal Tibia for Residual Equinus Deformity in Children with Clubfeet

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

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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*

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2:31 PM-2:40 PM

Discussion

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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*

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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*

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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*

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2:56 PM-3:05 PM

Discussion

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Friday, May 17, 2019, continued

## **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*

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3:31 PM-3:47 PM

Discussion

Panel: *Donald Bae, MD*

*Robert Carrigan, MD*

*Charles Goldfarb, MD*

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3:48 PM-3:53 PM

**Challenging Cases in the Pediatric Upper Extremity Case Presentation #2**

*Christopher Stutz, MD*

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3:54 PM-4:10 PM

Discussion

Panel: *Robert Carrigan, MD*

*Charles Goldfarb, MD*

*Allan Peljovich, MD MPH*

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### PERIOD 2B

#### Free Papers

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

**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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**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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**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*

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Friday, May 17, 2019, continued

4:26 PM-4:35 PM

Discussion

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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*

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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*

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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*

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4:51 PM-5:00 PM

Discussion

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## **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*

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## Friday, May 17, 2019, continued

84

1:35 PM-1:39 PM

### The Effect of Screw Position in Slipped Capital Femoral Epiphysis

Jillian Lee, MBChB; Tegan Cheng; **David Little, MD, MBBS, FRACS, PhD**  
The Children's Hospital at Westmead, Sydney, New South Wales, Australia

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85

1:40 PM-1:44 PM

### Predictors of Failure After Surgical Treatment of Femoroacetabular Impingement: Results of a Multicenter Prospective Cohort of 621 Hips

**Jeffrey Nepple, MD**; Asheesh Bedi, MD; Ira Zaltz, MD; Christopher Larson, MD; Daniel Sucato, MD, MS; Paul Beaulé, MD; Young-Jo Kim, MD, PhD; ANCHOR Study Group; John Clohisey, MD  
Washington University School of Medicine, Saint Louis, MO

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1:45 PM-1:54 PM

Discussion

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86

1:55 PM-1:59 PM

### Does a Fascia Iliaca Pain Block Protocol Facilitate Earlier Mobilization and Shorter Hospital Stay than Epidural Anesthesia After Periacetabular Osteotomy

**Patrick Whitlock, MD**; Vidya Chidambaran; Megan Albertz, MD; Lili Ding, PhD; James McCarthy, MD, MHCM  
Cincinnati Children's Hospital Medical Center, Cincinnati, OH

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87

2:00 PM-2:04 PM

### Naproxen Provides Safe and Effective Heterotopic Ossification Prophylaxis for Periacetabular Osteotomies

John Clohisey, MD; Adam Sassoon, MD; Gail Pashos; Sean Akers; Karla Crook, BSW; **Michael Hellman, MD**  
Washington University School of Medicine, Saint Louis, MO

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88

2:05 PM-2:09 PM

### Does Early Proximal Femoral Varus Osteotomy Shorten the Length of Fragmentation In LCPD? Lessons from a Prospective Multi-Center Cohort

**Wudbhav (Woody) Sankar MD**; Scott Lavalva, BA; Molly McGuire; Chan-Hee Jo, PhD; Harry Kim, MD  
Children's Hospital of Philadelphia, Philadelphia, PA

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2:10 PM-2:19 PM

Discussion

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## PERIOD 1B

2:20 PM-2:22 PM

**Case 1: Management of Focal Femoral Head Avascular Necrosis**  
Vidyadhar Upasani, MD

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2:23 PM-2:27 PM

### Allograft / Biologics

Patrick Whitlock, MD, PhD

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2:28 PM-2:32 PM

### Osteotomy

Courtney O'Donnell, MD

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## Friday, May 17, 2019, continued

2:32 PM-2:42 PM	Discussion
2:43 PM-2:45 PM	<b>Case 2: Management of Whole Head Avascular Necrosis</b> <i>Vidyadhar Upasani, MD</i>
2:46 PM-2:50 PM	<b>THA</b> <i>John Masonis, MD</i>
2:51 PM-2:55 PM	<b>Non-Arthroplasty Options</b> <i>David Podeszwa, MD</i>
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*

<b>89</b> 3:25 PM-3:29 PM	<b>Comparison Between the Pavlik Harness and the Tübingen Splint for the Treatment of Developmental Dysplasia of the Hip in Infants</b> <b>Xuemin Lyu, MD</b> <i>Beijing Jishuitan Hospital, Beijing, China, People's Republic of</i>
<b>90</b> 3:30 PM-3:34 PM	<b>The Fate of the Stubborn Hip in Bilateral Cases Where One Hip Reduces on Initial Treatment: How Many and What To Do?</b> <b>Jose Herrera-Soto, MD; Emily Schaeffer, PhD; Kishore Mulpuri, MBBS; Wudbhav (Woody) Sankar, MD; Nicole Williams, FRACS; Travis Matheney, MD; Vidyadhar Upasani MD</b> <i>BC Children's Hospital, Vancouver, BC, Canada</i>
<b>91</b> 3:35 PM-3:39 PM	<b>Perfusion MRI after Closed and Open Reduction may not Predict Proximal Femoral Growth Disturbance at Long-term Followup in Developmental Dysplasia of the Hip</b> <b>Florian Schmaranzer, MD; Young-Jo Kim, MD, PhD; Mariana Ferrer, MD; David Williams, PhD; Sarah Bixby, MD; Eduardo Novais, MD</b> <i>Boston Children's Hospital, Boston, MA</i>
3:40 PM-3:49 PM	Discussion
<b>92</b> 3:50 PM-3:54 PM	<b>Anterior Open Reduction of the Hip in Walking Age Children. What is the Role of Bony Surgery?</b> <b>Alpesh Kothari, MD; Angela Tatay, MD; Sarah Lancaster, MD; Tim Theologis</b> <i>Oxford University Hospitals NHS Trust, Oxford, Oxfordshire, United Kingdom</i>

## Friday, May 17, 2019, continued

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

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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

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4:05 PM-4:15 PM

Discussion

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### PERIOD 2B

4:15 PM-4:17 PM

**Case 1: Persistent Dislocation, Failed Bracing**

*Travis Matheney, MD*

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4:18 PM-4:22 PM

**Attempt Closed Reduction/Open Reduction Early (Early Treatment)**

*Andreas Roposch, MD, MSc, FRCS*

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4:23 PM-4:27 PM

**Wait for Open Reduction/Osteotomies**

*Charles Price, MD*

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4:27 PM-4:37 PM

Discussion

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4:38 PM-4:40 PM

**Case 2: Residual Dysplasia with Open Triradiate Cartilage**

*Travis Matheney, MD*

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4:41 PM-4:45 PM

**Intervene Now**

*Scott Rosenfeld, MD*

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4:46 PM-4:50 PM

**Wait and See/PAO is Best**

*Eduardo Novais, MD*

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4:50 PM-5:00 PM

Discussion

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Friday, May 17, 2019, continued

## 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*

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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*

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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*

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1:45 PM-1:54 PM

Discussion

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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*

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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*

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- ◆ 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*

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2:10 PM-2:19 PM Discussion

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### PERIOD 1B

#### DEBATE: Should Isolated Femoral Anteversion Be Corrected?

Moderator: *Christopher Iobst, MD*

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

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

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2:30 PM-2:40 PM Discussion

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#### 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*

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

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

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2:55 PM-3:05 PM: Discussion

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Friday, May 17, 2019, continued

## 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 Huroy, BS; Clarissa Encisa, MPH; Ashley Ferkul, BA; Herbert Graham, MD; Kishore Mulpuri, MBBS; Michael Fehlings, MD*  
*The Hospital for Sick Children, Toronto, Ontario, Canada*

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102

3:30 PM-3:34 PM

#### Hip Reconstruction in Children with Cerebral Palsy: What Predicts Failure?

*Pooya Hosseinzadeh, MD; Arya Minaie, BA; Jaclyn Schipper, BA; Elizabeth Forsen, ST*  
*Saint Louis Children's Hospital, Saint Louis, MO*

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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*

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3:40 PM-3:49 PM

Discussion

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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*

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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*

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## Friday, May 17, 2019, continued

106 4:00 PM-4:04 PM	<b>Femoral Head Avascular Necrosis After Reconstructive Hip Surgery in Children with Cerebral Palsy</b> <i>Pooya Hosseinzadeh, MD; Arya Minaie, BA; Jaclyn Schipper, BA; Elizabeth Forsen, ST</i> <i>Saint Louis Children's Hospital, Saint Louis, MO</i>
4:05 PM-4:15 PM	Discussion

### PERIOD 2B

Moderators: *Emily Dodwell, MD & Vineeta Swaroop, MD*

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

4:15 PM-4:20 PM	<b>Percutaneous</b> <i>David Yngve, MD</i>
4:21 PM-4:26 PM:	<b>Open</b> <i>Jon Davids, MD</i>
4:27 PM-4:34 PM:	Discussion
4:35 PM-4:40 PM:	<b>Publications This Year That Might Change Your Practice</b> <i>Jill Larson, MD</i>
4:41 PM-4:50 PM:	◆ <b>How/When to Operate on Older Teens/Young Adults with Cerebral Palsy</b> <i>Henry (Hank) Chambers, MD</i>
4:51 PM-5:00 PM:	<b>Master Technique: Early Results of the Trochanteric Sparing Proximal Femoral Resection for Arthritic Neuromuscular Hip</b> <i>Jonathan Schoenecker, MD, PhD</i>

◆ 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

## 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*

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

## Friday, May 17, 2019, continued

### 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*
- 
- 108**  
2:21 PM-2:25 PM
- The Impact of Posterior Spinal Fusion (PSF) on Coronal Balance in Adolescent Idiopathic Scoliosis (AIS): A New Classification and Trends in the Post-Operative Period**  
*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	<p>◆ <b>Implanted Reservoir for Intrathecal Administration of Nusinersen (Spinraza™) in Patients with Spinal Muscular Atrophy and Posterior Spinal Fusions</b> <i>Burt Yaszay, MD; Chamindra Konersman, MD; Emily Ewing, MA; Andrew Skalsky, MD</i> <i>Rady Children's Hospital, San Diego, CA</i></p> <hr/>
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	<p><b>Setting the Stage</b> <i>Jeffrey Sawyer, MD</i></p> <hr/>
3:30 PM-3:35 PM	<p><b>Non-Surgical Treatment</b> <i>Lori Karol, MD</i></p> <hr/>
3:35 PM-3:40 PM	<p><b>Growth Friendly Treatment</b> <i>Michael Vitale, MD, MPH</i></p> <hr/>
3:40 PM-3:45 PM	<p>◆ <b>Vertebral Body Stapling</b> <i>Patrick Cahill, MD</i></p> <hr/>
3:45 PM-3:50 PM	<p><b>Vertebral Body Tethering</b> <i>Stefan Parent, MD</i></p> <hr/>
3:50 PM-3:55 PM	<p><b>Spinal Fusion</b> <i>Jaime Gómez, MD</i></p> <hr/>
3:55 PM-4:10PM	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).

## Friday, May 17, 2019, continued

### 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      **Intraspinial 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
-

Friday, May 17, 2019, continued

## **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

- 119**  
1:30 PM-1:34 PM      **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**  
1:35 PM-1:39 PM      **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**  
1:40 PM-1:44 PM      **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*
- 
- 1:45 PM-1:54 PM      Discussion
- 
- 122**  
1:55 PM-1:59 PM      **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**  
2:00 PM-2:04 PM       **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

- 124**  
2:05 PM-2:09 PM      **The Use of the Y-Balance Test for Return to Play Assessment Following Adolescent ACL Reconstruction: Exposing the Contralateral Limb**  
**Henry Ellis, MD**; *K. John Wagner, BS; Meagan Sabatino, BA; Aaron Zynda, BS; Lorenzo Vite, PT; Jessica Dabis, DPT; Laura Saleem, PT; Daniel Stokes, DPT; Philip Wilson, MD*  
*Texas Scottish Rite Hospital for Children, Dallas, TX*
- 
- 2:10 PM-2:19 PM      Discussion
- 

### 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
-

## Friday, May 17, 2019, continued

### 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*

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

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3:00 PM-3:05 PM      Discussion

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3:05 PM-3:25 PM      Break

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### 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*

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#### 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*

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#### 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*

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3:40 PM-3:49 PM      Discussion

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#### 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*

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## Friday, May 17, 2019, continued

129

3:55 PM-3:59 PM

**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*

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130

4:00 PM-4:04 PM

**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*

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4:05 PM-4:15 PM

Discussion

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### 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: 1<sup>st</sup> time traumatic anterior GH dislocation in adolescent male football player**

4:15 PM-4:20 PM

**Nonop/PT/Bracing**

*Matthew Schmitz, MD*

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4:20 PM-4:25 PM

**Op – Arthroscopic Bankart Repair**

*Paul Saluan, MD*

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4:25 PM-4:30 PM

**Op – Open Bankart Repair**

*Henry Ellis, MD*

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4:30 PM-4:40 PM

Discussion

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

4:40 PM-4:45 PM

**Nonop/PT**

*Donald Bae, MD*

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4:45 PM-4:50 PM

**Op – Arthroscopic Capsulorrhaphy**

*Michael Busch, MD*

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## Friday, May 17, 2019, continued

4:50 PM-4:55 PM **Op – Open Inferior Capsular Shift**  
*Mininder Kocher, MD, MPH*

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4:55 PM-5:00 PM Discussion

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### **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*

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**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; Raphaelle Blondin-Gravel, MSc;*  
*Constantin Stanciu; Mathilde Hupin, MD*  
*CHU Ste-Justine, Montreal, Quebec, Canada*

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**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*

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1:45 PM-1:54 PM

Discussion

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**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*

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may be used for external trauma-related CMEs.





## Friday, May 17, 2019, continued


- 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-Moscati; Jason Stoneback, MD;  
Nancy Miller, MD  
Children's Hospital of Colorado, Aurora, CO
-

## Friday, May 17, 2019, continued

- 139**  
3:35 PM-3:39 PM
-  **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*
- 
- 3:40 PM-3:49 PM
- Discussion
- 
- 140**  
3:50 PM-3:54 PM
-  **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*
- 
- 141**  
3:55 PM-3:59 PM
-  **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*
- 
- 142**  
4:00 PM-4:04 PM
-  **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*
- 
- 4:05 PM-4:15 PM
- Discussion
- 
- PERIOD 2B**  
4:15 PM-4:17 PM
-  **Pediatric Patients with Adult Trauma: Treating the "Tweeners" Cases: Introduction and Presentation of the Femoral Tweener Case**  
*Mark Sinclair, MD*
- 
- 4:17 PM-4:22 PM
-  **Treatment of Femoral Tweener Case with IM Fixation**  
*Eric Eisner, MD*
- 
- 4:23 PM-4:28 PM
-  **Treatment of Femoral Tweener Case with Submuscular Plating**  
*Paul Sponseller, MD*
- 
- 4:28 PM-4:30 PM
- Audience Vote/Discussion
- 
- 4:30 PM-4:39 PM
-  **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

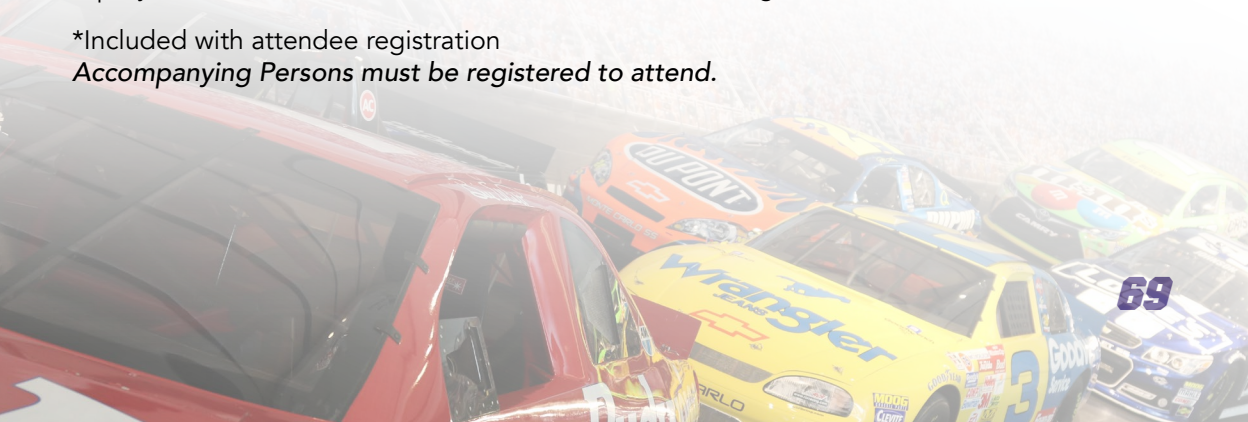
7:30 PM	Doors Open
7:30 PM-8:00 PM	Cocktails
8:00 PM-9:30 PM	Dinner
9:30 PM-11:00 PM	DJ and Karaoke

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

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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

## UPPER/LOWER EXTREMITY GENERAL SESSION

Moderator: *John (Jack) Flynn, MD*

eModerator: *Samantha Spencer, MD*

Presider: *Christine Ho, MD*

143

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*

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144

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*

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145

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*

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8:21 AM-8:29 AM

Discussion

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146

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*

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147

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*

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148

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*

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- ◆ 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).



## Saturday, May 18, 2019, continued

8:45 AM-8:53 AM

Discussion

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**149**

8:54 AM-8:58 AM

**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*

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**150**

8:59 AM-9:03 AM

**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 Schueler; A. Noelle Larson, MD** Mayo Clinic, Rochester, MN*

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**151**

9:04 AM-9:08 AM

**How Accurate Is the Multiplier Method in Predicting the Timing of Angular Correction after Hemiepiphysiodesis?**

***John Herzenberg, MD; Hady Eltayeb, MBChB; Chukwuweike Gwam, MD** International Center for Limb Lengthening, Sinai Hospital of Baltimore, Baltimore, MD*

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9:09 AM-9:17 AM

Discussion

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### **CONGENITAL/SYNDROMES GENERAL SESSION**

Moderator: *Lori Karol, MD*

eModerator: *Philip Nowicki, MD*

Presider: *Klane White, MD*

**152**

9:18 AM-9:22 AM

**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*

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**153**

9:23 AM-9:27 AM

**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*

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**154**

9:28 AM-9:32 AM

**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*

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9:33 AM-9:41 AM

Discussion

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## Saturday, May 18, 2019, continued

- 155**  
9:42 AM-9:46 AM  **Characteristics of Olecranon Fractures in Osteogenesis Imperfecta**  
*Samantha Tayne, MD; Peter Smith, MD*  
*Shriners Hospitals for Children - Chicago, Chicago, IL*
- 
- 156**  
9:47 AM-9:51 AM  **Femoral Fassier-Duval Rodding in Osteogenesis Imperfecta: Long Term Results in 27 Patients with a Minimum 10 Year Follow Up**  
*Francois Fassier, MD; Abdullah Addar, MBBS; Fan Jiang; Yousef Marwan, MD; Nizar Algarni, MD; Kathleen Montpetit, OT; Reggie Hamdy, MD*  
*Shriners Hospitals for Children - Canada, Montreal, Quebec, Canada*
- 
- 157**  
9:52 AM-9:56 AM **Bone Density and Hardware Failure in Pediatrics**  
*Althea Perez; Mallory Rowan; Amanda Whitaker, MD*  
*Nationwide Children's Hospital, Columbus, OH*
- 
- 9:57 AM-10:05 AM Discussion
- 
- 10:06 AM-10:26 AM Break
- 

### **HIP GENERAL SESSION**

Moderator: *Ernest Sink, MD*  
eModerator: *Rachel Goldstein, MD*  
Presider: *Kishore Mulpuri, MD*

- 158**  
10:27 AM-10:31 AM **Should I Plan to Open? Predicting the Need for Open vs. Closed Reduction in the Surgical Treatment of Developmental Dysplasia of the Hip**  
*Nakul Talathi, BS; Arianna Trionfo, MD; Neeraj Patel, MD; Vidyadhar Upasani, MD; Travis Matheney, MD; Kishore Mulpuri, MBBS; Wudbhav (Woody) Sankar, MD*  
*Children's Hospital of Philadelphia, Philadelphia, PA*
- 
- 159**  
10:32 AM-10:36 AM **Predictors of Avascular Necrosis of the Femoral Head Following Closed or Open Reduction in the Treatment of Developmental Dysplasia of the Hip**  
*Emily Schaeffer, PhD; Jeffrey Bone, MSc; Wudbhav (Woody) Sankar, MD; Travis Matheney, MD; Kishore Mulpuri, MBBS*  
*BC Children's Hospital, Vancouver, BC, Canada*
- 
- 160**  
10:37 AM-10:41 AM **Evolution of Concentric Reduction after Closed Reduction in Developmental Dysplasia of the Hip: A Prospective Series of Magnetic Resonance Imaging Studies**  
*Weizheng Zhou, MD; Lianyong Li*  
*Shenjing Hospital of China Medical University, Shenyang, Liaoning Province, China, People's Republic of*
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## Saturday, May 18, 2019, continued

10:42 AM-10:50 AM

Discussion

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**161**

10:51 AM-10:55 AM

**The Natural History of Unilateral Versus Bilateral Immature Hips – What are the Factors that Lead to Persistently Abnormal Exams?**  
*Katherine Schroeder, MD; Ashley Startzman, DO; Kolby Buckner, PA; Hayley Peoples, MPH; Jaclyn Hill, MD*  
*Texas Children's Hospital, Houston, TX*

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**162**

10:56 AM-11:00 AM

**Significance of Asymmetry of Groin/Thigh Creases in Developmental Dysplasia of the Hip Revisited: A Myth or a Fact ?**  
*Hakan Omeroglu, MD; Suleyman Tatlici, MD; Nusret Kose*  
*TOBB University of Economics and Technology, Sogutozu, Ankara, Turkey*

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**163**

11:01 AM-11:05 AM

**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**  
*Daniel Sucato, MD, MS; Hannah Worrall, MPH; Chan-Hee Jo, PhD*  
*Texas Scottish Rite Hospital, Dallas, TX*

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11:06 AM-11:14 AM

Discussion

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**164**

11:15 AM-11:19 AM

**Comparison of Staged Vs. Single Event Timing of Bilateral Hip Surgery in Children with Spastic Quadriplegic Cerebral Palsy**  
*Craig Louer, MD; Jason Nunez, BA; James Bomar; Henry (Hank) Chambers, MD; Vidyadhar Upasani, MD*  
*Rady Children's Hospital, San Diego, San Diego, CA*

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**165**

11:20 AM-11:24 AM

**Prolonged Non-Weightbearing Treatment Decreases Femoral Head Deformity in Legg-Calve-Perthes Disease**  
*Jeffrey Peck, MD; Dustin Greenhill, MD; Molly McGuire; Harry Kim, MD*  
*Texas Scottish Rite Hospital for Children, Dallas, TX*

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**166**

11:25 AM-11:29 AM

**Does Surgical Containment of Hips in Patients with Epiphyseal Dysplasia Impact Clinical Outcomes?**  
*Vidyadhar Upasani, MD; Amelia Lindgren, MD; Dennis Wenger, MD; James Bomar, MPH*  
*Rady Children's Hospital, San Diego, San Diego, CA*

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11:30 AM-11:38 AM

Discussion

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## Saturday, May 18, 2019, continued

- 167**  
11:39 AM-11:43 AM **Relative Contribution of Epiphyseal Tubercle and Peripheral Cupping to Capital Femoral Epiphysis Stability: New Insights to the Pathogenesis of SCFE and Cam-FAI Morphology**  
*Eduardo Novais, MD; Daniel Maranhó; Ata Kiapour, PhD; Ali Kiapour, PhD; Young-Jo Kim, MD, PhD*  
*Boston Children's Hospital, Boston, MA*
- 
- 168**  
11:44 AM-11:48 AM **Comparison of Prophylactic In-situ Screw Fixation Versus Observation of the Asymptomatic Contralateral Hip in Slipped Capital Femoral Epiphysis (SCFE)**  
*Brian Haus, MD; Lauren Agatstein, MA; Akash Patel, BS; Alton Skaggs BS; Jennette Boakes, MD*  
*Shriners Hospitals for Children Northern California, Sacramento, CA*
- 
- 169**  
11:49 AM-11:53 AM **Capital Femoral Epiphyseal Cupping and Extension May Be Protective in Slipped Capital Femoral Epiphysis: A Multicenter Matching Cohort Study**  
*William Morris, MD; Raymond Liu, MD; Danielle Marshall, BA; Daniel Maranhó; Roya Dastjerdi; Eduardo Novais, MD*  
*Boston Children's Hospital, Boston, MA*
- 
- 11:54 AM-12:04 PM Discussion
-

# VIDEO ABSTRACTS



## Video Abstract 1

**Thumb Duplication: Reconstruction of a Wassell IV Deformity**

**David Westberry, MD; Ashley Carpenter, BS**

*Shriners Hospital for Children: Greenville, Greenville, SC*

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## Video Abstract 2

**Magnetic, Motorized Femoral Lengthening Nail: Antegrade Piriformis Insertion**

**John Herzenberg, MD**

*Sinai Hospital of Baltimore, Baltimore, MD*

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## 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*

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## 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*

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## Video Abstract 5

**Application of Mehta Cast Technique**

**Joseph Khoury, MD; Jacob Cox, MD; Rafael Serrano, MD**

*Shriners Hospital for Children, Tampa, FL*

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## 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*

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## Video Abstract 7

**Percutaneous Calcaneal Displacement Osteotomy in the Pediatric Population**

**Indranil (Neel) Kushare, MD; Jeffrey Shilt, MD**

*Texas Children's Hospital, Houston, TX*

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## 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*

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## 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*

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## Video Abstracts, continued

### 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*

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# 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*

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## Paper Poster 2

Coronal Remodeling Potential of Pediatric Distal Radius Fractures

*Teresa Cappello, MD; Kyle Lynch, BS*  
*Loyola University Medical Center, Maywood, IL*

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## 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*

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## 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*

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## 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*

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## Paper Poster 6

Effect of Intravenous  $\epsilon$ -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*

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## 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*

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## 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*

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## Paper Posters, continued

### Paper Poster 9

18% of Patients with MCGR 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

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### 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

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### 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

**James Sanders, MD**; Xueya Cai, PhD; Shan Gao, MS; Raymond Liu, MD; Jonathan Cui, MD; Dana Duren, PhD; Mekka Garcia, BS; Alec Lik Hang Hung; Lauren Karbach, MD; Derrick Knapik, MD; Don Li; Allen Nicholson, MD; Brian Smith, MD; David Weber; Daniel Cooperman, MD  
University of Rochester, Rochester, NY

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### Paper Poster 12

Does Repetitive Torque Result in Morphological Changes of the Lateral Elbow of the Skeletally Immature Baseball Player? A Prospective MRI Study

William Harkin, BA; Andrew Pennock, MD; Tracey Bastrom, MA; **Eric Edmonds, MD**  
Rady Children's Hospital, San Diego, CA

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### Paper Poster 13

The Modified Kocher Criteria is Good Predictor of Both Septic Hip and Knee

Casey Smith, MD; Jessica Burns, MD; **Mohan Belthur, MD**  
Phoenix Children's Hospital, Phoenix, AZ

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### Paper Poster 14

Epiphyseal-Entry Cannulated Screws for Temporary Guided Growth of the Knees

**Kevin Neal, MD**; Gary Kiebzak, PhD; Cody Sanderson, MD  
Nemours, Jacksonville, FL

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### Paper Poster 15

Factors Affecting Femoral Remodeling after Proximal Femoral Varus Osteotomy 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

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## Paper Posters, continued

### Paper Poster 16

#### Risk Factors for Venous Thromboembolism in Children Undergoing Orthopaedic Surgery

*Elbert Mets, BA; Neil Pathak, BS; Anoop Galivanche, BS; Ryan Mclynn, MD; David Frumberg, MD; Jonathan Grauer, MD*

*Yale School of Medicine, New Haven, CT*

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### Paper Poster 17

#### Utility of Preoperative Labs in Posterior Spinal Fusions for Idiopathic Scoliosis

*Scott Luhmann, MD; Kevin Clark, MPH*

*Washington University School of Medicine, Saint Louis, MO*

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### Paper Poster 18

#### Minimally Invasive Surgery in Patients with Adolescent Idiopathic Scoliosis is Safer, Less Expensive with Similar Curve Correction and SRS-30 Outcomes as Standard PSF

*Vishal Sarwahi, MBBS; Jesse Galina, BS; Stephen Wendolowski, BS; Sayyida Hasan, BS;*

*Chhavi Katyal, MD; Yungtai Lo, PhD*

*Cohen Children's Medical Center, New Hyde Park, NY*

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### Paper Poster 19

#### Expert Consensus for Early Onset Scoliosis Surgery 2018

*Jason Anari, MD; Patrick Cahill, MD; Divya Talwar, MPH; John (Jack) Flynn, MD*

*Children's Hospital of Philadelphia, Philadelphia, PA*

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### Paper Poster 20

#### Retrograde Intramedullary Nailing of Pediatric Femoral Shaft Fractures does not Result in Growth Arrest at the Distal Femoral Physis - A Retrospective Case Series

*Alex Benedick, MD; Batzorig Bazar, MD; Lewis Zirkle, MD; Raymond Liu, MD*

*Rainbow Babies and Children's Hospital/Case Western Reserve University, Cleveland, OH*

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# ePOSTERS

## ePoster 1

Correlation of Collagen X Biomarker (CXM) with Peak Height Velocity and Radiographic Measures of Growth in Idiopathic Scoliosis

**Michelle Welborn, MD**; Susan Sienko, PhD; Ryan Coghlan; William Horton, MD  
Shriners Hospital for Children Portland, Portland, OR

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## ePoster 2

Are Children Treated for ADHD at Risk for Short Stature? A Physal Mouse Model

**Todd Milbrandt, MD**; Daniela Galeano-Garces, MD; Catalina Garces, BS; Jennifer Grauberger, BA; A. Noelle Larson, MD; Andre Van Wijnen  
Mayo Clinic, Rochester, MN

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## ePoster 3

The Effects of Physiologic Loading on Juvenile Bone: An Analysis of Primary Osteocytes using Next Generation Sequencing

**Donna Pacicca, MD**; Tammy Brown, BA; Jeff Johnston, BS; Greyson Twist, MS; M. Gibson, MB; Emily Farrow, PhD  
Children's Mercy Hospital, Kansas City, MO

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Convergent Validity of PODCI and PROMIS Domains in Congenital Upper Limb Anomalies

**Charles Goldfarb, MD**; Carley Vuillermin, MBBS; Patricia Miller, MS; Donald Bae, MD; Lindley Wall, MD  
Washington University, Saint Louis, MO

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Radiologic Outcomes of Containment Surgery for Dysplastic Hips in Morquio IV-A Syndrome.

Amit Nemade, MS; **William Mackenzie, MD**; Mihir Thacker, MD; Kenneth Rogers, PhD  
Nemours - Alfred I duPont Hospital for Children, Wilmington, DE

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Initial Dimeglio Score Predicts Treatment Difficulty During Ponseti Casting for Isolated Clubfoot

Christopher Brazell, BA; Patrick Carry, MS; Alexander Jones, BA; Robin Baschal; Kaley Holmes, BA; Nancy Miller, MD; **Gaia Georgopoulos, MD**  
Children's Hospital Colorado, Aurora, CO

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## ePoster 7

Autism and Toe-walking: Are They related? Trends and Treatment Patterns from 2005-2016

**Steven Frick, MD**; Jacinta Leyden, BS; Lawrence Fung, MD  
Stanford University, Stanford, CA

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Patient Reported Outcome Measurement Information System (PROMIS) Scores in Children with Brachial Plexus Birth Injury

**Mary Manske, MD**; Ido Volk; Lauren Agatstein, BA; Nancy Abarca, MPH; Michelle James, MD  
Shriners Hospital for Children Northern California, Sacramento, CA

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### ePoster 9

**Analysis of Femoral Head Microstructure and Vasculature Relevant to Legg-Calve-Perthes Disease**

**William Morris, MD; Raymond Liu, MD; Elena Chen; Harry Kim, MD**  
Texas Scottish Rite Hospital for Children, Dallas, TX

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### ePoster 10

**Developmental Dysplasia of the Hip: Care Practices of Orthopaedic Surgeons in North America**

**Jessica Burlile, BA; Isabel Taylor; Kishore Mulpuri, MBBS; Xue Geng, MS; Emily Schaeffer, PhD; Eva Habib, BS; Lauren Vagelakos, MBA; Charles Price, MD; Kevin Shea, MD**  
Stanford University, Stanford, CA

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### ePoster 11

**Rate of Osteotomy Healing and Factors Associated with Non-union after Periacetabular Osteotomy for the Treatment of Symptomatic Acetabular Dysplasia**

**Courtney O'Donnell, MD; Michael Millis, MD; Ariel Davila-Parrilla, MD; Young-Jo Kim, MD, PhD; Kathryn Williams, MS; Eduardo Novais, MD**  
Boston Childrens Hospital, Boston MA

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### ePoster 12

**The Effect of Aminocaproic Acid on Blood Loss in Periacetabular Osteotomy**

**Jose Herrera-Soto, MD; Gregory Hale, MD; Denise Lopez, NP; Obinna Adigweme, MD**  
Arnold Palmer Hospital for Children, Orlando, FL

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### ePoster 13

**Post-Operative Pain Control and Medication Usage in Pediatric Patients Following Operative Treatment of Supracondylar Humerus Fractures: Are We Still Overprescribing Opioids?**

**Matthew Stillwagon MD; Shawn Feinstein MD; Elizabeth Byrd Nichols; Paul Andrews, MS; Anna Vergun, MD**  
University of North Carolina, Chapel Hill, Chapel Hill, NC

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### ePoster 14

**Outcomes for Patients with Developmental Hip Dysplasia who Present after Six Months of Age**

**Ronald Roiz, MD; Liam Harris, MD; Paul Choi, MD; Rachel Goldstein, MD**  
Children's Hospital Los Angeles, Los Angeles, CA

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### ePoster 15

**Does the Use of an Intraoperative Cell Salvage System Affect the Rate of Perioperative Allogenic Red Blood Cell Transfusion in Patients Undergoing Periacetabular Osteotomy?**

**Michael Van Der Merwe, MBChB; Nicholas Lightfoot, MBChB; Jacob Munro, MD; Matthew Boyle, FRACS**  
Starship Children's Hospital, Auckland, New Zealand

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### ePoster 16

**Does Type of Regional Anesthetic Blockade Affect Time to Mobilize and Length of Hospital Stay after Periacetabular Osteotomy?**

**Isobella Henzell, MBBS; Nicholas Lightfoot, MBChB; Jacob Munro, MD; Matthew Boyle, FRACS**  
Starship Children's Hospital, Auckland, New Zealand

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Corroborating the Association Between Major Comorbidities and Slipped Capital Femoral Epiphysis: A Utilization of Big Data

**R. Justin Mistovich, MD**; Julian Gatta, MD; Lakshmanan Sivasundaram, MD; Nikunj Trivedi, MD; Abdulhakim Tlimat, MD; David Kaelber

Case Western Reserve University Department of Orthopaedics, Cleveland, OH

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### ePoster 18

Reliability and Outcome Predictability of Acetabular Index and Center-edge Angle in Developmental Dysplasia of the Hip: A Comparison of Two Different Measurement Methods

**Chang Ho Shin, MD**; Chaemoon Lim; Won Joon Yoo, MD; In Choi, MD; Tae-Joon Cho

Seoul National University Children's Hospital, Seoul, Korea, Republic of

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### ePoster 19

Effect of Pavlik Harness Treatment on Infant Motor Milestones

**Tyler Stavinoha**; Onyemaechi Uzosike, BA; Damian McGlothlin, BA; Nicole Segovia, BS; Stephanie Pun, MD; Meghan Imrie, MD

Stanford University, Palo Alto, CA

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### ePoster 20

The Incidence of Residual Acetabular Dysplasia after Early Childhood Operative Intervention

**Courtney O'Donnell, MD**; Jenna Powell, BS; Patrick Carry, MS; Matthew Genelin; Ernest Sink, MD  
Children's Hospital Colorado, Aurora, CO

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◆ Contrast-Enhanced Ultrasound of Infant Hips: A Comparison with Post-Operative MRI and Correlation with Development of Avascular Necrosis

**Travis Matheney, MD**; Young-Jo Kim, MD, PhD; Benjamin Shore, MD, MPH, FRCSC; Harriet Paltiel, MD  
Boston Children's Hospital, Boston, MA

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Comparing the Pemberton Osteotomy and Modified San Diego Acetabuloplasty in Developmental Dysplasia of the Hip

**Raghav Badrinath, MD**; James Bomar, MPH; Dennis Wenger, MD; Scott Mubarak, MD; Vidyadhar Upasani, MD

Rady Children's Hospital, San Diego, San Diego, CA

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### ePoster 23

The Incidence of Pin Tract Infections and Septic Arthritis in Percutaneous Distal Femur Pinning

**Rajan Murgai, BS**; Edward Compton, BS; Kenneth Illingworth, MD; Rachel Goldstein, MD; Robert Kay, MD

Children's Hospital Los Angeles, Los Angeles, CA

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- ◆ 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).

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#### Outcome of Surgical Excision in Patients with Fibro-Adipose Vascular Anomaly

Samantha Spencer, MD; **Kemle Wang, MD**; Rachel Glenn; Megan Anderson, MD; Raja Shaikh, MD; Gulraiz Chaudry, MBChB; Steven Fishman, MD; Arin Greene, MD; Alyaa Al-Ibraheemi, MD  
Boston Children's Hospital, Boston, MA

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### ePoster 25

#### A New Method to Objectively Differentiate Paediatric Septic Arthritis of the Hips from Transient Synovitis Using C-reactive Protein and Hip Ultrasound

Richie Olandres; Wei Ren Daniel Seng, MD; Aruni Seneviratna; Ehab Hamouda; Bryan Foong; Elvin Lokino; **Arjandas Mahadev, FRCS**  
KK Women's and Children's Hospital, Singapore, Singapore

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#### Predicting Septic Arthritis of the Knee in Children: Can We Use the Septic Hip Criteria in the Knee?

Mitchel Obey, MD; Arya Minaie, BA; Jaclyn Schipper, BA; **Pooya Hosseinzadeh, MD**  
Washington University School of Medicine, Saint Louis, MO

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#### Pain >4 Days is Predictive of Concomitant Osteomyelitis in Children with a Septic Joint

Ali Siddiqui, BS; Lindsay Andras, MD; Kenneth Illingworth, MD; **David Skaggs, MD, MMM**  
Children's Hospital Los Angeles, Los Angeles, CA

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#### Infection Trends After Open Fractures in Pediatric Patients: A Study of Data Over 11 Years

Derek Kelly, MD; **Benjamin Sheffer, MD**; Jeffrey Sawyer, MD; David Spence, MD; Robert Elrod; Lauren Piana, MS; Naveen Pattisapu, MD; William Warner, MD; James Beaty, MD  
Campbell Clinic, Germantown, TN

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#### The Incidence of Skip Lesions in Acute Hematogenous Osteomyelitis

**Noelle Whyte, MD**; Robert Bielski, MD; Kate Feinstein, MD; Olufemi Adams  
University of Chicago, Chicago, IL

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#### Intravenous vs. Oral Antibiotic Therapy for Treatment of Septic Arthritis in Children

Gregory Manista, MD; Jamie Burgess, PhD; Nina Srdanovic, MS; **Joseph (Jay) Janicki, MD**  
Ann & Robert H. Lurie Childrens Hospital, Chicago, IL

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#### Procalcitonin for Early Detection of Septic Arthritis

Brianna McMichael MPH; Amanda Nickel MPH; **Jennifer Laine MD**; Walter Truong MD;  
Anupam Kharbanda MD  
Children's Minnesota, Minneapolis, MN

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Are Patients with Musculoskeletal Infection More Likely to Present After-Hours? A Prospective, Cross-sectional Study

**Jennifer Laine, MD**; Amanda Nickel, MPH; Brianna McMichael, MPH; Walter Truong, MD; Anupam Kharbanda, MD  
Children's Minnesota, Minneapolis, MN

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### ePoster 33

Foot Abduction Orthosis Use Greater than 3 Years Correlates with Better Promis Scores for Children Ages 5-16 with Ponseti-Treated Idiopathic Clubfoot

**Joel Lerman, MD**; Ahsan Khan, BS; Nancy Abarca, MPH; Nina Cung  
Shriners Hospital- Northern California, Sacramento, CA

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Factors Related to Outcomes after Single Event Multilevel Surgery (SEMLS) in Patients with Cerebral Palsy

**Mauro De Morais Filho, PhD**; Francesco Blumetti, MD; Kamila Freitas, MD; Catia Kawamura, PT; Marcelo Fujino; Daniella Neves; Jose Augusto Lopes, MSc  
AACD, São Paulo, Brazil

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### ePoster 35

The Value of Tranexamic Acid in Children with Cerebral Palsy Undergoing Proximal Femoral Varus Derotational Osteotomies

Alexander Nazareth, MS; Stephen Shymon, MD; Lydia Andras; Rachel Goldstein, MD; **Robert Kay, MD**  
Children's Hospital Los Angeles, Los Angeles, CA

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### ePoster 36

The Use of Tranexamic Acid (TXA) in Neuromuscular Hip Reconstruction, Significant Transfusion Reduction or Fake News?

**Benjamin Shore, MD, MPH, FRCSC**; Laura Lins, MPH; Aneesh Samineni; Patricia Miller, MS; Colyn Watkins, MD; Travis Matheney, MD; Brian Snyder, MD, PhD  
Boston Children's Hospital, Boston, MA

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The Effect of Selective Dorsal Rhizotomy on Hip Displacement in Children with Cerebral Palsy: A Long Term Follow Up Study

Stacey Miller, PT; Maria Juricic, PT; Emily Schaeffer, PhD; Paul Steinbok; Jeffrey Bone, MSc; **Kishore Mulpuri, MBBS**  
BC Children's Hospital, Vancouver, BC, Canada

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### ePoster 38

Does Acetabular Dysplasia Improve after Isolated Femoral Varus Osteotomy 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

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**Incidence of Post-Operative Venous Thromboembolism in Children with Cerebral Palsy**

**Julieanne Sees, DO**; Sky Prestowitz, BA; Kathleen Maguire, MD; Kenneth Rogers, PhD;  
Freeman Miller, MD

Nemours - Alfred I duPont Hospital for Children, Wilmington, DE

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**Health-state Utility Values in Cerebral Palsy Patients Following Deformity Surgery: Are We Now Ready for Cost-utility Analysis in this Patient Population?**

**Firoz Miyanji, MD**; Luigi Nasto, MD; Michelle Marks, PT; Paul Sponseller, MD; Amer Samdani, MD;  
David Clements, MD; Unni Narayanan, MBBS; Peter Newton, MD; Harms Study Group

BC Children's Hospital, Vancouver, BC, Canada

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**Predictors of Hospital Length of Stay Following Neuromuscular Spinal Fusion Using a Postoperative Standardized Pathway**

Laura Bellaire, MD; Laura Ward; Robert Bruce, MD; Eric Dillbone, MD; **Nicholas Fletcher, MD**

Children's Healthcare of Atlanta, Atlanta, GA

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**Eighty-nine Percent of Opioids Prescribed for Outpatient Pediatric Surgery Go Unused**

De-An Zhang, MD; Eric McCoy, MD; Ronen Sever, MD; Cynthia Nguyen, MD; Robert Cho, MD;  
**Selina Poon, MD**

Shriners for Children Medical Center, Pasadena, CA

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**Does a Career in Orthopaedic Surgery Affect a Woman's Fertility and Pregnancy Complication Rates?**

Damayeaa Hargett, MD; Shannon Lorimer, DO; Cynthia Nguyen, MD; Samara Friedman, MD;  
Shari Cui, MD; Monica Payares, MD; Kimberly Tucker, MD; Holly Pilson, MD; **Selina Poon, MD**

Shriners for Children Medical Center - Pasadena, Pasadena, CA

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**Cost of Interfacility Transfer for Non-Urgent Fractures**

Ryan Mayer, MD; David Zuelzer, MD; Cale Jacobs, PhD; Ryan Muchow, MD; Janet Walker, MD;  
Vishwas Talwalkar, MD; Henry Iwinski, MD; Scott Riley, MD; **Elizabeth Hubbard, MD**

University of Kentucky, Lexington, KY

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Brian Yang, BA; Benton Heyworth, MD; **Donald Bae, MD**

Boston Children's Hospital, Boston, MA

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**Robert Murphy, MD**; David Williams, PhD; Grant Hogue, MD; David Spence, MD;  
Henry (Hank) Chambers, MD; Benjamin Shore, MD, MPH, FRCSC  
Medical University of South Carolina, Charleston, SC

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PROMIS Scores in Surgically Treated Idiopathic Scoliosis Patients: The Impact of Curve Characteristics

**Scott Luhmann, MD**; Ernst Etienne  
Washington University School of Medicine, Saint Louis, MO

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### ePoster 48

PROMIS Peer Relationship Domain as a Screening Tool for Socially "At Risk" Children in the Pediatric Orthopaedic Clinic

Laura Bellaire, MD; Kristen Carroll, MD; **Graham Fedorak, MD**  
Shriners Hospitals for Children - Salt Lake City, Salt Lake City, UT

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Team-Oriented, Multi-Modal Postoperative Pain Control for Idiopathic Scoliosis: Is Postoperative Day One Discharge Feasible?

**Karen Myung, MD**; Joseph Jacobson, MD; Jeffrey Yu, BS; Jian Ye, MD; Randall Loder, MD;  
Ryan Fitzgerald, MD; Senthil Sadhasivam, MD  
Riley Hospital for Children at IU Health, Indianapolis, IN

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Socioeconomic Factors Impact Adolescent Fracture Care Compliance

Blake Meza, BS; Dina Iacone, BS; Divya Talwar, MPH; Wudbhav (Woody) Sankar, MD;  
**Apurva Shah, MD, MBA**  
Children's Hospital of Philadelphia, Philadelphia, PA

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### ePoster 51

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Evan Ball, BS; Alexander Karius; Katherine Hastings, MPH; Damian McGlothlin, BA;  
Samuel Rodriguez, MD; Thomas Caruso, MD; Charles Chan, MD; **Steven Frick, MD**  
Stanford University, Palo Alto, CA

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Influence of Cost Information on Cast vs. Splint Decision-Making for Pediatric Distal Radius Buckle Fractures: A Randomized Controlled Trial

J. Todd Lawrence, MD, PhD; Matthew Buczek, BS; Elle Macalpine; Bernard Horn, MD;  
**Apurva Shah, MD, MBA**  
Children's Hospital of Philadelphia, Philadelphia, PA

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Accuracy of Emergency Department and Urgent Care Center Pediatric Orthopaedic Diagnoses

Anna Schoonover, BA; Xuyang Song, MD; Alexandria Case, BS; Joshua Abzug, MD  
University of Maryland School of Medicine, Baltimore, MD

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### ePoster 54

Economic Impact of Wait Times in a Paediatric Orthopaedic Clinic

Khristinn Leitch, MD  
Canadian Centre of Orthopaedics, North York, Ontario, Canada

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Selective Thoracic Fusion in Adolescent Idiopathic Scoliosis: Comparison of the Lower Instrumented Vertebrae

Dale Segal, MD; Zachary Grabel, MD; Jeffrey Konopka, MD; Adam Boissonneault, MBChB; E. Yoon; Tracey Bastrom, MA; John (Jack) Flynn, MD; Nicholas Fletcher, MD  
Emory University, Atlanta, GA

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Preop Halo Gravity Traction (HGT) Associated with Decreased Implant Complications in MCGR

Michelle Welborn, MD; Nikolas Baksh, MD; J. Krajbich, MD  
Shriners Hospital for Children Portland, Portland, OR

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Roger Widmann, MD; Jonathan Schachne, BA; Madison Heath, BS; Colleen Wixted, BS; Daniel Green, MD; Shevaun Doyle, MD; Peter Fabricant, MD  
Hospital for Special Surgery, New York, NY

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Comparison of Sublaminar Bands and All-Pedicle Screw Instrumentation for the Correction of Lenke 1 and 2 Adolescent Idiopathic Scoliosis

Sébastien Pesenti, MD; Renaud Lafage; Brice Henry, MD; Colleen Wixted, BS; Manon Bolzinger; Han Jo Kim, MD; Tejbir Pannu, MD; Matthew Cunningham, MD; Elie Choufani; Virginie Lafage, PhD; John Blanco, MD; Jean Luc Jouve; Roger Widmann, MD  
Hospital for Special Surgery, New York, NY

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### ePoster 59

Gait Changes Induced by Idiopathic Scoliosis Mainly Occur in the Transversal Plane

Sébastien Pesenti, MD; Benjamin Blondel, MD; Jean Luc Jouve  
Timone Children's Hospital, Marseille, France

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### ePoster 60

Sensitivity of MRI in Detection of Pediatric Spondylolysis

Hena Joshi, MD; Joshua Murphy, MD; Dennis Devito, MD; Nicholas Fletcher, MD; Nadja Kadom, MD  
Children's Healthcare of Atlanta, Atlanta, GA

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Comparison of Pre-operative Halo-gravity Traction to Non-traction in Patients Undergoing Surgery for Severe Scoliosis: A Case-control Study

**Thomas Wilson, MD**; Laura Bellaire, MD; John Heflin, MD; Bruce MacWilliams; Graham Fedorak, MD  
University of Utah, Salt Lake City, UT

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Humeral Staging Stratifies Risk of Scoliosis Progression in Risser 0 Patients

Don Li, MS; Jonathan Cui, MD; Stephen Devries, BS; Joseph Kahan, MD; Logan Petit, MD;  
Ronan Talty, BS; Daniel Cooperman, MD; **Brian Smith, MD**  
Yale University, New Haven, CT

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The Safety and Efficacy of Intrathecal Morphine in Pediatric Spinal Deformity Surgery –  
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**Christina Hardesty, MD**; Connie Poe-Kochert, NP; Jochen Son-Hing, MD; George Thompson, MD;  
Jason Ina, MD; Paul Tripi, MD  
Rainbow Babies and Children's Hospital, Cleveland, OH

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Can Ultrasound be Used for Quantitative Assessment of Spinal Deformity in Adolescent Idiopathic Scoliosis (AIS): A Detailed Analysis with Radiography for 952 Patients

**Tsz Ping Lam, MBBS**; Yi Shun Wong; Ka-Lee Lai; Lee Ning Wong; Yong-Ping Zheng;  
Alec Lik Hang Hung; Bobby Ng, MD; Benjamin Yip; Jack Cheng, MD  
Chinese University of Hong Kong, Hong Kong SAR, Hong Kong

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Comparing Risk of Unplanned Returned to the Operating Room (UPROR): Magnetically Controlled Growing Rod (MCGR) System vs Prosthetic Rib Constructs (PRC)

Chun Wai Hung, MD; Megan Campbell, BA; Hiroko Matsumoto, MA; David Roye, MD;  
Michael Vitale, MD, MPH; **Benjamin Roye, MD**  
Columbia University Medical Center, New York, NY

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### ePoster 66

Adolescent Idiopathic Scoliosis: Psychological Implications of Pain in Pre-Surgical Patients

**Brandon Ramo, MD**; Teresa Collins-Jones, PhD; Kiley Poppino, BS; Shelby Parker, MA;  
Dong-Phuong Tran, MS  
Texas Scottish Rite Hospital for Children, Dallas, TX

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Factors Affecting MCGR Lengthening Outcomes in Early Onset Scoliosis

**Matthew Oetgen, MD**; Shannon Kelly, MD; Leah Linfield  
Children's National Health System, Washington, DC

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#### Back to Back Scoliosis Surgeries: Is Patient Safety and Outcomes Compromised?

**Vishal Sarwahi, MBBS**; Jesse Galina, BS; Jon-Paul DiMauro, MD; Stephen Wendolowski, BS; Sayyida Hasan, BS; Yungtai Lo, PhD; Terry Amaral, MD  
Cohen Children's Medical Center, New Hyde Park, NY

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#### The Demographics and Epidemiology of Idiopathic Scoliosis in Children and Incidence of Scoliosis in the U.S

**Jeffrey Kessler, MD**; Kevin Bondar; Annie Tram Anh Nguyen; Jasmine Vatani  
Kaiser Los Angeles Medical Center, Los Angeles, CA

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### ePoster 70

#### Osteochondritis Dissecans of the Elbow in Adolescent Gymnasts: Early Treatment Results and Return to Sport

Katherine Eisenberg, BS; Kathryn Williams, MS; **Donald Bae, MD**  
Boston Children's Hospital, Boston, MA

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#### Fluoroscopy as Definitive Post-Reduction Imaging of Pediatric Wrist and Forearm Fractures Is Safe and Saves Time

Avi Goodman, MD; Devin Walsh, MD; Mark Zonfrillo, MD; Craig Ebersson, MD; **Aristides Cruz, MD**  
Hasbro Children's Hospital / Brown University, Providence, RI

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#### Risk of Osteonecrosis and Complications After Delayed Treatment of Lateral Condyle Fractures

Keith Orland, MD; William Carpenter, MD; Allison Spitzer, MD; Joshua Murphy, MD; Neeta Shenvi, MS; **Nicholas Fletcher, MD**  
Children's Healthcare of Atlanta, Atlanta, GA

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### ePoster 73

#### Cozen's Phenomenon of the Proximal Tibia: Does it Really Exist?

Brian Yang, BA; Benjamin Shore, MD, MPH, FRCSC; Emily Rademacher, BS; Collin May, MD; Colyn Watkins, MD; **Michael Glotzbecker, MD**  
Boston Children's Hospital, Boston, MA

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#### Practice Patterns for Management of Pediatric Femur Fractures in Low- and Middle-income Countries

Patrick Curran, MD; Patrick Albright, MS; Syed Ali; John Ibrahim, BA; David Shearer, MD; **Coleen Sabatini, MD, MPH**  
Institute for Global Orthopaedics and Traumatology, UCSF Department of Orthopaedic Surgery, San Francisco, CA

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#### Driver Characteristics Involved in Child and Youth Pedestrian Motor-vehicle Collisions (PMVC) – A Case Control Study

**Andrew Howard, MD**; Liraz Fridman; Linda Rothman, PhD; Brent Hagel, PhD  
Hospital for Sick Children, Toronto, Ontario, Canada

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Point of Care Ultrasound in the Emergency Department may Provide more Accurate Diagnosis of Toddler Fractures than Radiographs: A Pilot Study

*Sasha Carsen, MD, MBA, FRCSC; Meagan Doyle; Kevin Smit, MD; Alan Shefrin; Terry Varshney  
Children's Hospital of Eastern Ontario, Ottawa, Ontario, Canada*

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### ePoster 77

Development and Content Validation of the Patient-Reported Outcomes of Fracture Healing (PROOF) Questionnaires

*Unni Narayanan, FRCSC; Shikha Patel, BS; Roni Propp; Mark Camp; Anne Murphy, NP;  
Ashley Ferkul, BA  
The Hospital for Sick Children, Toronto, Ontario, Canada*

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### ePoster 78

Complications Associated with Intramedullary Nailing of Femoral Shaft Fractures: Are Adolescents Different than Adults?

*Colyn Watkins, MD; Manasa Kadiyala; Ryan Sanborn, BA; Laura Lins, ATC; Collin May, MD;  
Michael Glotzbecker, MD; Benjamin Shore, MD, MPH, FRCSC  
Boston Children's Hospital, Boston, MA*

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### ePoster 79

Tibial Tuberosity Ossification Predicts Reoperation for Growth Disturbance in Distal Femoral Physeal Fractures

*Jim Kennedy, FRCS (Ortho); Daniel Westacott; Mark Camp, MD; Andrew Howard, MD  
The Hospital for Sick Children, Toronto, Ontario, Canada*

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### ePoster 80

2016 POSNA/OREF Research Grant (Clinical Research)  
A Pilot Investigation into the Genetics of Mild Bone Fragility

*Sasha Carsen, MD*

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### ePoster 81

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*

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### ePoster 82

2017 POSNA/Zimmer Biomet Spine Research Grant  
The Impact of 3D Spine and Ribcage Parameters on the Bracing Outcomes

*Saba Pasha, PhD, MSc*

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# EXPLORE CHARLOTTE

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, Yafu 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](http://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

## SECOND WARD

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

- 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 McColl 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 Il Disco Grande
- E Charlotte Sign on The Green
- F The Firebird
- G Carolina Panthers Statues
- H Spiral Odyssey

# EXHIBITOR LISTING

## 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 IIIB, Friedrich's Ataxia and other rare diseases.

## BoneSupport



BONESUPPORT develops and markets CERAMENT®IBONE 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.



# EXHIBITOR LISTING, CONTINUED

## 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.

# EXHIBITOR LISTING, CONTINUED

## Global Help



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



Globus Medical, Inc. 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



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



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



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.

# EXHIBITOR LISTING, CONTINUED

## Life Bridge Health, Rubin Institute for Advanced Orthopedics



Rubin Institute for  
Advanced Orthopedics  
Sinai Hospital of Baltimore

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



Further, Together

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 PeditrOS FlexTack™ and RigidTack™. These novel staples correct leg length discrepancies and angular deformities through improved temporary epiphysiodesis. Merete's PeditrOS staples offer a safer and more effective alternative for your patients.

## MHE Research Foundation



Wings of HOPE as we REACH for the  
CURE to Multiple Hereditary Exostoses

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.

# EXHIBITOR LISTING, CONTINUED

## NuVasive, Inc.



**NUVASIVE**

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.

# EXHIBITOR LISTING, CONTINUED

## 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.

# EXHIBITOR LISTING, CONTINUED

## 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



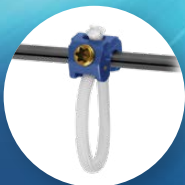
BEFORE REDUCTION



AFTER REDUCTION

**CHOOSE YOUR  
DEFORMITY  
SOLUTION**

*Empowering Surgeons to  
Help Improve Deformity  
Procedures*



SILC®



CREO® & CREO AMP®



CREO® Threaded &  
CREO AMP® Threaded



CREO® Threaded CoCr &  
CREO AMP® Threaded CoCr

*Delivering innovative solutions to enhance patient care*

Life moves us 

Learn more at [GlobusMedical.com/Deformity](http://GlobusMedical.com/Deformity)

  
**GLOBUS**  
MEDICAL

# 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 Not's

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*

"Pedicule 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 Costo-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"



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

[ipos.posna.org](http://ipos.posna.org)

 **POSNA**  
PEDIATRIC ORTHOPAEDIC SOCIETY  
OF NORTH AMERICA

 **AAOS**  
AMERICAN ACADEMY OF  
ORTHOPAEDIC SURGEONS



*"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*

# Expert Spine Care from Simple to Complex

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](http://gillettechildrens.org/spineortho)

**To make an appointment:** 651-290-8707



**Gillette  
Children's**

*Specialty Healthcare*

Heritage. Partnership. Trusted Innovation.

# Share the

# Momentum.



Proud sponsor of  
**POSNA  
2019**

EXPEDIUM® Spine System

 **DePuy Synthes**

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108220-190225 DSUS 03/19

# Alden's 8-year diagnostic odyssey is not uncommon

*"My bones weren't growing properly, but none of my doctors could figure out why."*



Age: 11  
Height: 5 ft, 3 in  
(160 cm);  
98.8th percentile

DIAGNOSED WITH MPS VI AFTER 8 YEARS OF SIGNS AND SYMPTOMS.

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)<sup>1</sup>

- **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])

[\*\*LEARN MORE AT THE BIOMARIN BOOTH\*\*](#)

Reference: 1. Clarke L, Cristian I, Pollard L, et al. Poster presented at: American College of Medical Genetics Annual Clinical Genetics Meeting; April 10-14, 2018; Charlotte, NOC (Poster #428).

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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

