

2021

# POSNA

ANNUAL MEETING

DALLAS, TX | MAY 12-15, 2021

HILTON ANATOLE



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WUDBHAV SANKAR, MD

**SUBSPECIALTY DAY CHAIR**

MATTHEW OETGEN, MD, MBA

**PRE-COURSE CHAIR**

LINDSAY ANDRAS, MD

**LOCAL HOSTS**

AMY MCINTOSH, MD

DANIEL SUCATO, MD, MS

**FINAL  
PROGRAM**



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Symposia ■ ePosters ■ Videos ■ Young Member Forum



AVAILABLE ONLINE  
FOR VIEWING





## PRE-COURSE COMMITTEE

### Chair

Lindsay Andras, MD

### Committee

Julie Balch Samora, MD, PhD    A. Noelle Larson, MD

## PROGRAM COMMITTEE

### Program Chair

Wudbhav N. Sankar, MD

### Committee

Jeffrey Martus, MD    Matthew Oetgen, MD, MBA    Nicholas Fletcher, 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 AND VISION STATEMENTS

**Mission:** To advance pediatric orthopaedics by promoting education, research, and quality care.

**Vision:** A world with optimal musculoskeletal health for all children.

## CONNECT WITH POSNA DURING THE MEETING AND SHARE YOUR EXPERIENCES

**#POSNA2021**



**Websites:** [POSNA.org](http://POSNA.org), [Orthokids.org](http://Orthokids.org), [JPOSNA.org](http://JPOSNA.org) and [POSNAcademy.org](http://POSNAcademy.org)

# WELCOME

Dear Colleagues,

On behalf of POSNA, it is my pleasure to welcome you to the 2021 Annual Meeting in Dallas, Texas.

What a year it's been! We were all reminded of our human vulnerability when a single stranded sequence of RNA came upon us and changed the world. And while there has been terrible suffering, we are resilient creatures. The 2021 Annual Meeting is an example of that resilience. While this meeting may be in some ways different than previous year's, there has been incredible excitement and pent-up demand to reconnect as colleagues and friends after a long, forced absence. POSNA 2021 will not disappoint.

The program committee of **Woody Sankar** (Chair), **Matt Oetgen**, **Jeff Martus**, and **Nick Fletcher** have organized an exceptional scientific program. Some of the meeting highlights you won't want to miss include

- Our kick-off Pre-Course titled "Optimizing performance throughout your orthopaedic career: How to take your practice to the next level in the clinic, operating room, and your institution", developed and chaired by **Lindsay Andras**.
- The Opening Ceremony on Wednesday evening, highlighted with the Howard Steel Lecture presented by **Jason Dorsey**, a World-leading Gen Z and Millennial speaker, expert, and researcher. It also allows us to recognize our industry partners, and honor **Robert Cady** for the Humanitarian Award and **Ken Noonan** for the Special Effort and Excellence Award. A cocktail welcome reception will follow.
- The scientific program features 160 podium presentations. Meeting registrants will also have online access to 79 ePosters, 11 video abstracts and 5 symposia sessions.
- **New this year**, Subspecialty Day, chaired by **Matt Oetgen**, has been moved to Thursday morning and includes Spine, Hip, Sports, Upper Extremity, Foot, Trauma, Neuromuscular, and Lower Extremity sessions. This will be followed by a free afternoon to reconnect with friends and enjoy Dallas.
- The Friday morning session, which is always a meeting highlight, begins with the Clinical and Basic Science Award sessions. This year we will have the pleasure of honoring our 2020 (**Behrooz Akbarnia**) and 2021(**Lori Karol**) Distinguished Achievement Award recipients and our 2020 (**Lori Karol**) and 2021(**Peter Newton**) Presidential Speakers. Friday morning will conclude with the presidential transfer to incoming president **Mininder Kocher**.
- Saturday morning we've dedicated time to a special Diversity session, hosted by our newly created Diversity Committee. **Corinna Franklin** and **Coleen Sabatini** will chair "Advancing justice, equality, diversity, and inclusion in pediatric orthopaedics".

Many thanks to local hosts **Amy McIntosh** and her husband, **Richard McIntosh**, and **Daniel Sucato** and his wife, **Lisa Sucato** for helping navigate planning during a difficult time. And please join me in thanking our entire POSNA staff for their efforts during a very tough year.

POSNA is alive and well.

Welcome back and welcome to Dallas!



Michael Vitale, MD, MPH  
President, POSNA



# BOARD OF DIRECTORS

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# ACKNOWLEDGEMENTS

The Pediatric Orthopaedic Society of North America gratefully acknowledges the following for their generous financial support in 2021.

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Stanford Children's Health

\*Provided an Educational Grant for the Annual Meeting



## MICHAEL VITALE, MD, MPH PRESIDENT

Michael Vitale, MD MPH is the Ana Lucia Professor of Orthopedic and Neurosurgery and Vice Chief, (Quality and Strategy) of the Department of Orthopaedics at Columbia University Medical Center. He is also Chief of Pediatric Orthopaedics for the New York Presbyterian health system, where he has developed his clinical focus in the care of children with spinal deformity since joining the staff of the Morgan Stanley Children's Hospital of New York in 2001.

Dr. Vitale received his undergraduate degree in biology and psychology from Trinity College and attended medical school at Columbia University's College of Physicians & Surgeons, where he also completed a master's degree in public health. He remained at Columbia for his residency training in Orthopaedic Surgery at NewYork-Presbyterian/Columbia University Irving Medical Center, followed by a fellowship in pediatric orthopaedics at the Children's Hospital of Los Angeles.

Early in career, Dr. Vitale was chosen as an inaugural member of the AAOS Leadership Fellow Program as well as the POSNA Traveling Fellowship. He has served various roles in the POSNA BOD and has been the recipient of POSNA's Arthur Huene Memorial Award, the Angela Kuo Award, and the Award for Special Effort.

Dr. Vitale has served as Chairman of the International Pediatric Orthopaedic Symposium and President of the Children's Spine Foundation and Pediatric Spine Study Group. He founded the Project for Safety in Spine Surgery, which hosts the annual Summit for Safety in Spine Surgery. He is also an active member of the Scoliosis Research Society where he has chaired the Committee on Safety and the Committee on Pediatric Medical Devices.

In addition to his clinical practice, Dr. Vitale has made a lifelong commitment to clinical research with almost 200 peer-reviewed publications largely focused around pediatric spine surgery, and numerous related chapters and books.

Dr. Vitale serves on the Board of Crutches for Kids and Alexandra's Playground, which he co-founded with his wife, Andrea. An avid skier, marathon runner, and recreational triathlete, Dr. Vitale's biggest pleasure is spending his free time with his wife and four sons.



## MININDER KOCHER, MD, MPH INCOMING PRESIDENT

Dr. Kocher is the Chief of the Division of Sports Medicine and the O'Donnell Family Endowed Chair at Boston Children's Hospital, and a Professor of Orthopaedic Surgery at Harvard Medical School.

He was born and raised in Rochester, NY. He graduated from McQuaid Jesuit High School where he has received the Father Noonan Distinguished Alumni Award. He graduated Phi Beta Kappa from Dartmouth College where he was a member of the basketball and track & field teams, and from the Duke University School of Medicine where he was a Davidson Scholar. He did his orthopaedic surgery residency at the Harvard Combined Orthopaedic Surgery Program. He completed clinical fellowships in pediatric orthopaedics at Boston Children's Hospital and sports at the Steadman Hawkins Clinic in Vail, CO. He completed an MPH in clinical epidemiology at the Harvard School of Public Health and the program in leadership development at the Harvard Business School. He has been on staff at Boston Children's Hospital since 2000.

His clinical practice focuses on pediatric sports medicine and pediatric orthopaedic trauma. He has developed novel techniques for meniscus transplantation in children, growth plate sparing ACL reconstruction, patellofemoral stabilization, hip arthroscopy in children, and peroneal tendon subluxation repair. He is the team physician for numerous high schools, colleges, and US Olympic teams. He has been featured in the New York Times, Scientific American, San Francisco Chronicle, Boston Globe, Wall Street Journal, Chicago Daily Herald, ABC World News with Diane Sawyer, HBO Real Sports, and Sports Illustrated.

His research focuses on clinical epidemiology and biostatistics. Dr. Kocher has published over 270 scientific peer-reviewed articles, 100 book chapters, and 7 textbooks. He has received research grants from the NIH, OREF, Aircast Foundation, AOSSM, and POSNA. He published a widely used algorithm to differentiate septic arthritis and transient synovitis of the hip in children, "Kocher Criteria." He is the principal investigator for PLUTO, a prospective multicenter cohort study of ACL injuries in children. He has received numerous research awards including the Angela Kuo Award, the Arthur Heune Award, the Vernon Thompson Award, the Richard Kilfoyle Award, and the Kappa Delta Award.

He is an educator, teaching orthopaedic surgery, sports medicine, clinical epidemiology, and biostatistics to medical students, residents, fellows, and visiting orthopaedic surgeons. He is director of the sports medicine fellowship at Boston Children's Hospital, core faculty for HCORP, and teaches in courses at Harvard Medical School and Harvard School of Public Health.

As a leader, Dr. Kocher is a Division Chief and on the PO Board at Boston Children's Hospital. He served on the board of directors of AAOS and AOSSM. He founded and served as the second President of PRISM. He is an elected member of IPOTT, Herodicus Society, and the 20th Century Orthopaedic Association. Within POSNA, he has served on multiple committees and on the board of directors twice as at-large member and research council chair.

Personally, Dr. Kocher loves spending time with his wife, Mich, and five children (ages 12-22). They live at Frog Rock Farm with horses, sheep, ducks, bunnies, cats, and dogs. He enjoys anything in the outdoors (skiing, hiking, mountain biking, camping, and fishing) and coaching youth sports. His hobbies include tuning skis, chopping and stacking wood, and driving his Kubota tractor.

# WELCOME FROM YOUR LOCAL HOSTS

Dear friends and fellow pediatric orthopedic surgeons,  
Welcome to Dallas, TX Y'all!

We are looking forward to having you for the POSNA Annual Meeting from May 12-15, 2021. We had an impressive number of abstract submissions this year. Therefore, the scientific program under the direction of our president, Michael Vitale, and program chair, Wudbhav (Woody) Sankar, is full of interesting and thought-provoking content. We also will have a fantastic Pre-Course coordinated by Lindsay Andras.

Everything is BIGGER in Texas! The Hilton Anatole boasts the new and beautiful JadeWaters. It offers plenty of spots for fun and relaxation, including: a splash and play area for kids, an amazing lazy river, two 180-ft. water slides, and 23-seat swim-up bar. There is also a spacious Sculpture Garden area outside the gates of JadeWaters. Verandah Fitness Club is an on-property health and fitness center with cardio machines and strength-training room; a 25-meter, seven-lane indoor lap pool, basketball, racquetball, squash courts, cross-training and boxing gym; and whirlpools, eucalyptus steam, and dry sauna.

The city of Dallas has a variety of outdoor and indoor entertainment venues. Noteworthy outdoor activities include Klyde Warren Park, White Rock Lake, and the Arboretum. Take a walk/run or bike down the Katy Trail and stop at the Katy Trail Icehouse for a refreshing beverage.

Visit the historic Sixth Floor museum at Dealey Plaza to explore the life, assassination, and legacy of JFK. The nearby Dallas Museum of Art, Nasher Sculpture Center, Dallas World Aquarium, and Perot Science Museum are fun and educational ways to spend an afternoon.

Deep Ellum, Bishop Arts District, Trinity Groves, Highland Park Village, North Park, and the Galleria are areas to shop and eat. If you journey into Deep Ellum, do not forget to stop at Pecan Lodge for "mind blowing BARBEQUE".

A short car or train ride (30 mins) to visit the home of America's Team (The Dallas Cowboys) at A T & T Stadium or the world-famous Fort Worth Stock Yards will round out your TEXAS experience. Do not forget to get some authentic boots.

If you need any assistance, please do not hesitate to reach out. We look forward to seeing you soon.

Amy McIntosh, Local Host and Daniel Sucato, Local Host



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# GENERAL MEETING INFORMATION

## LEARNING OBJECTIVES

- Objective 1:** Learn about the latest advances in pediatric orthopaedic surgery
- Objective 2:** Interact and learn with world-renowned thought leaders in the field
- Objective 3:** Use the information obtained to make improvements in your own practices

## 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 AAOS and Pediatric Orthopaedic Society of North America (POSNA). AAOS 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 **16.5 AMA PRA Category 1 Credits™**. Physicians should claim only the credit commensurate with the extent of their participation in the activity.



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

The Subspecialty Day is designated for a maximum of 3.5 AMA PRA Category 1 Credits™. Physicians should claim only the credit commensurate with the extent of their participation in the activity.

## 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).

## DISCLOSURE

Each presenter 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.

# GENERAL MEETING INFORMATION

## EVENT CANCELLATION

Due to circumstances beyond our control, POSNA may elect to cancel Annual Meeting 2021. 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.

## LANGUAGE

English is the official language of POSNA.

## LOST AND FOUND

Dial 7369 from a house phone and speak with Security Dispatch.

## SAFETY INFORMATION

### Emergency Numbers:

City Police Emergency: 911  
Hotel internal emergency number: 111  
City Police Non-Emergency: 214-744-4444  
Poison Control: (800) 222-1222 (Nationwide)

### Nearest Hospital and Urgent Care:

Parkland Hospital  
1.6 miles  
5200 Harry Hines Blvd, Dallas, TX 75235  
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### CVS Pharmacy

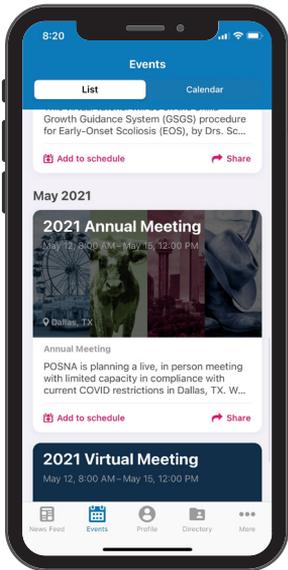
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Saturday 8:00 AM-6:00 PM  
Sunday 10:00am-6:00 PM



# GENERAL MEETING INFORMATION



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## ANNUAL MEETING VISION

To advance the musculoskeletal care of children worldwide through the discussion and dissemination of pediatric orthopaedic research.

## ANNUAL MEETING MISSION

To be the preeminent international platform for the exchange of research and ideas related to the orthopaedic care of children.



# GENERAL MEETING INFORMATION



**POSNA**  
PEDIATRIC ORTHOPAEDIC SOCIETY  
OF NORTH AMERICA

844-792-0800

AMBASSADOR@SAFEEXPO.ORG

## STEP 1

COMPLETE YOUR  
DAILY HEALTH  
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## STEP 3

DAILY TEMPERATURE  
SCREENING



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# GENERAL MEETING INFORMATION

## REGISTRATION

Tuesday, May 11	4:00 PM – 6:00 PM
Wednesday, May 12	7:00 AM – 5:00 PM
Thursday, May 13	6:30 AM – 12:00 PM
Friday, May 14	6:30 AM – 4:00 PM
Saturday, May 15	7:00 AM – 11:30 AM

## EXHIBIT HALL

Join your colleagues in the Exhibit Hall for fellowship and discovery of new pediatric orthopaedic products and services. Meals and breaks will be served in the Exhibit Hall, located in Chantilly East.

Wednesday, May 12	7:00 AM – 5:30 PM
Thursday, May 13	6:30 AM – 12:00 PM
Friday, May 14	6:30 AM – 4:00 PM

## SPEAKER READY ROOM

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 **Sapphire room**.

Wednesday, May 12	7:00 AM – 8:00 PM
Thursday, May 13	7:00 AM – 12:00 PM
Friday, May 14	6:30 AM – 4:00 PM
Saturday, May 15	7:00 AM – 11:30 AM

## POSNA MEMBERSHIP REQUIREMENT

Full meeting attendance at the 2021 Annual Meeting fulfills your POSNA membership meeting attendance requirement. Registration and attendance at only Pre-Course or Subspecialty Day does not meet the member meeting attendance requirement.

## ONSITE REGISTRATION FEES

(US DOLLARS)

POSNA MEETING REGISTRATION	
POSNA Member	\$ 800
Non-Member	\$ 1400
Resident/Fellow*	\$ 600
RN/PA/Allied Health	\$ 600
Delegates from Reduced Rate Countries: Low Income	\$ 500
Accompanying Person**	\$ 350
Senior Members	\$ 525
Children 6-12, per child	\$10
Children 13-17, per child	\$100
PRE-COURSE REGISTRATION	
Member	\$ 275
Non-Member	\$ 315
RN/PA/Allied Health	\$ 215
Resident/Fellow*	\$ 215
SUBSPECIALTY DAY REGISTRATION***	
THURSDAY ONLY–Member	\$ 365
THURSDAY ONLY–Non-Member	\$ 415
THURSDAY ONLY–Allied Health	\$ 315
THURSDAY ONLY–Resident/Fellow	\$ 315

\* 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 to attend any function, including optional events.

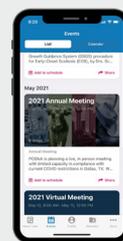
\*\*\* Subspecialty Day registration is Thursday only, and includes breakfast and sessions.



# MEETING AT A GLANCE

TUESDAY, MAY 11		
Board of Directors Meeting	8:00 AM–1:00 PM	Wedgwood Ballroom
Registration	4:00 PM–6:00 PM	Chantilly Foyer
POPS Meeting	8:00 AM–5:00 PM	Coronado Ballroom
WEDNESDAY, MAY 12		
Registration	7:00 AM–5:00 PM	Chantilly Foyer
Breakfast/Exhibits	7:00 AM–8:00 AM	Chantilly East
Pre-Course	8:00 AM–12:00 PM	Trinity Ballroom
Coffee Break/Exhibits	10:05 AM–10:25 AM	Chantilly East
Scientific Program	1:30 PM–5:30 PM	Trinity Ballroom
Coffee Break/Exhibits	3:20 PM–3:40 PM	Chantilly East
Opening Ceremony	6:30 PM–8:00 PM	Trinity Ballroom
Welcome Reception	8:00 PM–9:30 PM	Croquet Lawn
THURSDAY, MAY 13		
Registration	6:30 AM–12:00 PM	Chantilly Foyer
Breakfast/Exhibits	6:45 AM–7:45 AM	Chantilly East
<b>Subspecialty Day</b>		
Hand/Foot	7:45 AM–12:00 PM	DeSoto
Hip	7:45 AM–12:00 PM	Trinity Ballroom
LE/Neuromuscular	7:45 AM–12:00 PM	Cortez
Spine	7:45 AM–12:00 PM	Chantilly West
Sports	7:45 AM–12:00 PM	Wedgwood
Trauma	7:45 AM–12:00 PM	Coronado Ballroom
Coffee Break/Exhibits	9:45 AM–10:10 AM	Chantilly East

FULL PROGRAM CAN BE FOUND  
ON THE 2021 MEETING APP



# MEETING AT A GLANCE

FRIDAY, MAY 14		
Registration	6:30 AM–4:00 PM	Chantilly Foyer
Breakfast/Exhibits	6:30 AM–7:30 AM	Chantilly East
Scientific Program Papers	7:30 AM–11:00 AM	Trinity Ballroom
Coffee Break/Exhibits	9:48 AM–10:10 AM	Chantilly East
Distinguished Achievement Award 2020	11:00 AM–11:08 AM	Trinity Ballroom
Distinguished Achievement Award 2021	11:09 AM–11:17 AM	Trinity Ballroom
2022 Meeting Highlights	11:18 AM–11:23 AM	Trinity Ballroom
Presidential Speaker 2020	11:24 AM–11:35 AM	Trinity Ballroom
Presidential Speaker 2021	11:36 AM–11:49 AM	Trinity Ballroom
Presidential Transfer	11:50 AM–12:00 PM	Trinity Ballroom
Business Meeting	12:15 PM–1:35 PM	Chantilly West
Concurrent Session Spine	2:00 PM–4:00 PM	Trinity Ballroom
Concurrent Session Sports	2:00 PM–4:00 PM	Chantilly West
Coffee Break/Exhibits	3:00 PM–3:20 PM	Chantilly East
EVENING		
Closing Reception	7:00 PM–10:00 PM	Backyard Dallas
SATURDAY, MAY 15		
Registration	7:00 AM–11:30 AM	Chantilly Foyer
Breakfast	6:30 AM–7:45 AM	Chantilly East
POSNA Critical Issue Symposia	7:30 AM–8:43 AM	Trinity Ballroom
POSNA Board Meeting	9:00 AM–10:00 AM	Wedgwood
Scientific Program	8:44 AM–11:36 AM	Trinity Ballroom
Break	10:00 AM–10:20 AM	Trinity Foyer

## MEMBER BUSINESS MEETING

All POSNA members are invited to attend the Member Business Meeting on Friday, May 14, 2021 from 12:15 PM to 1:35 PM.



**Stanford**  
**Children's Health**

Children's Orthopedic  
and Sports Medicine Center



## Stanford Excellence in Action

### Presentations:

Clubfoot Activity, Recurrence & Exercise  
(CARES): A Pilot Study

This study investigates whether patient/parent reported outcomes (PROs) and activity levels for children with clubfoot are different in patients treated for relapse. It also proposes a method to assess outcomes remotely. | **Steven Frick, MD**

Trans-articular versus Retro-articular Drilling of  
Stable Osteochondritis Dissecans of the Knee:  
A Prospective Randomized Controlled Trial by the  
ROCK Multicenter Study Group | **Kevin Shea, MD,**  
**senior author**



### Posters:

Proof of Concept for Artificial Intelligence Based  
Estimation of Skeletal Maturity from Biplanar  
Slot Scan Scoliosis Imaging | **John Vorhies, MD**

Quantitative Assessment of the Medial Patellofemoral  
Complex: A Pediatric Cadaveric Study | **Kevin Shea, MD**



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# ANNUAL MEETING POLICIES

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## NO SMOKING POLICY

Smoking is not permitted during any meeting or event.

# LEVELS OF EVIDENCE FOR PRIMARY RESEARCH QUESTIONS

THE JOURNAL OF BONE & JOINT SURGERY · JBJS.ORG  
VOLUME 97-A · NUMBER 1 · JANUARY 7, 2015

UPDATING THE ASSIGNMENT OF LEVELS OF EVIDENCE

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?	<ul style="list-style-type: none"> <li>Randomized controlled trial</li> </ul>	<ul style="list-style-type: none"> <li>Prospective<sup>3</sup> cohort<sup>4</sup> study</li> </ul>	<ul style="list-style-type: none"> <li>Retrospective<sup>5</sup> cohort<sup>4</sup> study</li> <li>Case-control<sup>6</sup> study</li> </ul>	<ul style="list-style-type: none"> <li>Case series</li> </ul>	<ul style="list-style-type: none"> <li>Mechanism-based reasoning</li> </ul>
	Is this diagnostic or monitoring test accurate?	<ul style="list-style-type: none"> <li>Testing of previously developed diagnostic criteria (consecutive patients with consistently applied reference standard and blinding)</li> </ul>	<ul style="list-style-type: none"> <li>Development of diagnostic criteria (consecutive patients with consistently applied reference standard and blinding)</li> </ul>	<ul style="list-style-type: none"> <li>Nonconsecutive patients</li> <li>No consistently applied reference standard</li> </ul>	<ul style="list-style-type: none"> <li>Poor or nonindependent reference standard</li> </ul>	<ul style="list-style-type: none"> <li>Mechanism-based reasoning</li> </ul>
Prognostic— Investigating the effect of a patient characteristic on the outcome of a disease	What is the natural history of the condition?	<ul style="list-style-type: none"> <li>Inception<sup>3</sup> cohort study (all patients enrolled at an early, uniform point in the course of their disease)</li> </ul>	<ul style="list-style-type: none"> <li>Prospective<sup>3</sup> cohort<sup>4</sup> study (patients enrolled at different points in their disease)</li> <li>Control arm of randomized trial</li> </ul>	<ul style="list-style-type: none"> <li>Retrospective<sup>5</sup> cohort<sup>4</sup> study</li> <li>Case-control<sup>6</sup> study</li> </ul>	<ul style="list-style-type: none"> <li>Case series</li> </ul>	<ul style="list-style-type: none"> <li>Mechanism-based reasoning</li> </ul>
Therapeutic— Investigating the results of a treatment	Does this treatment help? What are the harms? <sup>7</sup>	<ul style="list-style-type: none"> <li>Randomized controlled trial</li> </ul>	<ul style="list-style-type: none"> <li>Prospective<sup>3</sup> cohort<sup>4</sup> study</li> <li>Observational study with dramatic effect</li> </ul>	<ul style="list-style-type: none"> <li>Retrospective<sup>5</sup> cohort<sup>4</sup> study</li> <li>Case-control<sup>6</sup> study</li> </ul>	<ul style="list-style-type: none"> <li>Case series</li> <li>Historically controlled study</li> </ul>	<ul style="list-style-type: none"> <li>Mechanism-based reasoning</li> </ul>
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.

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## **POSNA 2021: Selected Presentations**

### **Michael Vitale, MD**

Looking Under the Hood: Factors that Drive Successful Study Group Participation and Publications in Pediatric Spine Programs

### **Katherine Rosenwasser, MD**

The Atypical Clubfoot: Is it doomed from the start?

The largest study to date regarding the fate of the idiopathic atypical clubfoot treated from birth.

### **Christen Russo, MD**

Promoting Bone Health in Communities: Early Use of Calcium and Vitamin D Supplements Health

Working towards guidelines and recommendations regarding calcium and Vitamin D supplementation in the pediatric orthopedic population.

### **Samuel Van de Velde, MD**

Anatomic versus Non-anatomic Anterolateral Tenodesis in Combination with Anterior Cruciate Ligament Reconstruction:  
Sometimes Cheaper is Better

## **Columbia Pediatric Orthopedic Research Highlights**

### **Benjamin Roye, MD**

Establishing consensus on the best practice guidelines for the use of bracing in adolescent idiopathic scoliosis.

### **Joshua Hyman, MD**

Evaluation of assessment of caregiver experience with neuromuscular disease: Reliability and responsiveness of a new caregiver-reported outcome measure in patients with cerebral palsy

### **Charles Popkin, MD**

Cervical Spine Injuries in the Ice Hockey Player: Current Concepts in Epidemiology, Management, and Prevention

### **Lauren Redler, MD**

MRI following medial patellofemoral ligament reconstruction: assessment of imaging features found with post-operative pain, arthritis, and graft failure

### **Paulo Selber, MD**

Orthopedic Surgery in Dystonic Cerebral Palsy

**“Our goal and mission at NewYork-Presbyterian and Columbia Orthopedics is to deliver the most exceptional care possible to young people with orthopedic problems.”**

-Michael Vitale, MD, Chief of Pediatric Orthopedics and POSNA President



# PRE-COURSE Sponsored by NuVasive

Optimizing performance throughout your orthopaedic career: How to take your practice to the next level in the clinic, operating room, and your institution

*Chair: Lindsay Andras, MD*

**WEDNESDAY, MAY 12 — 8:00 AM–12:00 PM**

## DESCRIPTION

Practical advice for advancing your practice in clinical, operative, and administrative settings with words of wisdom from leaders in the field for junior, middle, and senior level faculty.

## LEARNING OBJECTIVES

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

- Objective 1:** Describe at least 3 new techniques for improving workflow in the clinic setting.
- Objective 2:** Identify ways to build team cohesiveness and improve patient safety in the operating room.
- Objective 3:** Develop techniques and terminology to tackle administrative tasks and negotiations.

## 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 **3.5 AMA PRA Category 1 Credits™**. Physicians should claim only the credit commensurate with the extent of their participation in the activity.

## PROGRAM

### SESSION I: CLINIC: FROM CHAOS TO COHESIVE CARE

8:00 AM–9:15 AM

*Moderators: Vishwas Talwalkar, MD & Ying Li, MD*

8:00 AM–8:05 AM

**Introduction: Welcome & Overview**

*Lindsay Andras, MD and Wudbhav Sankar, MD*

8:05 AM–8:10 AM

**Building volume: how to build a referral base with patients and pediatricians**

*Dan Miller, MD*

# PRE-COURSE

- 8:10 AM–8:15 AM **Wow them with your website: Improving your online presence**  
*Jonathan Schoenecker, MD, PhD*
- 8:15 AM–8:20 AM **Surviving in the electronic era: my top EMR hacks**  
*Jason Anari, MD*
- 8:20 AM–8:25 AM **Leveraging Telehealth: how you and your patients can get the most out of the virtual experience**  
*Alfred Atanda, MD*
- 8:25 AM–8:30 AM Discussion
- 8:30 AM–8:35 AM **Secrets of successful coding & collecting: how to legally avoid leaving money on the table**  
*Michael Jofe, MD*
- 8:35 AM–8:40 AM **Shining on Satisfaction Surveys: how to avoid being a Press Ganey victim**  
*Suken Shah, MD*
- 8:40 AM–8:45 AM Discussion
- 8:45 AM–9:05 AM **Better patient care through physician extender debate: What your clinic needs is a...**  
*Scribe - Jack Flynn, MD; RN - Benjamin Shore, MD, MPH, FRCSC  
Nurse Practitioner - Meghan Imrie, MD  
Physician's Assistant - Ernest Sink, MD  
Athletic Trainer - Matt Milewski, MD*
- 9:05 AM–9:10 AM Panel Discussion

## SESSION II: OPERATING ROOM: BUILDING YOUR SKILLS AND YOUR TEAM

- 9:10 AM–10:05 AM  
*Moderator: Paul Sponseller, MD & Rachel Goldstein, MD*
- 9:10 AM–9:15 AM **Transforming the B team into the A team: a survival guide for junior attendings in the OR**  
*Lindsay Andras, MD*
- 9:15 AM–9:25 AM **Coaching and surgeon performance**  
*Brandon Ramo, MD, Laura Bellaire, MD, and Vernon Tolo, MD*
- 9:25 AM–9:30 AM **Building self-confidence and other skills: what surgeons can learn from other professions**  
*Laurel Blakemore, MD*
- 9:30 AM–9:40 AM Discussion

# PRE-COURSE

WEDNESDAY, MAY 12 CONTINUED

- 9:40 AM–9:45 AM **Keep Calm and Be the Captain: How not to lose your cool when things get out of control**  
*Peter Newton, MD*
- 9:45 AM–9:50 AM **Safety doesn't happen by accident**  
*Michael Vitale, MD, MPH*
- 9:50 AM–9:55 AM **Innovation with Ethics: How do we responsibly push the envelope in patient care**  
*A. Noelle Larson, MD*
- 9:55AM–10:00 AM Discussion
- 10:05 AM–10:25 AM Break

## SESSION III: MASTERING BUSINESS ADMINISTRATION IN ORTHOPAEDICS

- 10:30 AM–11:55 AM  
*Moderator: Lori Karol, MD & Jaysson Brooks, MD*
- 10:30 AM–10:35 AM **Saving yourself and others from bad meetings**  
*Nicholas Fletcher, MD*
- 10:35 AM–10:45 AM **The art of negotiation: avoiding positional bargaining and getting to yes**  
*Pablo Castaneda, MD*
- 10:45 AM–10:50 AM **Problem Partners: how to deal with a colleague that causes problems**  
*James McCarthy, MD*
- 10:50 AM–10:55 AM Discussion
- 10:55 AM–11:00 AM **Think and speak like you went to business school: the 10 min mini MMM**  
*David Skaggs, MD, MMM*
- 11:00 AM–11:10 AM **The Missing 33%: how to talk to the C-suite**  
*Michelle Caird, MD*
- 11:10 AM–11:15 AM **Crisis leadership: Lessons learned from the COVID pandemic**  
*Michael Glotzbecker, MD*
- 11:15 AM–11:25 AM Discussion
- 11:25 AM–11:55 AM **Panel Discussion: How and when to transition to the next phase: reflections from surgeons in or approaching retirement**  
*Vernon Tolo, MD, Tony Herring, MD, Stuart Weinstein, MD, Dennis Wenger, MD, and Stephen Ondra, MD*

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# OPENING CEREMONY

6:30 – 6:35 PM	<b>Welcome</b> <b>POSNA President:</b> <i>Michael G. Vitale, MD, MPH</i> Local Hosts: <i>Daniel Sucato, MD, MS and Amy McIntosh, MD</i>
6:35 – 6:40 PM	<b>Introduction of Distinguished Guests</b> <ul style="list-style-type: none"><li>■ International Presidents</li><li>■ New Members</li><li>■ Distinguished Achievement Award Recipient</li><li>■ Presidential Guest Speaker</li><li>■ Board of Directors</li></ul>
6:40 – 6:45 PM	<b>Introduction of POSNA Hall of Fame Inductees</b> <i>Michael G. Vitale, MD, MPH</i>
6:45 – 6:50 PM	<b>Presentation of the St. Giles Young Investigator Award</b> <i>Michael G. Vitale, MD</i>
6:50 – 6:55 PM	<b>Presentation of the Arthur H. Huene Award</b> <i>Michael G. Vitale, MD, MPH</i>
6:55 – 7:00 PM	<b>Presentation of Angela S.M. Kuo Memorial Award</b> <i>Michael G. Vitale, MD, MPH</i>
7:00 – 7:05 PM	<b>Presentation of the Humanitarian Award</b> <i>Michael G. Vitale, MD, MPH</i>
7:05 – 7:10 PM	<b>Presentation of the Special Effort and Excellence Award</b> <i>Michael G. Vitale, MD, MPH</i>
7:10 – 7:25 PM	<b>Recognition of Industry Sponsors</b> <i>Michael G. Vitale, MD, MPH</i>
7:25 PM	<b>Introduction Steel Lecturer</b> <i>Daniel Sucato, MD, MS</i>
7:26 – 8:05 PM	<b>2021 Steel Lecture</b> Crossing the Generational Divide <i>Jason Dorsey</i>
8:05 – 9:30 PM	<b>Welcome Reception</b>

# SPEAKER & AWARD RECIPIENTS



## LORI KAROL, MD 2020 PRESIDENTIAL GUEST SPEAKER

Dr. Lori Karol is currently the Chief of Pediatric Orthopaedic Surgery at Children's Hospital Colorado and professor of orthopaedic surgery at the University of Colorado. She earned her undergraduate and medical degrees at the University of Michigan and served her orthopaedic residency at Wayne State University in Detroit. Dr. Karol completed a fellowship in pediatric orthopaedics and scoliosis at the Texas Scottish Rite Hospital in Dallas. She served as the president of the Pediatric Orthopaedic Society of North America in 2015-2016.

Her clinical areas of interest include scoliosis, clubfoot, and the orthopaedic management of cerebral palsy. She has authored 93 peer reviewed manuscripts on topics ranging from early onset scoliosis, the orthotic management of scoliosis, the application of gait analysis in clubfoot. She has lectured widely both nationally and internationally.

Lori has been married to Bob Karol for over 35 years, and has three lovely and successful daughters, Molly, Leah, and Abby.

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## PETER NEWTON, MD 2021 PRESIDENTIAL GUEST SPEAKER

Dr. Peter Newton is a pediatric orthopedic surgeon with over 25 years of practice. He specializes in the care of childhood and adolescents with spinal deformities. Dr. Newton completed his undergraduate training in Bioengineering at UCSD before getting his medical degree from Southwestern Medical School in Dallas. He returned to UCSD for his orthopedic training and was back to Dallas at TSRH for his pediatric orthopaedic fellowship. He joined the pediatric orthopaedic group at the Children's Hospital San Diego in 1994 and is the chief of the Orthopaedic division at Rady Children's Specialist in San Diego, CA. He is also a clinical professor in the department of Orthopaedic Surgery at the University of California, San Diego. He is a past president of the Pediatric Orthopaedic Society of North America and the Scoliosis Research Society.

His clinical interests have been focused on novel treatments for scoliosis including: thoracoscopy in anterior thoracic spinal surgery, posterior methods designed to maximize the 3-dimensional correction of scoliosis as well as fusionless methods of spinal growth modulation. He leads the well-recognized Harms Study Group in their effort to produce influential multicenter scoliosis research and is president of the foundation, Setting Scoliosis Straight. In addition to clinical outcomes research, his laboratory has been involved in the basic science of spinal growth, biomechanical studies related to implants and 3-dimensional imaging methods and quality improvement.

Dr. Newton is committed to advancing the field through excellence of clinical care, education of future generations and, innovative research.

# SPEAKER & AWARD RECIPIENTS



## BEHROOZ AKBARNIA, MD 2020 DISTINGUISHED ACHIEVEMENT AWARD

Behrooz Akbarinia, MD graduated from Tehran University and continued his Orthopaedic Surgery residency at Albany Medical Center, including a year of Pediatric Orthopaedics under Dr. Howard Steel in Philadelphia. He then completed a Scoliosis and Spine Fellowship at Twin Cities Scoliosis Center with Dr. John Moe and colleagues. Dr. Akbarinia was Professor/Vice Chair of the Department of Orthopaedic Surgery at St. Louis University and Chief of Pediatric Orthopaedics at Cardinal Glennon Children's Hospital in St. Louis, Missouri for 10 years before relocating to San Diego, California in 1990. There, he established his academic practice, created the San Diego Spine Fellowship Program and founded the San Diego Spine Foundation to support educational and research programs.

Dr. Akbarinia's interest has been focused on spinal deformity, especially Early Onset Scoliosis, which started with POSNA/SRS Growing Rod Tutorials at Rady Children's Hospital, San Diego. He then worked with other colleagues to establish the Growing Spine Study Group. GSSG recently merged with CSSG to become Pediatric Spine Study Group (PSSG), creating the world's largest database of young children with spine deformities. In 2007, he established the International Congress on Early Onset Scoliosis (ICEOS), now in its 14th year. He has published several books including two editions of The Growing Spine Textbook (3rd Ed. in progress). His efforts have significantly affected the lives of young children with spinal deformity around the world.

He has helped many children globally with his innovations, developing new means for treating young children with spine deformity. His efforts comprise over 200 peer-reviewed publications, many book chapters, and presentations nationally and internationally. He has received the AAP Distinguished Service Award, SRS's Blount Humanitarian and Lifetime Achievement Awards. He is past president of Scoliosis Research Society and is currently a Clinical Professor of Orthopedic Surgery at University of California, San Diego.

He and Nasrin married in 1968 and now reside in La Jolla, California. He is a proud father of three children and a grandfather of five.



## LORI KAROL, MD 2021 DISTINGUISHED ACHIEVEMENT AWARD

Dr. Lori Karol is currently the Chief of Pediatric Orthopaedic Surgery at Children's Hospital Colorado and professor of orthopaedic surgery at the University of Colorado. She earned her undergraduate and medical degrees at the University of Michigan and served her orthopaedic residency at Wayne State University in Detroit. Dr. Karol completed a fellowship in pediatric orthopaedics and scoliosis at the Texas Scottish Rite Hospital in Dallas. She served as the president of the Pediatric Orthopaedic Society of North America in 2015-2016.

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Lori has been married to Bob Karol for over 35 years, and has three lovely and successful daughters, Molly, Leah, and Abby.

# SPEAKER & AWARD RECIPIENTS



## KENNETH NOONAN, MD, MHCDS SPECIAL EFFORT AND EXCELLENCE AWARD

Dr. Noonan is the director of Pediatric Orthopaedics at the University of Wisconsin in Madison. Ken graduated from Luther College in Decorah, Iowa and Medical School from the University of Iowa in 1989. He performed his residency at the University of Iowa and is proud to have learned from Ignacio Ponseti, Stuart Weinstein, Fred Dietz, and other leaders in orthopaedics.

He then spent a year in the Ponseti Laboratory studying growth plate chondrocytes as an NIH Training Grant Fellow. Ken counts his subsequent clinical fellowship year as being formative as his director, Chad Price, models the perfect synergy of art and science in the field.

After fellowship, Ken spent 5 years at Riley Children's Hospital as an assistant professor. He has fond memories working, learning, and maturing with his partner Kos Kayes, and is honored to learn how to manage children with spina bifida from Richard Lindseth. In 2001, Ken and his family moved to Madison, Wisconsin to begin work at the University of Wisconsin and equally important; to be closer to family, cross country skiing, and trout. For the last 20 years in Madison, Ken has been practicing general pediatric orthopaedics that includes spine, upper extremity, neuromuscular, limb deformity, lower extremity, and oncologic reconstruction. His research and service has been equally diverse; every year he travels to Honduras to deliver care in this underserved country. Over time, Ken recognized an appreciation for the administration of health and just completed a Master's in Health Care Delivery Science from Dartmouth College.

Ken considers POSNA as a second family and has been honored to have been selected as a Traveling Fellow, serve the family as a POSNA Junior Board Member, Secretary of the Board, and as the chair of multiple committees including the Program Committee, Specialty Day Committee, Industry Relations Committee, ECC Committee, By-Laws Committee, IPOS® Advisory Board, AAOS CME Courses Committee, and the AAOS Trauma Evaluation Committee. Ken's passion for education lead him to chair multiple CME courses for POSNA and AAOS. Most recently, Ken has spearheaded the development of JPOSNA and is the initial Editor in Chief.



## ROBERT CADY, MD HUMANITARIAN AWARD

While in the library as a seventh grader at Levy Junior High School in Syracuse I read a book about Albert Schweitzer's work in Africa and went home that day and told my mom I was going to be a doctor and work in Africa like Albert Schweitzer.

That was always my goal and it never changed. After graduation from Hamilton college in 1967 and Upstate Medical School in 1971, Linda and I headed west where I was an intern at Multnomah County Hospital in Portland, Oregon. The patients that I cared for there were poor, and out of hope. I discovered that you didn't have to work in Africa to find under served people to care for.

After internship I fulfilled my military obligation as a flight surgeon at Minot AFB North Dakota where I saw my first patient with a clubfoot while volunteering at the Four Bears Sioux reservation in nearby New Town, ND.

I switched my residency plans to orthopedics and was accepted into David Murray's program in Syracuse. Following residency I did a fellowship at the Hospital for Sick Children in Toronto where I got to work with some of the finest pediatric orthopedic surgeons in the world, Drs. Bobeckho, Salter, Rang, Moseley, Carroll and Gillespie. Subsequently I returned to Syracuse to develop the pediatric section of the orthopedic program.

# SPEAKER & AWARD RECIPIENTS

My practice grew rapidly and I soon recruited John Lubicky and then Steve Albanese to join me. I could not have had better partners. We closed the pediatric orthopedic clinic and welcomed all the uninsured and poorly insured patients into our private practices. All of our patients received the same level of care regardless of their ability to pay.

I had always seen large numbers of babies with clubfeet, but after the Ponseti revolution, clubfoot treatment made up the bulk of my practice. With the success of Shafique Pirani and Norgrove Penny's sustainable clubfoot treatment programs in Africa I decided to look for a country where I might have similar success. In 2009 at the suggestion of Kaye Wilkins and Scott Nelson I decided that Haiti was the place.

Haiti is a beautiful place with beautiful people who so much appreciate our efforts. With the help of CURE Clubfoot Worldwide (now Hope Walks), the Global Clubfoot Initiative, MiracleFeet, MD Ortho, PIA, and Clubfoot Solutions we have clubfoot clinics throughout Haiti managed by Haitian cast technicians, administrators, and Haitian orthopedic surgeons. Dr. Francel Alexis, the first Haitian member of POSNA, who works with Scott Nelson at Hopital Adventiste in Carrefour Haiti is our program director.

I've been very lucky to be a part of POSNA since its inception. There is not a finer group of human beings in the world than the members of POSNA. This award means everything to me and I thank you all from the bottom of my heart.

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## JASON DORSEY STEEL LECTURER

Jason Dorsey is a pioneering Gen Z, Millennial, and generations speaker and researcher. He is on a mission to separate generational myth from truth through data to solve strategic challenges for leaders.

Jason has received more than 1,000 standing ovations for his unique presentations. He's headlined events around the world, from India, Singapore and Switzerland to Chile and Finland, the UK, and France.

Jason has appeared as a generational expert on more than 200 TV shows such as 60 Minutes, 20/20, CNN, CNBC, The Early Show, The Today Show, along with hundreds more media interviews, including a New York Times cover story. Adweek calls him a "research guru."

### **Acclaimed Generational Researcher**

Jason is President of The Center for Generational Kinetics (CGK), the leading generational research, strategy, and consulting firm. CGK works with more than 100 clients annually to solve tough generational challenges—in areas from sales and marketing to recruiting and innovation.

CGK's PhD-led team has conducted more than 65 generational studies on four continents in multiple languages. Jason and his team have repositioned global brands to win each generation. They've advised on multi-billion-dollar acquisitions and taken clients from last to first in both employee retention and customer growth.

### **Latest Bestselling Book**

Jason's latest bestselling book is *Zconomy: How Gen Z Will Change the Future of Business—and What to Do About It*. This breakthrough book was a #1 New Release on Amazon. Forbes listed it as a Top 10 Business Book of 2020. *Zconomy* is published in five languages.

Jason is also a Millennial, married to a Gen X'er, and they have a Gen Z daughter!

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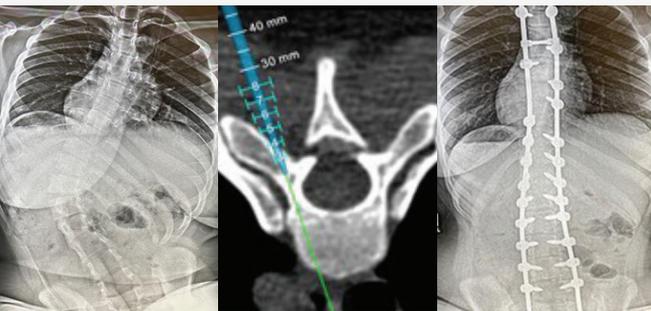
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MK-00040

# SCIENTIFIC PROGRAM

WEDNESDAY, MAY 12

1:30 PM–1:35 PM Introduction and Opening Remarks

## GENERAL SESSION: HIP/INFECTION

Moderator: *Alexandre Arkader, MD*

Co-Moderator: *Jonathan Schoenecker, MD*

1

1:36 PM–1:40 PM

**Long-term Patient Reported Outcomes and Satisfaction with Surgery Deteriorate Significantly with Time After In Situ Epiphysiodesis for Slipped Capital Femoral Epiphysis**  
*Patrick Whitlock, MD; Nicholas Auteri; Molly Uchtman  
Cincinnati Children's Hospital Medical Center, Cincinnati, Ohio*

2

1:41 PM–1:45 PM

**Proximal Femoral Changes Related to Obesity: An analysis of SCFE Pathoanatomy**  
*Travis Winston, MD; Andrew Landau; Pooya Hosseinzadeh, MD  
Washington University School of Medicine, Saint Louis, Missouri*

3

1:46 PM–1:50 PM



**Femoral Neck Growth and Remodeling with Free-Gliding Screw Fixation of Slipped Capital Femoral Epiphysis**

*Kevin Morash; Benjamin Orlik; Ron El-Hawary, MD;  
Luke Gauthier, MD; Karl Logan, MBChB  
IWK Health Centre, Halifax, N.S., Canada*

1:51 PM–1:59 PM

Discussion

4

2:00 PM–2:04 PM

**Is there a benefit to weaning Pavlik Harness treatment in infantile DDH?**  
*Wudbhav Sankar, MD; Joshua Bram; Shivani Gohel;  
Pablo Castaneda, MD  
Children's Hospital of Philadelphia, Philadelphia, PA*

5

2:05 PM–2:09 PM

**Comparison of Acetabular Morphology Changes in Pediatric Pelvic Osteotomies using Patient-Specific 3-D Models**  
*Vidyadhar Upasani, MD; Samuel Baird; Jason Caffrey;  
Harsha Bandaralage; James Bomar, MPH;  
Christine Farnsworth, MS  
Rady Children's Hospital - San Diego, San Diego, CA*

# SCIENTIFIC PROGRAM

WEDNESDAY, MAY 12 CONTINUED

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6

2:10 PM–2:14 PM

**Outpatient Bryant's Overhead Traction Does Not Affect the Rate of Open Reduction or Avascular Necrosis in Developmental Dislocation of the Hip**

*John Birch, MD; Emily Elerson; William Pierce; Sean Hinds; Benjamin Martin, MD; Ryan Muchow, MD  
Texas Scottish Rite Hospital for Children, Dallas, Texas*

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2:15 PM–2:23 PM

Discussion

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7

2:24 PM–2:28 PM

**Rate of Concomitant Cellulitis and Osteoarticular Infections in a Pediatric Population**

*Claire Ryan; Christopher Souder, MD; Matthew Ellington, MD  
University of Texas at Austin Dell Medical School, Austin, Texas*

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8

2:29 PM–2:33 PM

**Practice Variation in the Surgical Management of Children with Non-Abscess Forming Acute Osteomyelitis: Policy or Clinical Judgement**

*Vidyadhar Upasani, MD; Jessica Burns, MD; Tracey Bastrom, MA; Keith Baldwin, MD; Jonathan Schoenecker MD, PhD; Benjamin Shore, MD, MPH, FRCSC; CORTICES Study Group  
Rady Children's Hospital, San Diego, San Diego, California*

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9

2:34 PM–2:38 PM

**The Utility of Routine Radiographic Monitoring in Pediatric Osteoarticular Infections**

*Christopher Gajewski; Nicholas Gajewski; Alexander Upfill-Brown; Rachel Thompson, MD; Mauricio Silva, MD  
University of California, Los Angeles, Los Angeles, CA*

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2:39 PM–2:47 PM

Discussion

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10

2:48 PM–2:52 PM

**The Use of Biomarkers in Early Diagnosis of Septic Arthritis and Osteomyelitis**

*Michelle Mo, MD; Farshid Guilak; Alexis Elward; Kim Quayle; Dominic Thompson; Kirsten Brouillet; Scott Luhmann, MD  
St. Louis Children's Hospital, Saint Louis, MO*

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# SCIENTIFIC PROGRAM

WEDNESDAY, MAY 12 CONTINUED

**11**  
2:53 PM–2:57 PM **Outcome of Surgical Excision in Patients with Fibro-Adipose Vascular Anomaly**

*Samantha Spencer, MD; Jirawat Saengsin; Kemble Wang, MD; Patricia Miller, MS; Nicholas Sullivan; Blair Stewig; Megan Anderson, MD*  
*Department of Orthopaedic Surgery, Boston Children's Hospital, Harvard Medical School, Boston, MA*

**12**  
2:58 PM–3:02 PM **Spinal Involvement and Vertebral Deformity in patients with Chronic Recurrent Multifocal Osteomyelitis**

*Nathan Donaldson, DO; Nathan Rogers, MPH; Jennifer Soep*  
*Children's Hospital Colorado, Aurora, CO*

3:03 PM–3:11 PM Discussion

3:20 PM–3:40 PM Break

## GENERAL SESSION: TRAUMA

*Moderator: Charles Mehlman, DO, MPH*

*Co-Moderator: Christine Ho, MD*

**13**  
3:48 PM–3:52 PM  **Surgical Technique: Medial Pinning in Pediatric Supracondylar Humerus Fractures via the Mini-Open Technique—Safer Than We Thought?**

*Andrew Rees; Jacob Schultz; Lucas Wollenman; Stephanie Moore-Lotridge, PhD; Jonathan Schoenecker MD, PhD; Gregory Mencio, MD*  
*Vanderbilt University Medical Center, Nashville, Tennessee*

**14**  
3:53 PM–3:57 PM  **Intraoperative Internal Rotation Stress Test in Displaced Pediatric Supracondylar Humerus Fractures Improves Outcomes**

*Andrew Rees; Jacob Schultz; Lucas Wollenman; Stephanie Moore-Lotridge PhD; Jeffrey Martus, MD; Gregory Mencio, MD; Jonathan Schoenecker MD, PhD*  
*Monroe Carell Jr. Children's Hospital at Vanderbilt University Medical Center, Nashville, Tennessee*

# SCIENTIFIC PROGRAM

WEDNESDAY, MAY 12 CONTINUED

15

3:58 PM–4:02 PM



**Functional Outcomes of Operative vs Non-operative Treatment of Displaced Proximal Humerus Fractures in Adolescents: Early Results from a Multicenter Prospective Study**  
*Pooya Hosseinzadeh, MD; Andrew Landau; Rachel Goldstein, MD; Julia Sanders, MD; Jaime Denning, MD; Vidyadhar Upasani, MD; Keith Baldwin, MD*  
*Washington University School of Medicine, Saint Louis, Missouri*

4:03 PM–4:11 PM

Discussion

16

4:12 PM–4:16 PM



**Operative Versus Non-operative Treatment of Z-Type Comminuted Clavicle Fractures in Adolescents: A Sub-stratified Cohort Analysis**  
*Coleen Sabatini, MD, MPH; Eric Edmonds, MD; Elizabeth Liotta; Katelyn Hergott; Donald Bae, MD; Michael Busch, MD; Henry Ellis, MD; Mininder Kocher, MD, MPH; G Li, MD; Jeffrey Nepple, MD; Nirav Pandya, MD; Andrew Pennock, MD; Crystal Perkins, MD; David Spence, MD; David Williams PhD; Samuel Willimon, MD; Philip Wilson, MD; Benton Heyworth, MD*  
*Children's Hospital Boston, Boston, MA*

17

4:17 PM–4:21 PM



**Comparative Effectiveness of Non-operative Versus Operative Treatment for Completely Displaced Clavicle Shaft Fractures in Children**  
*Charles Mehlman, DO; Shital Parikh, MD*  
*Cincinnati Children's Hospital Medical Center, Cincinnati, OH*

18

4:22 PM–4:26 PM



**Changes in Superior Displacement, Angulation, and Shortening in the Early Phase of Healing for Completely Displaced Midshaft Clavicle Fractures in Adolescents: Results from a Prospective, Multicenter Study**  
*Jeffrey Nepple, MD; Andrew Pennock, MD; Benton Heyworth, MD; Tracey Bastrom MA; Donald Bae, MD; Michael Busch, MD; Eric Edmonds, MD; Henry Ellis, MD; Mininder Kocher, MD, MPH; G Li, MD; Elizabeth Liotta; Nirav Pandya, MD; Crystal Perkins, MD; Coleen Sabatini, MD, MPH; David Spence, MD; Samuel Willimon, MD; David Williams, PhD; Philip Wilson, MD*  
*Rady Children's Hospital, San Diego, CA*

4:27 PM–4:35 PM

Discussion

# SCIENTIFIC PROGRAM

WEDNESDAY, MAY 12 CONTINUED

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19

4:36 PM–4:40 PM



## Management of Syndesmotic Injuries in Children and Adolescents: Results of a Cross-Sectional Survey

Caroline Williams; Benjamin Shore, MD, MPH, FRCSC;  
Nicholas Sullivan; Blair Stewig; Dennis Kramer, MD;  
Yi-Meng Yen, MD; Collin May, MD; CORTICES Study Group  
Boston Children's Hospital, Boston, MA

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20

4:41 PM–4:45 PM



## Suture-button versus Screw Fixation of the Tibiofibular Syndesmosis in Adolescent Ankle Injuries

Benjamin Lurie; Conner Paez; Shayna Howitt;  
Andrew Pennock, MD  
Rady Children's Hospital, San Diego, San Diego, California

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21

4:46 PM–4:50 PM



## Incidence and Risk Factors for Acute Compartment Syndrome in Pediatric Tibia Fractures

Mitchel Obey; Maksim Shlykov; Margaret Smythe; Katelin Nickel;  
Matt Keller; Pooya Hosseinzadeh, MD  
Washington University School of Medicine, Saint Louis, Missouri

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4:51 PM–4:59 PM

Discussion

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22

5:00 PM–5:04 PM



## Clinical Scaphoid Fractures in Children: A prospective radiological study

Sasha Carsen, MD; Kevin Smit, MD; Holly Livock; Zoe Rubin;  
Ken Tang; Kerri Highmore; Khaldoun Koujok; Kevin Cheung  
CHEO, Ottawa, Ontario, Canada

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23

5:05 PM–5:09 PM



## Use of well-leg traction in the treatment of displaced femoral neck fractures in the pediatric population provides a practical alternative to the peroneal post

Courtney Selberg, MD; Nathan Donaldson, DO;  
Rachael Martino, BA; Nathan Rogers, MPH  
Children's Hospital Colorado,  
Aurora, Colorado

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24

5:10 PM–5:14 PM



## Evaluation and Treatment of Pediatric Pelvic Ring Injuries

Elizabeth Davis; Shiraz Younas, MD  
McGovern Medical School, Houston, Texas

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5:15 PM–5:23 PM

Discussion

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# SUBSPECIALTY DAY PROGRAMS

THURSDAY, MAY 13

## HAND SUBSPECIALTY DAY

Period 1: 7:50 AM–9:40 AM

*Chair: Joshua Abzug, MD*

*Co-Chair: Mary Claire Manske, MD*

*Co-Chair: Christine Ho, MD*

*Co-Chair: Julie Samora, MD*

Pediatric upper extremity surgeons manage a wide variety of conditions, including congenital, neuromuscular, and traumatic disorders. Clinical and diagnostic work-up, surgical indications, and treatment approach are often controversial. This session will include six high-quality abstract presentations, a panel discussion of challenging cases, and presentation on pediatric upper extremity surgery in low-resource countries.

7:45 AM–7:49 AM [Welcome and Remarks](#)

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**25**  
7:50 AM–7:54 AM [Long-Term Results for Surgically Treated Radial Polydactyly](#)  
*Takehiko Takagi, MD*  
*National Center for Child Health and Development, Tokyo, Tokyo, Japan*

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**26**  
7:55 AM–7:59 AM [A practical algorithm for radial polydactyly](#)  
*Chia-Hsieh Chang, MD*  
*Chang Gung Memorial Hospital, Taoyuan city, Taiwan*

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**27**  
8:00 AM–8:04 AM [Reliability of Masada Classification for forearm involvement in patients with Hereditary Multiple Osteochondromas \(HMO\)](#)  
*Carley Vuillermin, FRACS;*  
*Maria Canizares; Lindley Wall, MD; Suzanne Steinman, MD;*  
*Ann Van Heest*  
*Boston Children's Hospital, Boston, MA*

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8:05 AM–8:14 AM [Discussion](#)

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**28**  
8:15 AM–8:19 AM [Outcomes of Biceps Rerouting for Forearm Supination Contractures in Brachial Plexus Birth Injury](#)  
*Mary Claire Manske, MD; Cory Pham; Michelle James, MD*  
*Shriners Hospital for Children Northern California, Sacramento, California*

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# SUBSPECIALTY DAY PROGRAMS

THURSDAY, MAY 13 CONTINUED

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29

8:20 AM–8:24 AM

**Why the Knife? Reasons Children and their Families Choose Surgery for Ganglion Cysts**

*Jennifer Ty, MD; Joshua Bram; David Falk; Benjamin Chang; Ines Lin; Faris Fazal; Apurva Shah, MD  
Children's Hospital of Philadelphia, Philadelphia, Pennsylvania*

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30

8:25 AM–8:29 AM



**The Radiocoronoid line - a novel technique for diagnosing radiocapitellar dislocation**

*Kenneth Pak Leung Wong; Daniel JiaDong; Ling Hui Tay; Nicole Lee; Arjandas Mahadev, FRCS  
KK Women's and Children's Hospital, Singapore, Singapore*

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8:30 AM–8:38 AM

Discussion

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8:38 AM–8:43 AM

**Introduction**

*Joshua Abzug, MD and  
Mary Claire Manske, MD*

8:44 AM–8:54 AM

**Case Discussion 1**

*Joshua Abzug, MD and Mary Claire Manske, MD  
Panel: Sebastion Farr, MD, Carly Vuillermin, MD, Chris Stutz*

8:55 AM–9:05 AM

**Case Discussion 2**

*Joshua Abzug, MD and Mary Claire Manske, MD  
Panel: Sebastion Farr, MD, Carly Vuillermin, MD, Chris Stutz*

9:06 AM–9:16 AM

**Case Discussion 3**

*Joshua Abzug, MD and Mary Claire Manske, MD  
Panel: Sebastion Farr, MD, Carly Vuillermin, MD, Chris Stutz*

9:17 AM–9:27 AM

**Case Discussion 4**

*Joshua Abzug, MD and Mary Claire Manske, MD  
Panel: Sebastion Farr, MD, Carly Vuillermin, MD, Chris Stutz*

9:28 AM–9:40 AM

**International Outreach Missions in Pediatric Hand Surgery**  
*Scott Kozin, MD*

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9:45 AM–10:10 AM

Break

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# SUBSPECIALTY DAY PROGRAMS

THURSDAY, MAY 13 CONTINUED

## FOOT SUBSPECIALTY DAY

Period 2: 10:18 AM – 11:52 AM

*Chair: Derek Kelly, MD*

*Co-Chair: Maryse Bouchard, MD*

*Co-Chair: Joshua Hyman, MD*

The Pediatric and Adolescent Foot Imaging discussion and case presentations will focus on new MRI techniques for foot disease and deformity, weight bearing CT indications and benefits, and ultrasound uses. Then we will discuss minimally invasive techniques for pediatric and adolescent forefoot and hindfoot reconstruction including bunion repair and calcaneal osteotomy.

**31**

10:18 AM–10:22 AM **Pediatric Posterior Ankle Impingement- Arthroscopic Management and Outcomes: A Prospective Study**  
*Indranil Kushare, MD; Ramesh Ghanta; Jorge Gomez; Kristen Kastan; Tracie Stone; Sachin Allahabadi, BA; Scott McKay, MD*  
*Texas Children's Hospital, Houston, Texas*

**32**

10:23 AM–10:27 AM **Does the Stabilization of the Calcaneocuboid Joint With a Steinman Pin in Evans Osteotomy Procedures Affect Its Incidence of Arthritis?**  
*Brett Heldt; Isaiah Roepe; Elsayed Attia; Vinitha Shenava, MD; Jaclyn Hill, MD*  
*Texas Children's Hospital, Houston, TX*

**33**

10:28 AM–10:32 AM **A Retrospective Analysis of Nonoperative Treatment of Idiopathic Toe Walking: Outcomes and Predictors of Success**  
*Maryse Bouchard, MD; John Bartoletta; Elaine Tsao, MD*  
*Seattle Children's Hospital, Seattle, WA*

10:33 AM–10:41 AM Discussion

**34**

10:42 AM–10:46 AM **Talectomy for the Treatment of Rigid Non-idiopathic Clubfoot Deformity: Long-Term Follow-Up**  
*Jill Larson, MD*  
*Ann & Robert H. Lurie Children's Hospital of Chicago, Chicago, IL*

# SUBSPECIALTY DAY PROGRAMS

THURSDAY, MAY 13 CONTINUED

35

10:47 AM–10:51 AM **Clubfoot Activity, Recurrence & Exercise (CARES): A Pilot Study** This study investigates whether patient/parent reported outcomes (PROs) and activity levels for children with clubfoot are different in patients treated for relapse. It also proposes a method to assess outcomes remotely.  
*Steven Frick, MD; Ghida El-Banna; Nicole Segovia  
Stanford University, Stanford, CA*

36

10:52 AM–10:56 AM **The Atypical Clubfoot: Is it doomed from the start?**  
*Katherine Rosenwasser; Nickolas Nahm, MD;  
John Herzenberg, MD  
Sinai Hospital of Baltimore/Lifebridge Health, Baltimore, Maryland*

10:57 AM–11:05 AM Discussion

11:05 AM–11:18 AM **Pediatric and Adolescent Foot Imaging: Beyond the X-ray**  
*L. Reid Nichols, MD*

11:18 AM–11:28 AM **Q&A / Cases**  
*Derek Kelly, MD*

11:29 AM–11:41 AM **Minimally Invasive Techniques in Pediatric Foot Surgery**  
*Alastair Younger, MD*

11:42 AM–11:52 AM **Q&A / Cases**  
*Maryse Bouchard, MD*

## HIP SUBSPECIALTY DAY

Sponsored by OrthoPediatrics

Period 1: 7:50 AM–9:40 AM

**Management of Uncommon Hip Conditions**

*Chair: Rachel Goldstein, MD*

*Co-Chair: Scott Rosenfeld, MD*

This session will focus on how to approach less common hip conditions. Expert hip surgeons will discuss their approach to managing complex, uncommon hip problems.

7:45 AM–7:49 AM **Welcome and Remarks**

37

7:50 AM–7:54 AM **Acetabular Coverage Decreases at the End of Skeletal Growth: a 3D CT Study of Healthy Hips**  
*Ethan Ruh; April Krivoniak; Michael McClincy, MD  
University of Pittsburgh, Pittsburgh, PA*

38

# SUBSPECIALTY DAY PROGRAMS

THURSDAY, MAY 13 CONTINUED

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**38**

7:55 AM–7:59 AM

Patients That Undergo Concomitant Hip Arthroscopy and Periacetabular Osteotomy Obtain Minimal Clinically Important Difference More Than Patients That Undergo Isolated Periacetabular Osteotomy: An analysis of 231 hips

*Anthony Essilfie; Stacy Robustelli, BS; Ernest Sink, MD  
The Hospital for Special Surgery, New York, NY*

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**39**

8:00 AM–8:04 AM

Intermediate Term Results of Combined Surgical Dislocation and Periacetabular Osteotomy for Complex Perthes Deformities: Can We Save the Hip?

*Serena Freiman; Jeffrey Nepple, MD; Gail Pashos;  
Perry Schoenecker, MD; John Clohisy, MD  
Washington University School of Medicine, St. Louis Missouri*

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8:05 AM–8:14 AM

Discussion

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**40**

8:15 AM–8:19 AM

Analyzing Impingement Patterns and Planning Corrective Osteotomy Using Patient-specific 3-Dimensional CT Models for Collision Detection in Patients with Severe Slipped Capital Femoral Epiphysis

*Till Lerch; Florian Schmaranzer; Moritz Tannast;  
Klaus Siebenrock, MD; Simon Steppacher; Daniel Maranhão, MD;  
Young Kim, MD; Eduardo Novais, MD  
Boston Childrens Hospital, Boston, MA*

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**41**

8:20 AM–8:24 AM

Surgical Hip Dislocation Combined with Femoral Head Osteoplasty and Intertrochanteric Osteotomy as a Delayed Reconstruction of Slipped Capital Femoral Epiphysis (SCFE)-induced femoroacetabular impingement (FAI): a 10-year Experience

*Houssam Bouloussa; Sunny Parekh; Muzaffar Ali; Landon Cluts;  
Michael McClincy, MD; Patrick Bosch, MD  
Children's Hospital of Pittsburgh of UPMC, Pittsburgh, PA*

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**42**

8:25 AM–8:29 AM

Capital Realignment for High Grade Slips Using Anterior Approach and Subcapital Osteotomy

*Sandeep Patwardhan, MD;  
Dr. Ashok Shyam; Parag Sancheti  
Sancheti Institute for Orthopaedics & Rehabilitation, Pune, India*

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# SUBSPECIALTY DAY PROGRAMS

THURSDAY, MAY 13 CONTINUED

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8:30 AM–8:38 AM	Discussion
8:38 AM–8:41 AM	<b>Introduction</b> <i>Scott Rosenfeld, MD</i>
8:42 AM–8:49 AM	<b>Downs Syndrome Hip Instability</b> <i>Ira Zaltz, MD</i>
8:50 AM–8:57 AM	<b>Non-Perthes Avascular Necrosis of the Femoral Head</b> <i>Harry Kim, MD</i>
8:58 AM–9:05 AM	<b>Bladder Exstrophy</b> <i>Paul Sponseller, MD</i>
9:06 AM–9:15 AM	<b>Hip Deformity in Skeletal Dysplasia</b> <i>Vernon Tolo, MD</i>
9:16 AM–9:23 AM	<b>Femoral Head Osteochondral Defects</b> <i>Andrea Spiker, MD</i>
9:24 AM–9:40 AM	<b>Questions</b> <i>Scott Rosenfeld, MD</i>

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9:45 AM–10:10 AM	Break
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## HIP SUBSPECIALTY DAY (CONTINUED)

Period 2: 10:18 AM – 11:58 AM

### The Natural History of Common Hip Conditions

This section will focus on the natural history of common pediatric hip conditions.

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<b>43</b>	
10:18 AM–10:22 AM	<b>The Role of the Artery of Ligamentum Teres in Revascularization in Legg-Calve-Perthes Disease</b> <i>William Morris, MD; Angel Valencia; Molly McGuire; Harry Kim, MD</i> <i>Texas Scottish Rite Hospital for Children, Dallas, TX</i>

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<b>44</b>	
10:23 AM–10:27 AM	<b>Hip morphology in early-stage LCPD: Is there an argument for anatomic-specific containment?</b> <i>Wudbhav Sankar, MD; Courtney Selberg, MD; Joshua Bram; Patrick Carry; Rachel Goldstein, MD; Tim Schrader, MD; Jennifer Laine, MD; Harry Kim, MD</i> <i>Children's Hospital of Philadelphia, Philadelphia, PA</i>

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# SUBSPECIALTY DAY PROGRAMS

THURSDAY, MAY 13 CONTINUED

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**45**  
10:28 AM–10:32 AM **Reliability and Validity of Assessment of Legg-Calve-Perthes Disease Hypoperfusion with Perfusion MRI**  
*David Chong, MD; Tim Schrader, MD; Jennifer Laine, MD; Scott Yang, MD; Shawn Gilbert, MD; Harry Kim, MD*  
*International Perthes Study Group, Dallas, TX*

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10:33 AM–10:41 AM Discussion

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**46**  
10:42 AM–10:46 AM **Self-Reported Physical Function Doesn't Correlate with Pain or Functional Limitations in Adolescents Undergoing Hip Preservation Surgery**  
*Wilshaw Stevens; Kirsten Tulchin-Francis, PhD; David Podeszwa, MD*  
*Scottish Rite for Children, Dallas, TX*

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**47**  
10:47 AM–10:51 AM **Acetabular development following treatment of developmental hip dysplasia: Does the addition of bony surgery at index procedure decrease risk of secondary surgery?**  
*Ernest Sink, MD; Rachael Martino, BA; Aaron Brandt; Patrick Carry; Courtney Selberg, MD*  
*Children's Hospital Colorado, Aurora, Colorado*

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**48**  
10:52 AM–10:56 AM **Quasi-static MRI Motion Analysis to Study Hip Translation and Its Association with Hip Rotation and Morphology**  
*Young Jo Kim, MD; Alireza Emami; Shayan Hosseinzadeh; Eduardo Novais, MD; Ata Kiapour*  
*Boston Children's Hospital, Boston, MA*

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10:57 AM–11:05 AM Discussion

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11:05 AM–11:08 AM **Introduction**  
*Rachel Goldstein, MD*

11:09 AM–11:15 AM **Adolescent/Young Adult Hip Dysplasia**  
*Stuart Weinstein, MD*

11:16 AM–11:22 AM **Legg-Calvé-Perthes Disease**  
*Jennifer Laine*

11:23 AM–11:28 AM **Slipped Capital Femoral Epiphysis**  
*Michael Millis, MD*

# SUBSPECIALTY DAY PROGRAMS

THURSDAY, MAY 13 CONTINUED

11:29 AM–11:35 **Femoroacetabular Impingement**  
*Cara Beth Lee, MD*

11:36 AM–11:58 **Questions**  
*Rachel Goldstein, MD*

## NEUROMUSCULAR SUBSPECIALTY DAY

Period 1: 7:50 AM – 9:40 AM

**Chair:** *Andrew Georgiadis, MD*  
**Co-Chair:** *Benjamin Shore, MD, MPH, FRCSC*  
**Co-Chair:** *Lane Wimberly, MD*

This session will be a mixture of scientific presentations and discussion on the orthopaedic care of patients with neuromuscular disorders. A variety of topics will be presented, including the optimization of patients for surgical intervention, approaches to ambulatory patients with gait impairment, orthopaedic care in patients with Spina Muscular Atrophy, and a journal club of influential publications from the preceding year.

7:45 AM–7:49 AM **Welcome and Remarks**

**49**  
7:50 AM–7:54 AM **Severe Hip Subluxation in Non-Ambulatory Cerebral Palsy (CP): What Factors Lead to Lasting Success Of Reduction?**  
*Kristen Carroll, MD; Alyssa Thorman; Whitney Moss; Bruce MacWilliams; Matthew Talmage; Mark McMulkin; Glen Baird, MD; Alan Stotts, MD*  
*Shriners Hospital for Children- Salt Lake City, Salt Lake City, UT*

**50**  
7:55 AM–7:59 AM **3-D Acetabular Morphology of the Neuromuscular Hip: Implications for Pre-operative Planning**  
*Megan Severson, MD; Harsha Bandarlage; James Bomar, MPH; Christine Farnsworth, MS; Vidyadhar Upasani, MD*  
*Rady Children's Hospital-San Diego, San Diego, CA*

**51**  
8:00 AM–8:04 AM **Hip Pain and Scoliosis in Non-Ambulatory Children with SMA**  
*Nickolas Nahm, MD; Rewais Hanna; Melissa Bent, MD; Karen Patterson; Sarah Sund, BS; Mary Schroth; Matthew Halanski, MD*  
*University of Wisconsin, Madison, WI*

8:05 AM–8:14 AM **Discussion**

# SUBSPECIALTY DAY PROGRAMS

THURSDAY, MAY 13 CONTINUED

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**52**

8:15 AM–8:19 AM

**Bone Deficits in Spina Bifida Accelerate During Puberty**

*Robert Kay, MD; Nicole Mueske; Susan Rethlefsen, PT;  
Alexander Van Speybroeck; Wendy Mack;  
Tishya Wren, PhD  
Children's Hospital Los Angeles, Los Angeles, CA*

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**53**

8:20 AM–8:24 AM

**Long and Short Term Kinematic Outcomes of Rectus Femoris Transfers in Ambulatory Children with Cerebral Palsy**

*Rubini Pathy, MD; Mary Gannotti; Brianna Liquori; George Gorton  
Shriners Hospitals for Children, Springfield, MA*

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**54**

8:25 AM–8:29 AM

**Outcomes of Patellar Tendon Imbrication for Crouch Gait**

*Lauren Hyer, MD; David Westberry, MD; Prabhav Saraswat; Ashley  
Carpenter; Jon Davids, MD  
Shriners Hospitals for Children, Greenville, SC*

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8:30 AM–8:38 AM

Discussion

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8:38 AM–8:42 AM

**Introduction**

*Andrew Georgiadis, MD and Benjamin Shore, MD, MPH, FRCSC*

8:43 AM–8:57 AM

**Preoperative Optimization of Patients with Complex Medical Conditions**

*Laurie Glader, MD*

8:58 AM–9:08 AM

**Reliable Information and Social Media for Neuromuscular Conditions**

*Hank Chambers, MD*

9:09 AM–9:19 AM

**Publications This Year That Could Change Your Practice**

*Amanda Whitaker, MD*

9:20 AM–9:30 AM

**Master's Techniques – Anterior Guided Growth, Distal Femur**

*Robert Kay, MD*

9:31 AM–9:40 AM

**Orthopaedic Care of SMA in the Era of Pharmacotherapy**

*Brian Snyder, MD, PhD*

# SUBSPECIALTY DAY PROGRAMS

THURSDAY, MAY 13 CONTINUED

## LOWER EXTREMITY SUBSPECIALTY DAY

Period 2: 10:18 AM – 11:58 AM

*Chair: Phil McClure, MD*

*Co-Chair: Megan Young, MD*

Lower extremity topic is limb length discrepancy with presentations to highlight case examples, prediction methods, and a debate centered on opposing treatment methods. Presenters will review the options for epiphyseodesis versus limb lengthening including counseling of families, various techniques, results/complications and pearls and pitfalls. The didactic concludes with a discussion on the “cutoff” for limb lengthening considering evolving technology.

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**55**  
10:18 AM–10:22 AM **The Effects of Lower Extremity Rotational Malalignment on Pediatric Patient-Reported Outcomes Measurement and Information System (PROMIS) Scores**  
*Janan Chandrananth; Richard Hannan; Daniel Bouton, MD; Ellen Raney, MD; Jeremy Bauer, MD*  
*Shriners Hospital for Children, Portland, OR*

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**56**  
10:23 AM–10:27 AM **Patient reported PROMIS assessment in pediatric patients with tibial deficiency, fibular deficiency, and proximal focal femoral deficiency - A multicenter study**  
*Vanna Rocchi; Nina Cung; Jeffrey Fine; Jeffrey Ackman, MD; Sarah Nossov, MD; Janet Walker, MD; David Westberry, MD; Joel Lerman, MD*  
*Shriners Hospitals for Children Northern California, Sacramento, CA*

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**57**  
10:28 AM–10:32 AM **◆ Treatment of Congenital Pseudarthrosis of the Tibia: 2-year Minimum Followup**  
*Dror Paley, MD, FRCSC; David Feldman, MD; Aaron Huser DO; Claire Shannon, MD; Michelle Coleman; Anna Hell*  
*Paley Institute, West Palm Beach, FL*

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10:33 AM–10:41 AM 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).

# SUBSPECIALTY DAY PROGRAMS

THURSDAY, MAY 13 CONTINUED

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58

10:42 AM–10:46 AM **Complications Requiring Readmission Following Lower Limb Lengthening: A 10 Year U.S. Database Study**  
*Sanjeev Sabharwal, MD; Ashish Mittal; Sachin Allahabadi, MD; Rishab Jayaram; Matt Callahan*  
*University of California, San Francisco, San Francisco, CA*

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59

10:47 AM–10:51 AM **Angular Deformity before and after Temporary Epiphysiodesis for Leg Length Discrepancy**  
*Katherine Antoniak; Curtis VandenBerg, MD; Oussama Abousamra, MD*  
*Children's Hospital Los Angeles, Los Angeles, CA*

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60

10:52 AM–10:56 AM **Novel Treatment for Improving Knee Range of Motion in Patients with Arthrogyrosis and Severe Knee Flexion Deformity**  
*David Feldman, MD; Aaron Huser, DO; Dror Paley, MD, FRCSC; Troy Rand; Michael Beck*  
*Paley Institute, West Palm Beach, FL*

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10:57 AM–11:05 AM Discussion

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11:05 AM–11:10 AM **Case Presentation: What to do with a 4cm leg length discrepancy?**  
*Megan Young, MD*

11:10 AM–11:25 AM **Epiphysiodesis**  
*John Birch, MD*

11:30 AM–11:40 AM **Limb Lengthening**  
*John Herzenberg, MD*

11:41 AM–11:58 AM **Cutoff for limb lengthening...is there a right answer?**  
*Phillip McClure, MD*

# SUBSPECIALTY DAY PROGRAMS

THURSDAY, MAY 13 CONTINUED

## SPINE SUBSPECIALTY DAY

Period 1: 7:50 AM – 9:40 AM

*Chair: Sumeet Garg, MD*

*Co-Chair: Craig Ebersson, MD*

In 2020 we faced new challenges in clinical care and education. Our session will focus on contemporary issues of 2021 facing pediatric spine surgeons including the COVID pandemic, increasing use of telehealth, and racial disparities in pediatric spine care.

In addition, we will have a session on indications and techniques to optimize care for patients with neuromuscular scoliosis. Many options exist for treatment, and it is not always clear which patients benefit from operative intervention. This session will highlight the controversies that frequently arise during the treatment of these patients and highlight the benefits of having multiple tools in your toolbox when approaching these cases.

Finally, we also will have a duel on the current state of growth modulation in the treatment of scoliosis. Do we really know if this is better than a fusion? Our experts will slug it out!

7:45 AM–7:49 AM      **Welcome and Remarks**

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**61**

7:50 AM–7:54 AM      **How low can you go? Evaluation of Implant Density in Growing Construct Conversion to Posterior Spinal Fusion for Early Onset Scoliosis**

*Edward Compton; Purnendu Gupta, MD; Jaime Gomez, MD; Kenneth Illingworth, MD; David Skaggs, MD, MMM; Paul Sponseller, MD; Amer Samdani, MD; Steven Hwang; Matthew Oetgen MD, MBA; Jennifer Schottler; George Thompson, MD; Michael Vitale, MD, MPH; John Smith, MD; Lindsay Andras, MD; Pediatric Spine Study Group  
Children's Hospital Los Angeles, Los Angeles, CA*

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**62**

7:55 AM–7:59 AM      **Superiority of convex first differential rod technique in three-dimensional correction of Lenke 1&2 Adolescent Idiopathic Scoliosis**

*Lorena Floccari, MD; Trey Moberly; Todd Ritzman, MD  
Akron Children's Hospital, Akron, OH*

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**63**

8:00 AM–8:04 AM      **Predictors of Optimal Outcomes of Selective Thoracic Fusion at Five Years**

*Amelia Lindgren, MD; Tracey Bastrom MA; Amer Samdani, MD; Suken Shah, MD; Firoz Miyanji, MD; Patrick Cahill, MD; Vidyadhar Upasani, MD; Peter Newton, MD; Burt Yaszay, MD  
Rady Children's Hospital, San Diego, CA*

# SUBSPECIALTY DAY PROGRAMS

THURSDAY, MAY 13 CONTINUED

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8:05 AM–8:14 AM Discussion

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64

8:15 AM–8:19 AM **Scoliosis Surgery Normalizes Cardiac Function in AIS Patients**  
*Terry Amaral, MD; Vishal Sarwahi, MBBS; Aaron Atlas; Jesse Galina; Sayyida Hasan; Sarika Kalantre*  
*Cohen Children's Medical Center, New Hyde Park, NY*

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65

8:20 AM–8:24 AM **Spinal Fusion Effects on Pulmonary Function and Breathing Mechanics in Adolescent Idiopathic Scoliosis**  
*Vincent Prusick, MD; Joel Eastman; Hank White; Sam Augsburger; Vishwas Talwalkar, MD; Ryan Muchow, MD; Henry Iwinski, MD*  
*Shriners Hospitals for Children-Medical Center, Lexington, KY*

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66

8:25 AM–8:29 AM **Airway Management of Pediatric Cervical Fusions**  
*Daniel Hedequist, MD; Nora O'Neill; Danielle Cook; Sabeena Chacko*  
*Boston Children's Hospital, Boston, MA*

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8:30 AM–8:38 AM Discussion

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8:38 AM–8:48 AM **Indications for surgery in Neuromuscular Scoliosis - When to say no**  
*Brian Smith, MD*

8:48 AM–8:53 AM **Mortality in Neuromuscular scoliosis**  
*Jill Larson, MD*

8:53 AM–8:58 AM **Neuromuscular Scoliosis -Indications for posterior only surgery**  
*Brian Snyder, MD, PhD*

8:58 AM–9:03 AM **Neuromuscular Scoliosis -Indications for anterior surgery**  
*Mike Glotzbecker, MD*

9:03 AM–9:08 AM **Neuromuscular scoliosis - Indications for growth friendly instrumentation**  
*Burt Yaszay, MD*

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9:08 AM–9:18 AM Discussion

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9:18 AM–9:23 AM **60-degree curve in a Sanders 3 patient: In 2021, tethering is the way to go**  
*A. Noelle Larson, MD*

# SUBSPECIALTY DAY PROGRAMS

THURSDAY, MAY 13 CONTINUED

9:23AM–9:28 AM 60-degree curve in a Sanders 3 patient: In 2021, fusion is still the way to go  
*Dominick Tuason, MD*

9:28AM–9:40 AM Discussion

9:40 AM–10:10 AM Break

## SPINE SUBSPECIALTY DAY (CONTINUED)

Period 2: 10:18 AM – 11:58 AM

67

10:18 AM–10:22 AM Transcranial Motor Evoked Potential Monitoring During Scoliosis Surgery in Children with Cerebral Palsy:  
*Is it Feasible?*

*Wade M. Shrader, MD; Katherine Kenny; Kenneth Rogers, PhD; Sabina DiCindio; Anthony DiNardo; Alier Franco; Suken Shah, MD Nemours A.I. duPont Hospital for Children, Wilmington, DE*

68

10:23 AM–10:27 AM Breaking the Dogma: Does UIV have to be T2 in CP Patients Undergoing Spinal Fusion for their Neuromuscular Scoliosis?

*Jakub Sikora-Klak; Paul Sponseller, MD; Tracey Bastrom, MA; Suken Shah, MD; Patrick Cahill, MD; Mark Abel, MD; Amer Samdani, MD; Peter Newton, MD; Burt Yaszay, MD Rady Children's Hospital, San Diego, CA*

69

10:28 AM–10:32 AM Ambulatory Neuromuscular Scoliosis Patients have Similar Rates of Infection, Perioperative Complications, and Revision to Adolescent Idiopathic Scoliosis Patients

*Vishal Sarwahi, MBBS; Sayyida Hasan; Yungtai Lo; Terry Amaral, MD; Jesse Galina; Aaron Atlas Cohen Children's Medical Center, New Hyde Park, NY*

10:33 AM–10:41 AM Discussion

# SUBSPECIALTY DAY PROGRAMS

THURSDAY, MAY 13 CONTINUED

70

10:42 AM–10:46 AM **Prophylactic Application of Local Vancomycin onto Surgical Field Shows No Decrease of Acute Surgical Site Infection in Adolescent Idiopathic Scoliosis Patients**

*De-An Zhang; Marilan Luong;*

*Robert Cho, MD; Shriners Spine Study Group; Selina Poon, MD  
Shriners for Children Medical Center, Pasadena, CA*

71

10:47 AM–10:51 AM **◆ Multimodal Treatment for Severe Spinal Deformity in Osteogenesis Imperfecta: Rationale, Outcomes and Complications**

*Tyler McDonald; Alexander Kuzma; Yushane Shih, MD;*

*Kenneth Rogers, PhD; Petya Yorgova; Richard Kruse, DO;*

*Jeanne Franzone, MD; Suken Shah, MD*

*Nemours/Alfred I. duPont Hospital for Children, Wilmington, DE*

72

10:52 AM–10:56 AM **Post-Operative Complications Assessment for Patients with Early-Onset Scoliosis and Baclofen Pump Usage Undergoing Growth-Friendly Spinal Instrumentation Surgeries**

*Amy Xu; Majd Marrache; Christina Hardesty, MD; Mari Groves;*

*Mark Erickson, MD; Robert Murphy, MD; George Thompson, MD;*

*Paul Sponseller, MD*

*Johns Hopkins School of Medicine, Baltimore, MD*

10:57 AM–11:05 AM Discussion

11:05 AM–11:11 AM **COVID-19 Impact on Scoliosis Care**

*Roger Widmann, MD*

11:12 AM–11:18 AM **Incorporating Telehealth for Pediatric Spine Care**

*Suken Shah, MD*

11:19 AM–11:24 AM **Building a Social Media Presence for Your Practice**

*Robert Cho, MD*

11:25 AM–11:30 AM **Using Medical Animation to Enhance Patient Education**

*Mark Erickson, MD*

11:31 AM–11:40 AM Discussion

11:40 AM–11:48 AM **Racial Care Disparities in Pediatric Scoliosis**

*Jaysson Brooks, MD*

11:48 AM–11:58 AM 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).

# SUBSPECIALTY DAY PROGRAMS

THURSDAY, MAY 13 CONTINUED

## SPORTS SUBSPECIALTY DAY

Period 1: 7:50 AM – 9:30 AM

### Ortho-Biologics in Youth Sports: Waste of Money or Promising Treatment Option

*Chair: Peter Fabricant, MD*

*Co-Chair: Jennifer Beck, MD*

*Co-Chair: Eric Edmonds, MD*

This session aims to provide a review of the various trending ortho-biologic options in sports medicine including PRP, BMAC, stem cells, etc and current evidence on their applicability to youth sports medicine pathologies. A controversial, yet highly lucrative part of adult sports medicine practices, utilization of biologics in youth sports medicine has been limited. Understanding of the basic science behind their development and analysis of high level evidence in adult populations will improve application algorithms in youth sports medicine.

7:45 AM–7:49 AM      Welcome and Remarks

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**73**

7:50 AM–7:54 AM      Descriptive Epidemiology from the Research in OsteoChondritis Dissecans of the Knee (ROCK) Prospective Cohort

*Carl Nissen, MD*

*University of Pennsylvania, Philadelphia, PA*

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**74**

7:55 AM–7:59 AM      Osteochondral Allografting for Unsalvageable Osteochondritis Dissecans in the Skeletally Immature Knee: A Comparative Analysis of Radiographic Healing and Early Clinical Outcomes Between Skeletally Mature and Immature Patients

*Breann Tisano; Henry Ellis, MD; Charles Wyatt, NP;*

*Philip Wilson, MD*

*Scottish Rite for Children, Dallas, Texas*

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**75**

8:00 AM–8:04 AM      Predicting Outcomes of Talar Osteochondritis Dissecans Lesions in Children

*Kathleen Maguire, MD; Mitchell Johnson; Kunbo Park, MD;*

*Divya Talwar; J Todd Lawrence, MD*

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

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8:05 AM–8:14 AM      Discussion

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**76**

8:15 AM–8:19 AM      Activity Specific Differences in Patients Returning to Sports Following Primary Hip Arthroscopy

*Whitney Hovater; David Howell; Stephanie Mayer, MD*

*Children's Hospital Colorado, Aurora, CO*

# SUBSPECIALTY DAY PROGRAMS

THURSDAY, MAY 13 CONTINUED

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77

8:20 AM–8:24 AM

**Clinical Outcomes, Survivorship, and Return to Sports After Arthroscopic Capsular Repair with Suture Anchors for Adolescent Multidirectional Shoulder Instability at Mean Follow-Up of 6 Years**

*Brendon Mitchell; Matthew Siow; Alyssa Carroll; Andrew Pennock, MD; Eric Edmonds, MD  
Rady Children's Hospital, San Diego, San Diego, California*

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78

8:25 AM–8:29 AM

**Utility of MRI Assessment of Healing following Marrow Stimulation of Capitellar OCD**

*Charles Goldfarb, MD;  
Matthew Smith; James Broughton; Mitchel Obey; Travis Hillen  
Washington University, Saint Louis, Missouri*

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8:30 AM–8:38 AM

Discussion

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8:40 AM–8:54 AM

**Basic Science Review of Ortho-Biologics**

*Rachel Frank*

8:55 AM–9:00 AM

**Clinical Scientific Review and Case Based Discussion of Ortho-biologics in Youth Sports Elbow Injuries**

*Stephanie Mayer, MD*

9:01 AM –9:06AM

**Clinical Scientific Review and Case Based Discussion of Ortho-biologics in Youth Sports Foot and Ankle Injuries**

*Brian Haus, MD*

9:07 AM–9:10 AM

**Q&A**

*All Speaker*

9:10 AM–9:15 AM

**Clinical Scientific Review and Case Based Discussion of Ortho-biologics in Youth Shoulder Injuries**

*Rachel Frank, MD*

9:16 AM–9:21 AM

**Clinical Scientific Review and Case Based Discussion of Ortho-biologics in Youth Knee Injuries**

*Melissa Christino, MD*

9:22 AM–9:25 AM

**BEAR Trial Update**

*Yi Meng Yen, MD*

9:26 AM–9:30 AM

**Q&A, Cases**

*All Speakers*

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9:40 AM–10:18 AM

Break

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# SUBSPECIALTY DAY PROGRAMS

THURSDAY, MAY 13 CONTINUED

## SPORTS SUBSPECIALTY DAY (CONTINUED)

Period 2: 10:18 AM – 12:00 PM

### Osteochondritis Dissecans: Its More Than Drilling and Fixation in the Knee!

Osteochondritis dissecans (OCD) is an uncommon clinical condition but seen with increasing frequency among the pediatric sports medicine community. It most frequently presents in the knee, and the most common treatment strategy is drilling with or without internal fixation. However, with larger and deeper lesions, during revision surgery, or when encountering lesions in the capitellum or talus, alternative treatment strategies may be required. This session aims to provide an overview of those alternative treatment strategies for several osteochondritis dissecans lesion clinical dilemmas as well as those less commonly seen lesions in the talus and elbow.

79

10:18 AM–10:22 AM **Do Continuous Peripheral Nerve Blocks Decrease Home Opioid Use Following Anterior Cruciate Ligament Reconstruction in Children and Adolescents?**

**The Envelope Please.**

*John Schlechter, DO; Bryn Gornick; Benjamin Sherman, DO; Tanner Harrah*

*Children's Hospital of Orange County, Orange, CA*

80

10:23 AM–10:27 AM **Descriptive Epidemiology of Complete Anterior Cruciate Ligament Tears in the Skeletally Immature Population: A Multicenter Investigation of the PLUTO Study Group**

*Lauren Hutchinson, MPH;*

*Melissa Christino, MD; Andrew Pennock, MD;*

*PLUTO Study Group; Mininder Kocher, MD, MPH*

*Boston Children's Hospital, Boston, MA*

81

10:28 AM–10:32 AM **Anatomic versus Non-anatomic Anterolateral Tenodesis in Combination with Anterior Cruciate Ligament Reconstruction – Sometimes Cheaper is Better**

*Samuel Van De Velde; Gregory Schmale, MD; Scott Telfer*  
*University of Washington, Seattle, WA*

10:33 AM–10:41 AM Discussion

# SUBSPECIALTY DAY PROGRAMS

THURSDAY, MAY 13 CONTINUED

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82

10:42 AM–10:46 AM **Iliotibial Band Autograft Provides The Fastest Recovery Of Knee Extensor Mechanism Function In Pediatric Anterior Cruciate Ligament Reconstruction**

*Curtis Vandenberg, MD; Mia Katzel; Veronica Beltran; Adriana Conrad-Forrest; Tishya Wren, PhD  
Children's Hospital Los Angeles, Los Angeles, CA*

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83

10:47 AM–10:51 AM **Functional Recovery After Revision ACL Reconstruction In Adolescents and Young Adults**

*Benjamin Wilson, MD; Benton Heyworth, MD; Ryan Coene; Dai Sugimoto; Lyle Micheli, MD; Mininder Kocher, MD, MPH; Melissa Christino, MD  
Boston Children's Hospital, Boston, MA*

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84

10:52 AM–10:56 AM **Risk Factors for Revision Following Anterior Cruciate Ligament Reconstruction in a Pediatric Population: A Prediction Algorithm**

*Aristides Cruz, MD; Nicholas Lemme; Daniel Yang; Brooke Barrow; Ryan O'Donnell; Alan Daniels, MD  
Brown University Department of Orthopaedics, Providence, RI*

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10:57 AM–11:05 AM Discussion

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11:05 AM–11:10 AM **Studying OCDs: ROCK Group**

*Jennifer Weiss, MD*

11:11 AM–11:20 AM **Revision OCD surgery – When to fix, when to resurface, and when to address coronal plane alignment**

*Benton Heyworth, MD*

11:21 AM–11:30 AM **Unsalvageable Hefti Stage 4 & 5 Lesions – Deciding between bone grafting and fixation, OATS, OC Allograft, or ACI**

*Kris Jones, MD*

11:31 AM–11:37AM **Q&A, Cases**

*All Speakers*

11:38 AM–11:46 AM **OCD of the capitellum – Treatment strategies, surgical indications, and outcomes**

*Don Bae, MD*

# SUBSPECIALTY DAY PROGRAMS

THURSDAY, MAY 13 CONTINUED

11:47 AM–11:55 AM **OCD of the talus – Treatment strategies, surgical indications, and outcomes**  
*Mark Drakos, MD*

11:56 AM–12:00 PM **Q&A, Cases**  
*All Speakers*

## TRAUMA SUBSPECIALTY DAY

Period 1: 7:50 AM – 9:40 AM

*Chair: Mauricio Silva, MD*

*Co-Chair: Amy McIntosh, MD*

This session will be a mixture of scientific papers, debate, and discussion of topics of interest in the area of pediatric orthopaedic trauma. The debates and discussions will focus on controversial aspects of the treatment of common injuries in children. During the first session, we will discuss the management of femur fractures in pre-school age children, the management of type 1 open fractures, and the trend towards the use of rigid fixation for adolescent tibial shaft fractures. In the second session, our panelists will review current concepts on the management of pelvic, forearm, and clavicle fractures.

7:45 AM–7:49 AM **Welcome and Remarks**

85

7:50 AM–7:54 AM



**Acute Cast Immobilization of Pediatric and Adolescent Forearm Fractures – Is It Safe?**

*Casey Codd; Danielle Hogarth; Chloe Grzyb; Joshua Abzug, MD  
University of Maryland School of Medicine, Baltimore, Maryland*

86

7:55 AM–7:59 AM



**Long-leg versus Short-leg Cast Immobilization for Displaced Distal Tibial Physeal Fractures**

*Christopher Souder, MD; James Spearman; Lori Thornton, NP;  
Jessica Treiber; Ainsley Bloomer; Brian Scannell, MD;  
Christine Ho, MD  
Dell Medical School at the University of Texas at Austin,  
Austin, Texas*

87

8:00 AM–8:04 AM



**Conservative Management of Transitional Ankle Fractures in Adolescents: Does Immobilization Type Affect Outcome?**

*Kevin Neal, MD; Gary Kiebzak, PhD; Jane Benson  
Nemours, Jacksonville, FL*

8:05 AM–8:14 AM **Discussion**

# SUBSPECIALTY DAY PROGRAMS

THURSDAY, MAY 13 CONTINUED

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8:15 AM–8:19 AM



**Titanium Elastic Nails System (TENS) in Adolescent Forearm Fractures: Using Bone Age as an Objective guide to its Limits.**

*Chin Chuen Tan; Kenneth Pak Leung Wong; John Allen; Arjandas Mahadev, FRCS*

*KK Women's and Children's Hospital, Singapore, Singapore*

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89

8:20 AM–8:24 AM



**Canal Fill of the Forearm Bones When Placing Intramedullary Nails**

*Max Hamaker; Casey Codd; Nathan O'Hara; Joshua Abzug, MD*  
*University of Maryland School of Medicine, Baltimore, Maryland*

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90

8:25 AM–8:29 AM



**Re-fractures of the Radius and Ulna in Adolescents: Tumbling and Contact Sports may be at Risk in the First Year**

*Corey Gill, MD; Ami Kapadia; Charles Wyatt, NP; Gerard Montgomery, MS; Philip Wilson, MD; Henry Ellis, MD*  
*Scottish Rite For Children, Dallas, Texas*

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8:30 AM–8:38 AM

Discussion

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8:38 AM–8:43 AM

**Introduction**

*Mauricio Silva, MD and Amy McIntosh, MD*

8:44 AM–8:58 AM



**Femur fractures in pre-school age children: We should be using more intramedullary nailing**

*Jeffrey Martus, MD*

8:59 AM–9:08 AM



**Femur fractures in pre-school age children: A good spica cast is all you need**

*Brandon Ramo, MD*

9:09 AM–9:13 AM



**Type I open fractures: The case for management in the Emergency Department**

*Jay Janicki, MD*

9:14 AM–9:24 AM



**Type I open fractures: The case for formal operative treatment**

*Christine Ho, MD*

9:25 AM–9:34 AM



**Tibial shaft fractures in adolescence: It is time to consider rigid fixation**

*Jonathan Schoenecker, MD, PhD*

# SUBSPECIALTY DAY PROGRAMS

THURSDAY, MAY 13 CONTINUED

9:35 AM–9:40 AM



**Tibial shaft fractures in adolescence: Casting is still a good option.**

*Anthony Riccio, MD*

9:40 AM–10:10 AM

Break

## TRAUMA SUBSPECIALTY DAY (CONTINUED)

Period 2: 10:18 AM – 11:54 AM

91

10:18 AM–10:22 AM



**Vitamin D Insufficiency and Metaphyseal Fractures in Children**

*John Bryan; Rachel Thompson, MD; Benjamin Yu; Carly Strohbach, BA; Lubna Ziauddin; Jamie Burgess, PhD; Joseph Janicki, MD  
Lurie Children's Hospital of Chicago, Chicago, IL*

92

10:23 AM–10:27 AM



**Pediatric Orthopedic All-Terrain Vehicle (ATV) Injury Patterns, Surgeries, and Complications – Appreciating the True Morbidity and Impact**

*Brien Rabenhorst, MD; Chad Willis; David Bumpass  
University of Arkansas-Medical Sciences, Little Rock, AR*

93

10:28 AM–10:32 AM



**“You’re O.K. anesthesia”: Closed Reduction of Displaced Pediatric Forearm and Wrist Fractures in the Office Without Anesthesia**

*Byron Izuka, MD; Joshua Radi PhD; John Livingstone  
Kapiolani Medical Center for Women and Children, Honolulu, HI*

10:33 AM–10:41 AM

Discussion

94

10:42 AM–10:46 AM



**Non-Operative versus Operative Pediatric and Adolescent Medial Epicondyle Fractures: A Comparison of Outcomes Between Pediatric and Non-Pediatric Fellowship Trained Orthopedic Surgeons**

*Jessica Traver, MD; Layla Haidar; David McClendon; Kailash Panchapakesan; Timothy Borden, MD; Surya Mundluru, MD; Lindsay Crawford, MD; Shiraz Younas, MD; Alfred Mansour, MD  
UT-Health at McGovern Medical School, Houston, TX*

# SUBSPECIALTY DAY PROGRAMS

THURSDAY, MAY 13 CONTINUED

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95

10:47 AM–10:51 AM



**AP, Axial, and External Oblique Views Reliably Measure Medial Epicondyle Displacement Using Corresponding Point Methodology but the Measurements Only Moderate Correlate with True Displacement as Measured by CT Scan**

*J Todd Lawrence, MD; Ryan Guzek; Kathleen Harwood; Divya Talwar; David Isaacs; Donna Pacicca, MD; Michael Saper; Peter Fabricant, MD; Scott McKay, MD; Eric Edmonds, MD; Stephanie Mayer, MD; Matthew Ellington, MD; V Joughin, MD Children's Hospital of Philadelphia, Philadelphia, PA*

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96

10:52 AM–10:56 AM



**All Epiphyseal vs Trans-epiphyseal screw fixation for Tillaux fractures– Does it matter?**

*Brett Heldt; Elsayed Attia; Isaiah Roepe; Raymond Guo; Vinitha Shenava, MD; Indranil Kushare, MD Texas Children's Hospital, Houston, Texas*

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10:57 AM–11:05 AM

Discussion

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11:05 AM–11:23 AM



**Management of unstable pelvic fractures: Tips and Tricks**  
*Adam Starr, MD*

11:24 AM–11:33 AM



**Distal forearm fractures in late adolescence: when to cast, pin and plate?**

*Chris Stutz, MD*

11:34 AM–11:46 AM

**SCFE in 2021. What is new?**

*Rachel Thompson, MD*

11:47 AM–11:54 AM



**2021 perspective on clavicle shaft fractures in adolescents: Do they need surgery?**

*Benton Heyworth, MD*

# SCIENTIFIC PROGRAM

FRIDAY, MAY 14

7:30 AM–7:34 AM Welcome and Remarks

## AWARDS PART 1

Moderator: Todd Milbrandt, MD

Co-Moderator: Michelle Caird, MD

**97**  
7:35 AM–7:40 AM  **Effectiveness of Various Cast Covers in the Pediatric Population**  
Amit Parekh; John Moon; David Roberts, MD;  
Verena Schreiber, MD  
NorthShore University HealthSystem, Evanston, IL

**98**  
7:41 AM–7:46 AM **Pediatric Back Pain: A Scoring System to Guide Use of Magnetic Resonance Imaging**  
Michael Nolte; Garrett Harada;  
Ryan LeDuc; Arash Sayari; Bryce Basques; Philip Louie;  
Ethan Gordon; Dino Samartzis; Howard An; Monica Kogan  
Rush University Medical Center, Chicago, IL

7:47 AM–7:56 AM Discussion

**99**  
7:57 AM–8:01 AM **MSC exosomes enhance physal regeneration and reduce limb length discrepancy in a rat model of growth plate injury**  
Si Heng Sharon Tan; Keng Lin Wong; Shipin Zhang;  
Shang Jiunn Chuah; Ruenn Chai Lai; Sai Kiang Lim;  
James Hui; Wei Seong Toh  
National University of Singapore, Singapore, Singapore

**100**  
8:02 AM–8:06 AM **Sirt6 overexpression improves bone properties in the mouse model of osteogenesis imperfecta**  
Jung-Ryul Kim, MD; Young Jae Moon  
Jeonbuk National University Hospital, Jeonju, Korea, Republic of

8:07 AM–8:15 AM Discussion

**101**  
8:16 AM–8:21 AM **Impact of Spinal Deformity and Surgery on Health-Related Quality of Life in Cerebral Palsy: A Multicenter Prospective Controlled Trial**  
Patrick Cahill, MD; Unni Narayanan, MBBS, MSc, FRCS(C);  
Firoz Miyanji, MD; Burt Yaszay, MD; Stefan Parent, MD;

# SCIENTIFIC PROGRAM

FRIDAY, MAY 14 CONTINUED

Joshua Pahys, MD; Mark Abel, MD; Suken Shah, MD;  
Peter Gabos, MD; John (Jack) Flynn, MD; Amer Samdani, MD;  
Peter Newton, MD; Harms Study Group; Paul Sponseller, MD  
Children's Hospital of Philadelphia, Philadelphia, PA

102

8:22 AM–8:27 AM

**Anterior Vertebral Body Tethering in Idiopathic Scoliosis: a Prospective, Multicenter Analysis**

*Firoz Miyanji, MD; Paul Rushton; Isabelle Turgeon;  
Luigi Aurelio Nasto; Sultan Aldebeyan; Stefan Parent, MD  
British Columbia Children's Hospital, Vancouver, BC, Canada*

8:28 AM–8:37 AM

Discussion

103

8:38 AM–8:43 AM

**Who Will Need a Second Surgery? A Study of Cases of Isolated Septic Arthritis from the CORTICES**

*Keith Baldwin, MD; Benjamin Shore, MD, MPH, FRCSC;  
Danielle Cook; David Spence, MD; Jennifer Laine, MD;  
Jaclyn Hill, MD; Anthony Riccio, MD; Joshua Murphy, MD  
Children's Hospital of Philadelphia, Philadelphia, PA*

104

8:44 AM–8:49 AM



**Intramedullary Kirschner-wires are equivalent to titanium elastic nails for pediatric femur fractures: Results from a randomized clinical trial in Dar es Salaam, Tanzania**

*Msami Ngowi; Edmund Eliezer; Revocatus Luziba;  
Bryson Ikoshi, MD; John Ibrahim; Emmanuel Lema;  
David Shearer; Saam Morshed; Patrick Curran  
Muhimbili Orthopaedic Institute, Dar es Salaam, Tanzania*

8:50 AM–8:59 AM

Discussion

105

9:00 AM–9:04 AM

**Molecules in Necrotic Femoral Head Inhibit Osteogenesis and Promote Fibrogenesis and Adipogenesis of Mesenchymal Stem Cells**

*ZHUO DENG; Yinshi Ren; Harry Kim, MD  
Texas Scottish Rite Hospital for Children, Dallas, TX*

106

9:05 AM–9:09 AM

**Does NRG/ErbB Signaling Modulate Contractures after Neonatal Brachial Plexus Injuries?**

*Brendan Ho; QINGNIAN GOH; Sia Nikolaou; Liangjun Hu;  
Kritton Shay-winkler; Roger Cornwall, MD  
Cincinnati Children's Hospital, Cincinnati, OH*

# SCIENTIFIC PROGRAM

FRIDAY, MAY 14 CONTINUED

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9:10 AM–9:18 AM Discussion

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**107**

9:19 AM–9:24 AM

**Trans-articular versus Retro-articular Drilling of Stable Osteochondritis Dissecans of the Knee: A Prospective Randomized Controlled Trial by the ROCK Multicenter Study Group**

*Benton Heyworth, MD; Kevin Shea, MD; Elizabeth Liotta; Katelyn Hergott; Eric Wall, MD; Gregory Myer; Carl Nissen, MD; Eric Edmonds, MD; Roger Lyon, MD; Henry Chambers, MD; Matthew Milewski, MD; Daniel Green, MD; Jennifer Weiss, MD; Rick Wright; James Carey; John Polousky, MD; Jeffrey Nepple, MD; Mininder Kocher, MD, MPH; Theodore Ganley, MD  
Boston Children's Hospital, Boston, MA*

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**108**

9:25 AM–9:30 AM



**Operative Versus Non-Operative Treatment of Severely Shortened or Comminuted Clavicle Fractures in Older Adolescent Athletes: Results from A Prospective, Multicenter, Level 2 Cohort Study**

*David Spence, MD; Philip Wilson, MD; Donald Bae, MD; Michael Busch, MD; Eric Edmonds, MD; Henry Ellis, MD; Katelyn Hergott; Mininder Kocher, MD, MPH; G Li, MD; Elizabeth Liotta; Jeffrey Nepple, MD; Nirav Pandya, MD; Andrew Pennock, MD; Crystal Perkins, MD; Coleen Sabatini, MD, MPH; David Williams PhD; Samuel Willimon, MD; Benton Heyworth, MD  
Campbell Clinic/University of Tennessee, Germantown, TN*

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9:31 AM–9:40 AM Discussion

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9:48 AM–10:10 AM Break

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## AWARDS PART 2

*Moderator: Todd Milbrandt, MD*

*Co-Moderator: Michelle Caird, MD*

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**109**

10:18 AM–10:23 AM

**Nonoperative Management of Femoroacetabular Impingement: Clinical Outcomes at 5-years – A Prospective Study**

*Andrew Zogby; James Bomar, MPH; Kristina Johnson; Vidyadhar Upasani, MD; Andrew Pennock, MD  
Rady Children's Hospital, San Diego, San Diego, California*

# SCIENTIFIC PROGRAM

FRIDAY, MAY 14 CONTINUED

110

10:24 AM–10:29 AM **Acetabular remodeling after closed and open reduction for the treatment of developmental dysplasia of the hip**  
*Pedro Justo; William Morris, MD; Patricia Miller, MS; Eduardo Novais, MD*  
*Boston Childrens Hospital, Boston, MA*

10:30 AM–10:39 AM Discussion

111

10:40 AM–10:44 AM  **Activation of A Central Immunosuppressive Cascade Prevents Ischemia Reperfusion Injury after Acute Compartment Syndrome in a Murine Model**  
*Austin Hester; Nazanin Omid; Daniel Casella; Matthew Oetgen MD, MBA*  
*Children's National Hospital, Washington, DC*

112

10:45 AM–10:49 AM **Hematopoietic Cells Regulate Fracture Healing in Neurofibromatosis**  
*Benjamin Alman, MD; Puvindran Nadesan*  
*Duke, Durham, NC*

10:50 AM–10:58 AM Discussion

11:00 AM–11:08 AM **Distinguished Achievement Award 2020**  
*Behrooz Akbarnia, MD*

11:09 AM–11:17 AM **Distinguished Achievement Award 2021**  
*Lori Karol, MD*

11:18 AM–11:23 AM **2022 Meeting Highlights**

11:24 AM–11:35 AM **Presidential Speaker 2020**  
*Lori Karol, MD*

11:36 AM–11:49 AM **Presidential Speaker 2021**  
*Peter Newton, MD*

11:50 AM–12:00 PM **Presidential Transfer**

12:15 PM–1:45 PM **Member Business Meeting**

# SCIENTIFIC PROGRAM

FRIDAY, MAY 14 CONTINUED

## CONCURRENT SESSION 1: SPINE

Moderator: Lindsay Andras, MD

Co-Moderator: Jeffrey Sawyer, MD

113

2:05 PM–2:09 PM



10 year follow up of Lenke V curves in patients with adolescent idiopathic scoliosis

Nicholas Fletcher, MD; Tracey Bastrom, MA;

A. Noelle Larson, MD; Mark Erickson, MD; Baron Lonner, MD;

Stefan Parent, MD; Burt Yaszay, MD

Children's Healthcare of Atlanta, Atlanta, GA

114

2:10 PM–2:14 PM

Adolescent Athletes Return To Sports Rapidly After Posterior Spine Fusion (PSF) For Idiopathic Scoliosis (AIS): A Prospective Cohort Study

Tyler Tetreault; Hannah Darland; Thien Thanh Angela Vu;

Patrick Carry; Sumeet Garg, MD

Children's Hospital Colorado, Aurora, CO

115

2:15 PM–2:19 PM

Discordant Lowest Instrumented Vertebra in Adolescent Idiopathic Scoliosis: When Coronal and Sagittal Parameters Conflict

Michael Vitale, MD, MPH ; Dale Segal; Jacob Ball;

Nicholas Fletcher, MD; Tracey Bastrom, MA; Eric Yoon

Children's Healthcare of Atlanta, Atlanta, GA

2:20 PM–2:28 PM

Discussion

116

2:29 PM–2:33 PM

Unplanned Return to the Operating Room (UPROR) after AIS Surgery

Nishank Mehta; Divya Talwar; Harms Study Group;

John (Jack) Flynn, MD

Children's Hospital of Philadelphia, Philadelphia, PA

117

2:34 PM–2:38 PM

Complications Following Surgical Treatment of Adolescent Idiopathic Scoliosis: 10- year Prospective Follow-up Study

Arun Hariharan, MD; Suken Shah, MD; Margaret Baldwin;

Joseph Petfield; Baron Lonner, MD; Firoz Miyanji, MD;

Peter Newton, MD; Amer Samdani, MD;

Paul Sponseller, MD; Burt Yaszay, MD

Nemours/A.I. DuPont Hospital for Children, Wilmington, DE

# SCIENTIFIC PROGRAM

FRIDAY, MAY 14 CONTINUED

**118**

2:39 PM–2:43 PM

**Digital Skeletal Age and Curve Acceleration Phase in Male Adolescent Idiopathic Scoliosis**

*Alexander Kuzma; Michael Stevens; John King, MD; Kevin Cronin; Olivia Grothaus; Jonathan Grabau; Cale Jacobs; Vishwas Talwalkar, MD; Ryan Muchow, MD University of Kentucky, Lexington, KY*

2:44 PM–2:52 PM

Discussion

3:00 PM–3:20 PM

Break

## CONCURRENT SESSION 1: SPINE PART II

*Moderator: Ying Li, MD*

*Co-Moderator: Pat Cahill, MD*

**119**

3:28 PM–3:32 PM

**Outcomes of Magnetically Controlled Growing Rods in Severe Early Onset Scoliosis**

*Ilkka Helenius; Antti Saarinen; Paul Sponseller, MD; Lindsay Andras, MD; David Skaggs, MD, MMM; John Emans, MD; George Thompson, MD; Pediatric Spine Study Group University of Turku and Turku University Hospital, Turku, Finland*

**120**

3:33 PM–3:37 PM

**Early Outcomes of Magnetically Controlled Growing Rods (MCGRs), Posterior Final Fusion (PSF) and Vertebral Body Tethers (VBT) in Older Patients with Early Onset Scoliosis (EOS)**

*Catherine Mackey; Regina Hanstein; Majella Vaughan; Tricia St Hilaire; Scott Luhmann, MD; Michael Vitale, MD, MPH; Michael Glotzbecker, MD; Amer Samdani, MD; Stefan Parent, MD; Jaime Gomez, MD Montefiore Medical Center, Bronx, NY*

**121**

3:38 PM–3:42 PM

**Half of Magnetic Controlled Growing Rods (MCGR) “stall” 3 years after implantation**

*Amy McIntosh, MD; Brandon Ramo, MD; Charles Johnston, MD; Anna McClung; David Thornberg Texas Scottish Rite Hospital, Dallas, TX*

3:43 PM–3:51 PM

Discussion

# SCIENTIFIC PROGRAM

FRIDAY, MAY 14 CONTINUED

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**122**

3:52 PM–3:56 PM

**Matched Comparison of Growing Rods versus Primary Posterior Spinal Fusion in “Tweeners” with Early Onset Scoliosis**

*Craig Louer, MD; Lukas Keil; Til Stürmer; Alysa Nash; Yvonne Golightly; FENG-CHANG LIN; Joseph Stone, MD; James Sanders, MD  
UNC Orthopaedics, Chapel Hill, NC*

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**123**

3:57 PM–4:01 PM

**Vertebral Body Tethering Compared to the Spinal Fusion Gold Standard: A Matched Analysis 2 Years Post-Operatively**

*Lily Eaker; Jonahtan Markowitz; Baron Lonner, MD  
Mount Sinai Hospital, New York, NY*

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**124**

4:02 PM–4:06 PM

**Does Body Mass Index Affect Outcomes after Vertebral Body Tethering Surgery?**

*Amir Mishreky; Stefan Parent, MD; Firoz Miyanji, MD; Joshua Murphy, MD; Ron El-Hawary, MD  
IWK Health Centre, Halifax, Nova Scotia, Canada*

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4:07 PM–4:15 PM

Discussion

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**125**

4:16 PM–4:20 PM

**The effect of scoliosis on audio-visual and socio-emotional processing and the use of adaptive communicative equipment in children with severely involved cerebral palsy**

*Amanda Whitaker, MD; Stephanie Burkhardt; Kaleigh Hague; Lindsay Pietruszewski; Julia Less; Nathalie Maitre  
Nationwide Children’s Hospital, Columbus, Ohio*

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**126**

4:21 PM–4:25 PM

**Definitive Fusions are Better than Growth Friendly Procedures for Juvenile Patients with Cerebral Palsy and Scoliosis: A Prospective Comparative Cohort Study**

*Arun Hariharan, MD; Suken Shah, MD; Joseph Petfield; Margaret Baldwin; Paul Sponseller, MD; Burt Yaszay, MD; Michael Glotzbecker, MD; Patrick Cahill, MD; Tracey Bastrom, MA  
Nemours/A.I. DuPont Hospital for Children, Wilmington, DE*

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**127**

4:26 PM–4:30 PM

**Functional Outcomes of Spinal Orthoses in Spinal Muscular Atrophy**

*Mitchell Johnson; Carina Lott; Patrick Cahill, MD; Jason Anari, MD  
Children’s Hospital of Philadelphia, Philadelphia, PA*

# SCIENTIFIC PROGRAM

FRIDAY, MAY 14 CONTINUED

4:31 PM–4:39 PM Discussion

## CONCURRENT SESSION 2: SPORTS

Moderator: *Phil Wilson, MD*

Co-Moderator: *Melissa Christino, MD*

**128**

2:05 PM–2:09 PM

**Compared to Repair or No Treatment, Medial patellofemoral Ligament Reconstruction Results in Increased Stability in Adolescents with Acute First-time Patellar Dislocation with an Associated Loose Body**

*Eric Edmonds, MD; Preet Gurusamy; Jason Pedowitz; Alyssa Carroll; Kristina Johnson; Henry Chambers, MD; Andrew Pennock, MD  
Rady Children's Hospital, San Diego, CA*

**129**

2:10 PM–2:14 PM

**Isolated MPFL Reconstruction vs. Tibial Tubercle Osteotomy Plus Medial Retinacular Plication for Recurrent Patellar Instability: A Matched, Cohort Analysis**

*Benton Heyworth, MD; Evan Zheng; Zaamin Hussain; Benjamin Wilson, MD; Kianna Nunally; Mininder Kocher, MD, MPH; Yi-Meng Yen, MD; Dennis Kramer, MD; Lyle Micheli, MD  
Boston Children's Hospital, Boston, MA*

**130**

2:15 PM–2:19 PM

**Predictors of Arthrofibrosis after Pediatric Anterior Cruciate Ligament Reconstruction: What is the Impact of Quadriceps Autograft?**

*Abraham Ouweleen; Tyler Hall; Craig Finlayson, MD; Neeraj Patel, MD  
Ann & Robert H. Lurie Children's Hospital of Chicago, Chicago, IL*

2:20 PM–2:28 PM Discussion

**131**

2:29 PM–2:33 PM

**Functional recovery in Adolescent Athletes following ACL Reconstruction: A Matched Cohort Analysis of Patellar Tendon vs. Hamstring Autograft**

*Nikolaos Paschos; Dai Sugimoto; Elizabeth Liotta; Patricia Miller, MS; Lyle Micheli, MD; Mininder Kocher, MD, MPH; Benton Heyworth, MD  
Boston Children's Hospital, Boston, MA*

# SCIENTIFIC PROGRAM

FRIDAY, MAY 14 CONTINUED

132

2:34 PM–2:38 PM

## Anterior Cruciate Ligament Tear Following Operative Treatment of Pediatric Tibial Eminence Fractures in a Multicenter Cohort

Ryan O'Donnell; Steven Bokshan; Kelsey Brown; Julien Aoyama, BA; Theodore Ganley, MD; Peter Fabricant, MD; Neeraj Patel, MD; Henry Ellis, MD; Daniel Green, MD; Indranil Kushare, MD; R Lee, MD; Scott McKay, MD; Jason Rhodes, MD; Brant Sachleben, MD; Mary Sargent, MD; Gregory Schmale, MD; Yi-Meng Yen, MD; R Mistovich, MD; Aristides Cruz, MD  
Brown University/Rhode Island Hospital, Providence, RI

133

2:39 PM–2:43 PM

## A Multicenter Comparison of Open versus Arthroscopic Reduction and Internal Fixation for Tibial Spine Fractures

R. Justin Mistovich, MD; Jilan Shimberg; Tomasina Leska; Julien Aoyama, BA; Aristides Cruz, MD; Henry Ellis, MD; Peter Fabricant, MD; Theodore Ganley, MD; Daniel Green, MD; Jason Jagodzinski, MD; Indranil Kushare, MD; R Lee, MD; Scott McKay, MD; Neeraj Patel, MD; Jason Rhodes, MD; Brant Sachleben, MD; Mary Sargent, MD; Gregory Schmale, MD; Yi-Meng Yen, MD  
Rainbow Babies and Children's Hospital, Cleveland, OH

2:44 PM–2:52 PM

Discussion

3:00 PM–3:20 PM

Break

## CONCURRENT SESSION 2: FOOT/NM/LE

Moderator: Steve Frick, MD

Co-Moderator: L. Reid Nichols, MD

134

3:28 PM–3:32 PM

## Comparison of Rigid and Dynamic Foot Abduction Orthoses in Children with Clubfoot: A Randomized Trial

Vincent Prusick, MD; Michael Stevens; Cale Jacobs; Vishwas Talwalkar, MD; Janet Walker, MD; Ryan Muchow, MD; Henry Iwinski, MD; Elizabeth Hubbard, MD  
Shriners Hospital for Children, Lexington, KY

# SCIENTIFIC PROGRAM

FRIDAY, MAY 14 CONTINUED

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**135**

3:33 PM–3:37 PM

**Radiographic and Histologic Evaluation of Three Common Tendon Transfer Techniques in an Un-ossified Bone Porcine Model: Implications for Early Anterior Tibialis Tendon Transfers in Children with Clubfeet**

*Maegen Wallace, MD; Matthew Halanski, MD; Kyle Korth; Scott Bolam; Ellen Leiferman; Tom Crenshaw; Michael Dray; Haemish Crawford, MD  
University of Wisconsin, Madison, WI*

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**136**

3:38 PM–3:42 PM

**Ponseti versus surgery, the 15 year outcomes of prospectively enrolled cohorts.**

*James Recordon; Matthew Halanski, MD; N Susan Stott, MD; Mark Boocock; Peter McNair; Haemish Crawford, MD  
Starship Children's Hospital, Auckland, New Zealand*

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3:43 PM–3:51 PM

Discussion

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**137**

3:52 PM–3:56 PM

**Calcaneal Sliding Osteotomy is Superior to Calcaneal Lengthening Osteotomy in Children with Cerebral Palsy**

*Robert Kay, MD; Susan Rethlefsen, PT; Alison Hanson; Tishya Wren, PhD  
Children's Hospital Los Angeles, Los Angeles, CA*

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**138**

3:57 PM–4:01 PM

**The Impact of Preoperative Factors and Surgical Burden on Postoperative Recovery of Walking Activity in Children with Cerebral Palsy**

*M Shrader, MD; Chris Church; Isabel Biermann; Nancy Lennon MS; John Henley; Stephanie Butler; Timothy Niiler; Freeman Miller, MD; Jason Howard, MD  
Nemours duPont Hospital for Children, Wilmington, DE*

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**139**

4:02 PM–4:06 PM

**Fassier-Duval Telescoping Rodding in Osteogenesis Imperfecta: Rod Revision and Survivorship**

*Jirawat Saengsin; Patricia Miller, MS; Nicholas Sullivan; Blair Stewig; Collin May, MD; Carley Vuillermine FRACS; Susan Mahan, MD; James Kasser, MD; Samantha Spencer, MD  
Department of Orthopaedic Surgery, Boston Children's Hospital, Harvard Medical School, Boston, MA*

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# SCIENTIFIC PROGRAM

FRIDAY, MAY 14 CONTINUED

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4:07 PM–4:15 PM Discussion

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**140**

4:16 PM–4:20 PM

**Prediction of Varus Deformity Correction by Lateral Tension Band Plating at the Knee in Late-Onset Blount Disease- A Multi-Center Study**

*Janet Walker, MD; David Dueber; Kenneth Powell, MD; Lindsay Stephenson, MD; Allison Scott, MD; Joel Lerman, MD; Sarah Nossov, MD; Corinna Franklin, MD; David Westberry, MD Shriners Hospitals for Children, Multiple Centers- Lead Site, Lexington, KY*

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**141**

4:21 PM–4:25 PM

**Correction of Leg Length Discrepancy (LLD): Tension-Band Plating versus Percutaneous Trans-epiphyseal Screws**

*Manaf Younis, MD; Regina Hanstein; Yungtai Lo; Kainaat Javed; Eric Fornari, MD; Jaime Gomez, MD; Melinda Sharkey, MD; Jacob Schulz, MD Montefiore Medical Center, Bronx, NY*

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**142**

4:26 PM–4:30 PM

**Total Joint Arthroplasties before 25: Functional Outcomes and Quality of Life**

*Nathan Donaldson, DO; John Colleran; Nathan Rogers MPH Children's Hospital Colorado, Aurora, CO*

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4:31 PM–4:39 PM Discussion

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# SCIENTIFIC PROGRAM

SATURDAY, MAY 15

7:30 AM–7:34 AM

Welcome and Remarks

**QSVI Award Paper** presented by Peter Armstrong, MD  
**Trauma Paper & Best ePoster Awards**

## POSNA CRITICAL ISSUE SYMPOSIUM ADVANCING JUSTICE, EQUALITY, DIVERSITY, & INCLUSION IN PEDIATRIC ORTHOPAEDICS

7:35 AM–8:43 AM

*Moderator: Corinna Franklin, MD*

*Co-Moderator: Coleen Sabatini, MD, MPH*

Sponsored by the POSNA Diversity Task Force, this session will focus on:

1. Understanding issues of inequity in access and quality of care and how these negatively affect our patients and particular communities
2. Understanding how discrimination and unconscious bias disproportionately affect particular trainees and what can be done to ameliorate this
3. Beginning to develop tools to identify and address our own biases in order to improve the care we provide our patients and the mentorship and training we provide to our trainees

*Moderator: Coleen Sabatini, MD, MPH*

*eModerator: Corinna Franklin, MD*

7:35 AM–7:40 AM

**Introduction: The Importance of Diversity and Being a Good Ally**

*Michael Vitale, MD, MPH*

7:40 AM–8:00 AM

**Caring for Our Diverse Communities: Opportunities for Implementing Change**

*O. Folorunsho Edobor-Osula, MD MPH*

8:00 AM–8:10 AM

**Questions and Answers**

*O. Folorunsho Edobor-Osula, MD MPH*

8:10 AM–8:30 AM

**Panel discussion**

*Jaysson T. Brooks, MD*

*Qusai Hammouri, MD*

*Monica Payares-Lizano, MD*

*Selina Poon MD, MPH, MS*

*David Roye, MD*

*O. Folorunsho Edobor-Osula, MD MPH*

8:30 AM–8:43 AM

**Questions and Answers**

*All speakers*

# SCIENTIFIC PROGRAM

SATURDAY, MAY 15 CONTINUED

## QSVI I

Moderator: Kevin Shea, MD

Co-Moderator: Kali Tileston, MD

143

8:44 AM–8:48 AM

### Looking Under the Hood: Factors that Drive Successful Study Group Participation and Publications in Pediatric Spine Programs

Sonya Levine; Bradley Hammor; Abby Morris; Sushrut Arora; Afrain Bobby; Hiroko Matsumoto, PhD; Michael Fields; Matthew Oetgen MD, MBA; Tricia St Hilaire; Brandon Ramo, MD; Richard Anderson; John Smith, MD; Michael Vitale, MD, MPH; David Skaggs, MD; Pediatric Spine Study Group  
Columbia University Medical Center, New York, NY

144

8:49 AM–8:53 AM

### Improving Hip Surveillance across a Tertiary Children's Hospital: A Multi-Disciplinary Quality Improvement Initiative

Kathryn Milks; Jessica Holstine; Lynne Ruess; Alec McGinnis; Courtney Bishop, PA-C; Erin Mesi; Amanda Whitaker, MD  
Nationwide Children's Hospital, Columbus, Ohio

145

8:54 AM–8:58 AM

### How Much Will My Child's ACL Reconstruction Cost? Availability and Variability of Price Estimates for Anterior Cruciate Ligament Reconstruction in the United States

Julianna Lee; Ryan Guzek; Neal Shah; J Todd Lawrence, MD; Theodore Ganley, MD; Apurva Shah, MD  
Children's Hospital of Philadelphia, Philadelphia, Pennsylvania

8:59 AM–9:07 AM

Discussion

146

9:08 AM–9:12 AM

### Disposal of Unused Opioids Using an At-home Disposal Method

De-An Zhang; Marilan Luong; Emmanuel Barragan; Robert Cho, MD; Selina Poon, MD  
Shriners for Children Medical Center, Pasadena, CA

# SCIENTIFIC PROGRAM

SATURDAY, MAY 15 CONTINUED

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**147**

9:13 AM–9:17 AM



**Opioid Use in Children and Adolescents Following Common Orthopaedic Surgeries**

*Samuel Willimon, MD; Asahi Murata; Crystal Perkins, MD  
Children's Healthcare of Atlanta, Atlanta, GA*

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**148**

9:18 AM–9:22 AM

**Perioperative steroid use in patients undergoing posterior spinal fusion for adolescent idiopathic scoliosis**

*Robert Bruce, MD; Nicholas Fletcher, MD; Tracy Ruska NP;  
Ndeye Guisse; Thomas Austin; Joshua Murphy, MD  
Children's Healthcare of Atlanta, Atlanta, GA*

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9:23 AM–9:31 AM

Discussion

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**149**

9:32 AM–9:36 AM

**Reducing Intraoperative Radiation Exposure During Periacetabular Osteotomy: The Use of Flat Panel Detector Fluoroscopy**

*Rachael Martino, BA; Omar Samara; Sterling Lee;  
Courtney Selberg, MD  
Children's Hospital Colorado, Aurora, Colorado*

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**150**

9:37 AM–9:41 AM

**Lowering radiation dose to children with hip dysplasia through a change in radiograph technique**

*Cheryl Lawing, MD; Rebecca Gorbe; Maureen Maciel, MD;  
Joseph Khoury, MD  
Shriners Hospitals for Children, Tampa, FL*

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**151**

9:42 AM–9:46 AM



**Does Surgical Experience Decrease Radiation Exposure in the Operating Room?**

*Lacey Magee, BA; Alexa Karkenny, MD; Jie Nguyen;  
Faris Fazal, BS; Divya Talwar; Xiaowei Zhu; Apurva Shah, MD  
Children's Hospital of Philadelphia, Philadelphia, Pennsylvania*

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9:47 AM–9:55 AM

Discussion

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10:00 AM–10:20 AM

Break

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# SCIENTIFIC PROGRAM

SATURDAY, MAY 15 CONTINUED

## OSVI II

Moderator: Julie Samora, MD

Co-Moderator: Brian Brighton, MD

152

10:25 AM–10:29 AM **Methods for Reducing Intra-Operative Breast Radiation Exposure in Orthopaedic Surgeons**

*Sara Van Nortwick, MD*

*Medical University of South Carolina, Charleston, SC*

153

10:30 AM–10:34 AM **Healthcare disparities after implementation of standardized care pathway for adolescent idiopathic scoliosis patients undergoing spinal fusion**

*Philip Dela Merced; Caroll Vazquez Colon; Jenhao Cheng;*

*Matthew Oetgen MD, MBA; Sophie Pestieau;*

*Benjamin Martin, MD; Shannon Kelly, MD;*

*Ariana Mirzada; Zsombor Gal; Jessica Cronin*

*Children's National Hospital, Washington, DC*

154

10:35 AM–10:39 AM **Perceived physician empathy in pediatric orthopedics: a cross-sectional study**

*Ian Singleton; Rachel Garfinkel; Jason Malone, DO;*

*M'hamed Temkit; Mohan Belthur, MD*

*Phoenix Children's Hospital, Phoenix, Arizona*

10:40 AM–10:48 AM Discussion

155

10:49 AM–10:53 AM **Efficacy of Virtual Reality in Pain Reduction in Orthopedic Pediatric Patients Measured by Patient Feedback and Heart Rate Monitoring**

*Sean Waldron, MD; Bhunit Desai; Michael Nammour;*

*Michael Warren; Jeffrey Reese; Lawrence Haber, MD;*

*Brielle Plost, MD; Korak Sarkar*

*Ochsner Clinic Foundation, New Orleans, LA*

156

10:54 AM–10:58 AM ** Cast Saw Alarm System Reduces Blade to Skin Contact**

*Susan Scherl, MD; Max Twedt; Jeffrey Garvey;*

*Joshua Cameron; Matthew Halanski, MD*

*University of Nebraska Medical Center, Omaha, Nebraska*

# SCIENTIFIC PROGRAM

SATURDAY, MAY 15 CONTINUED

157

10:59 AM–11:03 AM



**Comparison of Commercially Available Cast Protectors**

*Stephanie Goldstein, MD; Scott Hetzel; Pamela Lang, MD;*

*Matthew Halanski, MD*

*University of Wisconsin-Madison, Madison, WI*

11:04 AM–11:12 AM Discussion

158

11:13 AM–11:17 AM

**Post Operative Scoliosis X-Rays - Before Discharge or First Follow Up**

*J Wattenbarger, MD; Ashley Carpenter; Franklin Gettys, MD  
SHC-Greenville, Greenville, SC*

159

11:18 AM–11:22 AM

**Zero Patient-Controlled Analgesia is an achievable target for postoperative rapid recovery management of Adolescent Idiopathic Scoliosis patients**

*Vishal Sarwahi, MBBS; Sayyida Hasan; Benita Liao; Aaron Atlas;  
Jesse Galina; Yungtai Lo; Terry Amaral, MD; Michelle Kars  
Cohen Children's Medical Center, New Hyde Park, NY*

160

11:23 AM–11:27 AM

**Establishing a Gold Standard for Estimation of Blood Loss During Spine Surgery**

*Nicholas Fletcher, MD; Laura Gilbertson; Robert Bruce, MD;  
Humphrey Lam; Kathy Spitzer; Matthew Lewis;  
Marney Moore; Thomas Austin  
Children's Healthcare of Atlanta, Atlanta, GA*

11:28 AM–11:36 AM Discussion

Adjourn



**NON-OPIOID**  
**EXPAREL®**  
(bupivacaine liposome injectable suspension)



# NOW APPROVED FOR POSTSURGICAL PAIN MANAGEMENT IN PEDIATRICS

THE FIRST AND ONLY FDA-APPROVED  
LONG-ACTING LOCAL ANALGESIC  
FOR AGES 6 AND ABOVE<sup>1</sup>

EXPERIENCE IN MORE THAN 8 MILLION ADULT PATIENTS<sup>2</sup>

Pediatric patients in the EXPAREL study were defined as 6 to <17 years of age.

## Indication

EXPAREL® (bupivacaine liposome injectable suspension) is indicated for single-dose infiltration in patients aged 6 years and older to produce postsurgical local analgesia and in adults as an interscalene brachial plexus nerve block to produce postsurgical regional analgesia. Safety and efficacy have not been established in other nerve blocks.

## Important Safety Information

EXPAREL is contraindicated in obstetrical paracervical block anesthesia.

Adverse reactions reported in adults with an incidence greater than or equal to 10% following EXPAREL administration via infiltration were nausea, constipation, and vomiting; adverse reactions reported in adults with an incidence greater than or equal to 10% following EXPAREL administration via interscalene brachial plexus nerve block were nausea, pyrexia, and constipation.

Adverse reactions with an incidence greater than or equal to 10% following EXPAREL administration via infiltration in pediatric patients six to less than 17 years of age were nausea, vomiting, constipation, hypotension, anemia, muscle twitching, vision blurred, pruritis, and tachycardia.

If EXPAREL and other non-bupivacaine local anesthetics, including lidocaine, are administered at the same site, there may be an immediate release of bupivacaine from EXPAREL. Therefore, EXPAREL may be administered to the same site 20 minutes after injecting lidocaine.

EXPAREL is not recommended to be used in the following patient populations: patients <6 years old for infiltration, patients younger than 18 years old for interscalene brachial plexus nerve block, and/or pregnant patients.

Because amide-type local anesthetics, such as bupivacaine, are metabolized by the liver, EXPAREL should be used cautiously in patients with hepatic disease.

## Warnings and Precautions Specific to EXPAREL

Avoid additional use of local anesthetics within 96 hours following administration of EXPAREL.

EXPAREL is not recommended for the following types

## Learn more at

[EXPAREL.com/hcp/specialty/pediatrics](https://www.exparel.com/hcp/specialty/pediatrics)

or routes of administration: epidural, intrathecal, regional nerve blocks **other than interscalene brachial plexus nerve block**, or intravascular or intra-articular use.

The potential sensory and/or motor loss with EXPAREL is temporary and varies in degree and duration depending on the site of injection and dosage administered and may last for up to 5 days, as seen in clinical trials.

## Warnings and Precautions for Bupivacaine-Containing Products

**Central Nervous System (CNS) Reactions:** There have been reports of adverse neurologic reactions with the use of local anesthetics. These include persistent anesthesia and paresthesia. CNS reactions are characterized by excitation and/or depression.

**Cardiovascular System Reactions:** Toxic blood concentrations depress cardiac conductivity and excitability, which may lead to dysrhythmias, sometimes leading to death.

**Allergic Reactions:** Allergic-type reactions (eg, anaphylaxis and angioedema) are rare and may occur as a result of hypersensitivity to the local anesthetic or to other formulation ingredients.

**Chondrolysis:** There have been reports of chondrolysis (mostly in the shoulder joint) following intra-articular infusion of local anesthetics, which is an unapproved use.

**Methemoglobinemia:** Cases of methemoglobinemia have been reported with local anesthetic use.

**Please refer to brief summary of Prescribing Information on adjacent page.**

**For more information, please visit [www.EXPAREL.com](https://www.exparel.com) or call 1-855-793-9727.**

**References:** 1. Pacira BioSciences. Pacira BioSciences announces FDA acceptance of sNDA for EXPAREL use in pediatric patients [press release]. Pacira website. <https://investor.pacira.com/news-releases/news-release-details/pacira-biosciences-announces-fda-acceptance-snda-exparel-use>. Published August 4, 2020. Accessed March 8, 2021. 2. Data on File. 6450. Parsippany, NJ: Pacira BioSciences, Inc.; January 2021.

Scan the QR code to see the safety data of the multicenter PLAY study



# EXPAREL®

(bupivacaine liposome injectable suspension)

## Brief Summary

(For full prescribing information refer to package insert)

## INDICATIONS AND USAGE

EXPAREL is indicated for single-dose infiltration in patients aged 6 years and older to produce postsurgical local analgesia and in adults as an interscalene brachial plexus nerve block to produce postsurgical regional analgesia.

Limitation of Use: Safety and efficacy has not been established in other nerve blocks.

## CONTRAINDICATIONS

EXPAREL is contraindicated in obstetrical paracervical block anesthesia. While EXPAREL has not been tested with this technique, the use of bupivacaine HCl with this technique has resulted in fetal bradycardia and death.

## WARNINGS AND PRECAUTIONS

### Warnings and Precautions Specific for EXPAREL

As there is a potential risk of severe life-threatening adverse effects associated with the administration of bupivacaine, EXPAREL should be administered in a setting where trained personnel and equipment are available to promptly treat patients who show evidence of neurological or cardiac toxicity.

Caution should be taken to avoid accidental intravascular injection of EXPAREL. Convulsions and cardiac arrest have occurred following accidental intravascular injection of bupivacaine and other amide-containing products.

Avoid additional use of local anesthetics within 96 hours following administration of EXPAREL.

EXPAREL has not been evaluated for the following uses and, therefore, is not recommended for these types of analgesia or routes of administration.

- epidural
- intrathecal
- regional nerve blocks other than interscalene brachial plexus nerve block
- intravascular or intra-articular use

EXPAREL has not been evaluated for use in the following patient population and, therefore, it is not recommended for administration to these groups.

- patients younger than 6 years old for infiltration
- patients younger than 18 years old for interscalene brachial plexus nerve block
- pregnant patients

The potential sensory and/or motor loss with EXPAREL is temporary and varies in degree and duration depending on the site of injection and dosage administered and may last for up to 5 days as seen in clinical trials.

## ADVERSE REACTIONS

### Clinical Trial Experience

#### Adverse Reactions Reported in Local Infiltration Clinical Studies

The safety of EXPAREL was evaluated in 10 randomized, double-blind, local administration into the surgical site clinical studies involving 823 patients undergoing various surgical procedures. Patients were administered a dose ranging from 66 to 532 mg of EXPAREL. In these studies, the most common adverse reactions (incidence greater than or equal to 10%) following EXPAREL administration were nausea, constipation, and vomiting. The common adverse reactions (incidence greater than or equal to 2% to less than 10%) following EXPAREL administration were pyrexia, dizziness, edema peripheral, anemia, hypotension, pruritus, tachycardia, headache, insomnia, anemia postoperative, muscle spasms, hemorrhagic anemia, back pain, somnolence, and procedural pain.

#### Adverse Reactions Reported in All Local Infiltration Clinical Studies in Pediatric Patients Aged 6 to Less Than 17 Years

The safety of EXPAREL in 110 pediatric patients between the age of 6 and 17 years old undergoing various surgical procedures was evaluated in one randomized, open-label, clinical study in which EXPAREL was administered by infiltration into the surgical site and one single-arm, open-label

study in which EXPAREL was administered by infiltration into the surgical site. Patients were administered a weight-based dose of EXPAREL at 4 mg/kg (maximum dose of 266 mg) or bupivacaine HCl 2 mg/kg (maximum dose of 175 mg). In these studies, the most common adverse reactions (incidence greater than or equal to 10%) following EXPAREL administration were nausea, vomiting, constipation, hypotension, anemia, muscle twitching, vision blurred, pruritus, and tachycardia.

The common adverse reactions (incidence greater than or equal to 2% to less than 10%) following EXPAREL administration were bradycardia, muscle spasms, tachypnea, hypoesthesia oral, anemia postoperative, dizziness, pyrexia, diarrhea, hypoacusis, hypoesthesia, back pain, hematuria, incontinence, muscular weakness, and visual impairment.

#### Adverse Reactions Reported in Nerve Block Clinical Studies

The safety of EXPAREL was evaluated in four randomized, double-blind, placebo-controlled nerve block clinical studies involving 469 patients undergoing various surgical procedures. Patients were administered a dose of either 133 or 266 mg of EXPAREL. In these studies, the most common adverse reactions (incidence greater than or equal to 10%) following EXPAREL administration were nausea, pyrexia, and constipation.

The common adverse reactions (incidence greater than or equal to 2% to less than 10%) following EXPAREL administration as a nerve block were muscle twitching, dysgeusia, urinary retention, fatigue, headache, confusional state, hypotension, hypertension, hypoesthesia oral, pruritus generalized, hyperhidrosis, tachycardia, sinus tachycardia, anxiety, fall, body temperature increased, edema peripheral, sensory loss, hepatic enzyme increased, hiccups, hypoxia, post-procedural hematoma.

#### Postmarketing Experience

These adverse reactions are consistent with those observed in clinical studies and most commonly involve the following system organ classes (SOCs): Injury, Poisoning, and Procedural Complications (e.g., drug-drug interaction, procedural pain), Nervous System Disorders (e.g., palsy, seizure), General Disorders And Administration Site Conditions (e.g., lack of efficacy, pain), Skin and Subcutaneous Tissue Disorders (e.g., erythema, rash), and Cardiac Disorders (e.g., bradycardia, cardiac arrest).

## DRUG INTERACTIONS

The toxic effects of local anesthetics are additive and their co-administration should be used with caution including monitoring for neurologic and cardiovascular effects related to local anesthetic systemic toxicity. Avoid additional use of local anesthetics within 96 hours following administration of EXPAREL.

Patients who are administered local anesthetics may be at increased risk of developing methemoglobinemia when concurrently exposed to the following drugs, which could include other local anesthetics:

#### Examples of Drugs Associated with Methemoglobinemia:

Class	Examples
Nitrates/Nitrites	nitric oxide, nitroglycerin, nitroprusside, nitrous oxide
Local anesthetics	articaïne, benzocaine, bupivacaine, lidocaine, mepivacaine, prilocaine, procaine, ropivacaine, tetracaine
Antineoplastic agents	cyclophosphamide, flutamide, hydroxyurea, ifosfamide, rasburicase
Antibiotics	dapsone, nitrofurantoin, para-aminosalicylic acid, sulfonamides
Antimalarials	chloroquine, primaquine
Anticonvulsants	Phenobarbital, phenytoin, sodium valproate
Other drugs	acetaminophen, metoclopramide, quinine, sulfasalazine

#### Bupivacaine

Bupivacaine HCl administered together with EXPAREL may impact the pharmacokinetic and/or physicochemical properties of EXPAREL,

and this effect is concentration dependent. Therefore, bupivacaine HCl and EXPAREL may be administered simultaneously in the same syringe, and bupivacaine HCl may be injected immediately before EXPAREL as long as the ratio of the milligram dose of bupivacaine HCl solution to EXPAREL does not exceed 1:2.

#### Non-bupivacaine Local Anesthetics

EXPAREL should not be admixed with local anesthetics other than bupivacaine. Nonbupivacaine based local anesthetics, including lidocaine, may cause an immediate release of bupivacaine from EXPAREL if administered together locally. The administration of EXPAREL may follow the administration of lidocaine after a delay of 20 minutes or more. There are no data to support administration of other local anesthetics prior to administration of EXPAREL.

Other than bupivacaine as noted above, EXPAREL should not be admixed with other drugs prior to administration.

#### Water and Hypotonic Agents

Do not dilute EXPAREL with water or other hypotonic agents, as it will result in disruption of the liposomal particles

## USE IN SPECIFIC POPULATIONS

### Pregnancy

#### Risk Summary

There are no studies conducted with EXPAREL in pregnant women. In animal reproduction studies, embryo-fetal deaths were observed with subcutaneous administration of bupivacaine to rabbits during organogenesis at a dose equivalent to 1.6 times the maximum recommended human dose (MRHD) of 266 mg. Subcutaneous administration of bupivacaine to rats from implantation through weaning produced decreased pup survival at a dose equivalent to 1.5 times the MRHD [see Data]. Based on animal data, advise pregnant women of the potential risks to a fetus.

The background risk of major birth defects and miscarriage for the indicated population is unknown. However, the background risk in the U.S. general population of major birth defects is 2-4% and of miscarriage is 15-20% of clinically recognized pregnancies.

#### Clinical Considerations

##### Labor or Delivery

Bupivacaine is contraindicated for obstetrical paracervical block anesthesia. While EXPAREL has not been studied with this technique, the use of bupivacaine for obstetrical paracervical block anesthesia has resulted in fetal bradycardia and death.

Bupivacaine can rapidly cross the placenta, and when used for epidural, caudal, or pudendal block anesthesia, can cause varying degrees of maternal, fetal, and neonatal toxicity. The incidence and degree of toxicity depend upon the procedure performed, the type, and amount of drug used, and the technique of drug administration. Adverse reactions in the parturient, fetus, and neonate involve alterations of the central nervous system, peripheral vascular tone, and cardiac function.

#### Data

##### Animal Data

Bupivacaine hydrochloride was administered subcutaneously to rats and rabbits during the period of organogenesis (implantation to closure of the hard plate). Rat doses were 4.4, 13.3, and 40 mg/kg/day (equivalent to 0.2, 0.5 and 1.5 times the MRHD, respectively, based on the BSA comparisons and a 60 kg human weight) and rabbit doses were 1.3, 5.8, and 22.2 mg/kg/day (equivalent to 0.1, 0.4 and 1.6 times the MRHD, respectively, based on the BSA comparisons and a 60 kg human weight). No embryo-fetal effects were observed in rats at the doses tested with the high dose causing increased maternal lethality. An increase in embryo-fetal deaths was observed in rabbits at the high dose in the absence of maternal toxicity.

Decreased pup survival was noted at 1.5 times the MRHD in a rat pre- and post-natal development study when pregnant animals were administered subcutaneous doses of 4.4, 13.3, and 40 mg/kg/day buprenorphine hydrochloride (equivalent to 0.2, 0.5 and 1.5 times the MRHD, respectively, based on the BSA comparisons and a 60 kg human weight) from implantation through weaning (during pregnancy and lactation).

## Lactation

### Risk Summary

Limited published literature reports that bupivacaine and its metabolite, pipecoloylidide, are present in human milk at low levels. There is no available information on effects of the drug in the breastfed infant or effects of the drug on milk production. The developmental and health benefits of breastfeeding should be considered along with the mother's clinical need for EXPAREL and any potential adverse effects on the breastfed infant from EXPAREL or from the underlying maternal condition.

### Pediatric Use

The safety and effectiveness of EXPAREL for single-dose infiltration to produce postsurgical local anesthesia have been established in pediatric patients aged 6 years and older. Use of EXPAREL for this indication is supported by evidence from adequate and well-controlled studies in adults with additional pharmacokinetic and safety data in pediatric patients aged 6 years and older.

Safety and effectiveness have not been established in pediatric patients aged less than 6 years old for local infiltration or less than 18 years old for interscalene brachial plexus nerve block.

### Geriatric Use

Of the total number of patients in the EXPAREL local infiltration clinical studies (N=823), 171 patients were greater than or equal to 65 years of age and 47 patients were greater than or equal to 75 years of age. Of the total number of patients in the EXPAREL nerve block clinical studies (N=531), 241 patients were greater than or equal to 65 years of age and 60 patients were greater than or equal to 75 years of age. No overall differences in safety or effectiveness were observed between these patients and younger patients. Clinical experience with EXPAREL has not identified differences in efficacy or safety between elderly and younger patients, but greater sensitivity of some older individuals cannot be ruled out.

### Hepatic Impairment

Amide-type local anesthetics, such as bupivacaine, are metabolized by the liver. Patients with severe hepatic disease, because of their inability to metabolize local anesthetics normally, are at a greater risk of developing toxic plasma concentrations, and potentially local anesthetic systemic toxicity. Therefore, consider increased monitoring for local anesthetic systemic toxicity in subjects with moderate to severe hepatic disease.

### Renal Impairment

Bupivacaine is known to be substantially excreted by the kidney, and the risk of toxic reactions to this drug may be greater in patients with impaired renal function. This should be considered when performing dose selection of EXPAREL.

## OVERDOSAGE

### Clinical Presentation

Acute emergencies from local anesthetics are generally related to high plasma concentrations encountered during therapeutic use of local anesthetics or to unintended intravascular injection of local anesthetic solution.

Signs and symptoms of overdose include CNS symptoms (perioral paresthesia, dizziness, dysarthria, confusion, mental obtundation, sensory and visual disturbances and eventually convulsions) and cardiovascular effects (that range from hypertension and tachycardia to myocardial depression, hypotension, bradycardia and asystole). Plasma levels of bupivacaine associated with toxicity can vary. Although concentrations of 2,500 to 4,000 ng/mL have been reported to elicit early subjective CNS symptoms of bupivacaine toxicity, symptoms of toxicity have been reported at levels as low as 800 ng/mL.

### Management of Local Anesthetic Overdose

At the first sign of change, oxygen should be administered.

The first step in the management of convulsions, as well as underventilation or apnea, consists of immediate attention to the maintenance of a patent airway and assisted or controlled ventilation with oxygen and a delivery system capable of permitting immediate positive airway pressure by mask. Immediately after the institution of these ventilatory measures, the adequacy of the circulation should be evaluated, keeping in mind

that drugs used to treat convulsions sometimes depress the circulation when administered intravenously. Should convulsions persist despite adequate respiratory support, and if the status of the circulation permits, small increments of an ultra-short acting barbiturate (such as thiopental or thiamylal) or a benzodiazepine (such as diazepam) may be administered intravenously. The clinician should be familiar, prior to the use of anesthetics, with these anticonvulsant drugs. Supportive treatment of circulatory depression may require administration of intravenous fluids and, when appropriate, a vasopressor dictated by the clinical situation (such as epinephrine to enhance myocardial contractile force).

If not treated immediately, both convulsions and cardiovascular depression can result in hypoxia, acidosis, bradycardia, arrhythmias and cardiac arrest. If cardiac arrest should occur, standard cardiopulmonary resuscitative measures should be instituted.

Endotracheal intubation, employing drugs and techniques familiar to the clinician, maybe indicated, after initial administration of oxygen by mask, if difficulty is encountered in the maintenance of a patent airway or if prolonged ventilatory support (assisted or controlled) is indicated.

## DOSAGE AND ADMINISTRATION

### Important Dosage and Administration Information

- EXPAREL is intended for single-dose administration only.
- Different formulations of bupivacaine are not bioequivalent even if the milligram strength is the same. Therefore, it is not possible to convert dosing from any other formulations of bupivacaine to EXPAREL.
- DO NOT dilute EXPAREL with water or other hypotonic agents, as it will result in disruption of the liposomal particles.
- Use suspensions of EXPAREL diluted with preservative-free normal (0.9%) saline for injection or lactated Ringer's solution within 4 hours of preparation in a syringe.
- Do not administer EXPAREL if it is suspected that the vial has been frozen or exposed to high temperature (greater than 40°C or 104°F) for an extended period.
- Inspect EXPAREL visually for particulate matter and discoloration prior to administration, whenever solution and container permit. Do not administer EXPAREL if the product is discolored.

### Recommended Dosing

#### Local Analgesia via Infiltration Dosing in Adults

The recommended dose of EXPAREL for local infiltration in adults is up to a maximum dose of 266mg (20 mL), and is based on the following factors:

- Size of the surgical site
- Volume required to cover the area
- Individual patient factors that may impact the safety of an amide local anesthetic

As general guidance in selecting the proper dosing, two examples of infiltration dosing are provided:

- In patients undergoing bunionectomy, a total of 106 mg (8 mL) of EXPAREL was administered with 7 mL infiltrated into the tissues surrounding the osteotomy, and 1 mL infiltrated into the subcutaneous tissue.
- In patients undergoing hemorrhoidectomy, a total of 266 mg (20 mL) of EXPAREL was diluted with 10 mL of saline, for a total of 30 mL, divided into six 5 mL aliquots, injected by visualizing the anal sphincter as a clock face and slowly infiltrating one aliquot to each of the even numbers to produce a field block.

#### Local Analgesia via Infiltration Dosing in Pediatric Patients

The recommended dose of EXPAREL for single-dose infiltration in pediatric patients, aged 6 to less than 17 years, is 4 mg/kg (up to a maximum of 266 mg), and is based upon two studies of pediatric patients undergoing either spine surgery or cardiac surgery.

#### Regional Analgesia via Interscalene Brachial Plexus Nerve Block Dosing in Adults

The recommended dose of EXPAREL for interscalene brachial plexus nerve block in adults is 133 mg (10 mL), and is based upon one study of patients undergoing either total shoulder arthroplasty or rotator cuff repair.

## Compatibility Considerations

Administer EXPAREL with drugs other than bupivacaine HCl prior to administration is not recommended.

- Non-bupivacaine based local anesthetics, including lidocaine, may cause an immediate release of bupivacaine from EXPAREL if administered together locally. The administration of EXPAREL may follow the administration of lidocaine after a delay of 20 minutes or more.

- Bupivacaine HCl administered together with EXPAREL may impact the pharmacokinetic and/or physicochemical properties of EXPAREL, and this effect is concentration dependent. Therefore, bupivacaine HCl and EXPAREL may be administered simultaneously in the same syringe, and bupivacaine HCl may be injected immediately before EXPAREL as long as the ratio of the milligram dose of bupivacaine HCl solution to EXPAREL does not exceed 1:2.

The toxic effects of these drugs are additive and their administration should be used with caution including monitoring for neurologic and cardiovascular effects related to local anesthetic systemic toxicity.

- When a topical antiseptic such as povidone iodine (e.g., Betadine®) is applied, the site should be allowed to dry before EXPAREL is administered into the surgical site. EXPAREL should not be allowed to come into contact with antiseptics such as povidone iodine in solution.

Studies conducted with EXPAREL demonstrated that the most common implantable materials (polypropylene, PTFE, silicone, stainless steel, and titanium) are not affected by the presence of EXPAREL any more than they are by saline. None of the materials studied had an adverse effect on EXPAREL.

### Non-Interchangeability with Other Formulations of Bupivacaine

Different formulations of bupivacaine are not bioequivalent even if the milligram dosage is the same. Therefore, it is not possible to convert dosing from any other formulations of bupivacaine to EXPAREL and vice versa.

Liposomal encapsulation or incorporation in a lipid complex can substantially affect a drug's functional properties relative to those of the unencapsulated or nonlipid-associated drug. In addition, different liposomal or lipid-complexed products with a common active ingredient may vary from one another in the chemical composition and physical form of the lipid component. Such differences may affect functional properties of these drug products. Do not substitute.

## CLINICAL PHARMACOLOGY

### Pharmacokinetics

Administration of EXPAREL results in significant systemic plasma levels of bupivacaine which can persist for 96 hours after local infiltration and 120 hours after interscalene brachial plexus nerve block. In general, peripheral nerve blocks have shown systemic plasma levels of bupivacaine for extended duration when compared to local infiltration. Systemic plasma levels of bupivacaine following administration of EXPAREL are not correlated with local efficacy.

### PATIENT COUNSELING

Inform patients that use of local anesthetics may cause methemoglobinemia, a serious condition that must be treated promptly. Advise patients or caregivers to seek immediate medical attention if they or someone in their care experience the following signs or symptoms: pale, gray, or blue colored skin (cyanosis); headache; rapid heart rate; shortness of breath; lightheadedness; or fatigue.

## PACIRA

Pacira Pharmaceuticals, Inc.  
San Diego, CA 92121 USA

Patent Numbers:

6,132,766 5,891,467 5,766,627 8,182,835

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For additional information call 1-855-RX-EXPAREL (1-855-973-9727)

Rx only

March 2021

# CLOSING RECEPTION



EAT. DRINK. PLAY.



**Date: Friday, May 14, 2021**  
**Time: 7:00 PM – 10:00 PM**

7:00 PM	Doors Open
7:30 PM – 8:00 PM	Cocktails
8:00 PM – 10:00 PM	Dinner
9:00 PM – 10:00 PM	Karaoke

Come enjoy good times, great food and drinks at Backyard Dallas. This lively and colorful, yet rustic and relaxed space is complemented with playful seating including painted picnic tables and lounge furniture. Add dozens of interactive games including ping pong, oversized Jenga, corn hole, shuffleboard, pool, pop-a-shot, darts, virtual bowling, giant connect four, air hockey and more.

Attire: Casual

*\*Included with attendee registration.*

*Accompanying Persons must be registered to attend.*

*Must be 21 and over to attend.*

# YOUNG MEMBER FORUM

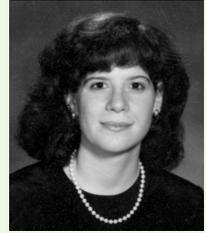
## 2021 ARABELLA LEET MEMORIAL YOUNG MEMBER FORUM

### Sponsored By Shriners Hospitals for Children

*Chairs: Dan Miller, MD and Margaret Siobhan Murphy-Zane, MD*

The POSNA Young Member Forum is held in honor of Dr. Arabella Leet. Dr. Leet was a highly accomplished Pediatric Orthopaedic Surgeon with a special interest in children with Cerebral Palsy. At the end of her career, she served as Chief of the Shriners' Hospital in Honolulu, Hawaii. She passed away in 2013 after a sudden illness.

This year, the Young Member Forum will focus on the pediatric orthopaedic family. This session will be beneficial to all pediatric orthopaedic providers but will be particularly relevant to those in the first five years of their practice, as well as residents and fellows. Members of POSNA and their families will share their own personal experience and wisdom on the topics selected with time for discussion at the end of the symposium.



### Introduction and Tribute to Arabella Leet

*Dan Miller, MD*

*Margaret Siobhan Murphy-Zane, MD*

### The Importance of Parental Leave for Surgeons, their Families, and the Orthopaedic Community

*Jennifer Weiss, MD*

### Technology hacks for the orthopaedic family

*Dan Miller, MD*

### What I Learned About Work-Life Balance Growing Up as the Child of a Pediatric Orthopaedic Surgeon

*Craig Birch, MD*

### The Spouse's Perspective on Work-Life Balance in Pediatric Orthopaedics

*Richard McIntosh*

### How Can We Make Two Professional Careers Work?

*Richard Zane, MD*

### Panel Discussion

*Jennifer Weiss, MD; Craig Birch, MD; Richard McIntosh; Amy McIntosh, MD Benjamin Roye, MD; Jonathan Schoenecker, MD, PhD*

### Concluding Remarks

*Dan Miller, MD*

*Margaret Siobhan Murphy-Zane, MD*

# SYMPOSIA

## POGO PEDIATRIC ORTHOPAEDIC GLOBAL OUTREACH SYMPOSIUM

### **75 Minutes**

*Chair: Michael J. Heffernan, MD*

*Co-chair: Jaysson Brooks, MD*

This year's POGO Symposium is focused on the impact that implants have in global outreach efforts. We have several experts discussing the topic from their unique perspective. A panel discussion will follow addressing the role that orthopaedic surgeons can play in increasing implant availability. There will also be an invited paper session to review recent global outreach research.

### **Introduction**

*Michael J. Heffernan, MD*

### **Implants in Global Outreach: Sign Nail Experience**

*Lewis Zirkle, MD*

### **Implants in Global Outreach: Orthopaedic Link Perspective**

*Dheera Ananthakrishnan, MD*

### **Implants in Global Outreach: Industry Perspective**

*Peter Armstrong, MD*

### **Implants in Global Outreach: POGO Scholar Perspective**

*Godwin Yaw Fosu Opuni, MBChB*

### **Implants in Global Outreach: Panel Discussion**

*Moderators: Jaysson T. Brooks, MD & Michael J. Heffernan, MD*

### **POGO Research: Invited Paper Presentations**

*Moderator: Karen Bovid, MD*



# SYMPOSIA

## POPS PEDIATRIC MUSCULOSKELETAL TUMORS AND INFECTIONS: CHALLENGES AND UPDATES

### 90 Minutes

*Chair: Raymond Kleposki, MSN, CPNP*

*Co-Chair: Jessica Staschak, MSN, CPNP*

Musculoskeletal infections and tumors present unique challenges for the pediatric orthopaedic provider. This symposium, presented by experts in treatment of pediatric musculoskeletal tumors and infections, will provide a useful review for principles of treatment of musculoskeletal infections and tumors, as well as an update on current best practices.

#### Principles and Challenges of Treating Pediatric Musculoskeletal Infections

*Megan Johnson, MD*

#### Principles and Challenges of Treating Pediatric Musculoskeletal Tumors

*Alexandre Arkader, MD*

## PRACTICE MANAGEMENT

### 80 Minutes

*Chair: Kevin M. Neal, MD, MBA*

*Co-Chair: M. Wade Shrader, MD*

The POSNA Practice Management Symposium is designed to discuss topics relevant to pediatric orthopaedic clinicians in a broad range of practice settings. This year's symposium focuses on coding, telemedicine, social media, and compensation plans. In addition, we will present the results of the latest POSNA practice management survey.

#### Introduction

*Kevin Neal, MD*

#### Coding Update 2021

*Dale Blasier, MD*

#### Telemedicine Best Practices

*Daniel Grant, MD*

#### Social Media Marketing

*McKay E. Hendershot, MD*

#### Compensation Plans

*Michael Jofe, MD*

#### Practice Survey Results

*Wade Shrader, MD*

# SYMPOSIA

## RESEARCH REGISTRIES & STUDY GROUPS

**60 Minutes**

*Chairs: Matthew Oetgen, MD, MBA*

*Co-Chair: Unni Narayanan, MBBS, MSc, FRCS(C)*

Medical registries have gained increased importance in recent years to further ongoing research and medical knowledge. Despite this promise, registries are also expensive and require significant resources to maintain. This symposium will explore the true nature and possibilities of healthcare registries, how POSNA may benefit from the investment in registries and insights into lessons learned from POSNA associated study groups.

### Introduction

*Matthew Oetgen, MD, MBA*

### What are True Health Care Registries and What Can They Achieve?

*David S. Jevsevar, MD, MBA, FAAOS*

### POSNA's Registry Investment - History, Current Landscape

*Steve Frick, MD*

### International Hip Dysplasia Registry (IHDR)

*Kishore Mulpuri, MD*

### International Legg Calve Perthes Registry

*Harry Kim, MD*

### Harms Study Group or Pediatric Spine Study Group

*Peter Newton, MD and Paul Sponseller, MD*

### International Cerebral Palsy Hip Outcomes Project (CHOP) Study

*Unni Narayanan, MBBS, MSc, FRCS(C)*

### Panel Discussion on the Future of Registries in Pediatric Orthopaedic Surgery

*All Speakers*



# SYMPOSIA

## TRAUMA TIPS AND TRICKS IN THE ADOLESCENT TRAUMA PATIENT

**95 Minutes**

*Chair: Chris Souder, MD*

*Co-Chair: Brian Scannell, MD*

The Trauma Symposium is focused on aspects for treatment of adolescent orthopaedic trauma patients. These cases can present complex injury patterns that are not commonly encountered in the routine care of pediatric orthopaedic trauma. This session will provide insight in treatment of these more adult like patterns of injury with tips and tricks provided by adult orthopaedic traumatologists. The topics covered will be of value to any orthopaedic surgeon involved in the management of pediatric orthopaedic trauma. We will discuss complex elbow fractures, pediatric pelvic fractures, as well as complex femur, tibia and ankle fractures.



### Introduction

*Chris Souder, MD*



### Management of Complex Distal Humerus Fractures: When Do You Need more Than Pins?

*Michael Brennan, MD*



### Pelvis Fractures: Which Really Need Fixation?

*Jason Stoneback, MD*



### Complex Femur Fractures: How to Fix the Challenging Femur Fracture?

*Caroline Tougas, MD*



### Peri-Articular Knee Fractures: What to do With Short Segments and Intra-Articular Fractures?

*David Rothberg, MD*



### High Energy Tibia Fractures: When and How Can We Best Use Rigid Nails?

*John Munz, MD*



### Ankle Fractures: When Does it Need More Than Just Screws?

*Drew Sanders, MD*



### Support Opportunities

*Brian Scannell, MD*

# ePOSTERS

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## ePoster 1

### Biomarkers for Prediction of Skeletal Disease Progression in Mucopolysaccharidosis Type I

*Klane White, MD; Troy Lund; Terence Doherty; Julie Eisengart; Rebecca Freese; Kyle Rudser; Ellen Fung; Bradley Miller; Paul Orchard; Chester Whitley; Lynda Polgreen  
Seattle Children's Hospital, Seattle, WA*

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## ePoster 2

### Single Cell Expression Analysis of Pediatric Cartilage Demonstrates Unique Signatures for Articular and Physeal Chondrocytes

*Donna Pacicca, MD; Tammy Brown; Jeffrey Johnston; Emily Farrow  
Children's Mercy Hospital, Kansas City, MO*

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## ePoster 3

### Primary cilia disturbances in the physes of immature hypothyroid mini-swine

*Ashley Mohrman, PhD; Erica Reber; Fayez Safadi; Mark Adamczyk, MD  
Akron Children's Hospital, Akron, OH*

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## ePoster 4

### Is the Lateral Cuneiform Large Enough to Support Interference Screw Fixation for Tibialis Anterior Tendon Transfer in Children Aged 3 to 6 Years?

*Jordan Polk; Jacob Zide, MD; Yassine Kanaan; Zachary Meyer; Anthony Riccio, MD  
Scottish Rite for Children, Dallas, TX*

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## ePoster 5

### Prenatal Counselling for a Suspected Clubfoot Diagnosis Reduces Parental Anxiety During the Corrective Phase of Ponseti Treatment

*Maryse Bouchard, MD; Leah Hatcher  
The Hospital for Sick Children, Toronto, ON, Canada*

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## ePoster 6

### Predictive Ability of Clinical and Radiographic Findings For Detecting Tarsal Coalition

*Kianna Nunally; Collin May MD; Patricia Miller MS; Jodie Shea;  
Benjamin Shore, MD, MPH, FRCSC  
Boston Children's Hospital, Boston, MA*

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## ePoster 7

### The Scapholunate Interval in the Pediatric Population Decreases in Size as Age Increases

*Timothy Shaver; Alexandria Case; Danielle Hogarth; Joshua Abzug, MD  
University of Maryland School of Medicine, Baltimore, Maryland*

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## ePoster 8

### A Novel 'Starfish' Flap for Syndactyly Release: Technique and Early Results

*Rameez Qudsi, MD; Kevin Little, MD  
Cincinnati Children's Hospital Medical Center, Cincinnati, OH*

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# ePOSTERS

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## ePoster 9

### Hip Arthroscopy Following Slipped Capital Femoral Epiphysis Fixation: Early and Progressive Chondrolabral Damage

*Javier Besomi, MD; Valeria Escobar; Santiago Alvarez; Juan Jose Valderrama; Jaime Lopez; Claudio Mella; Carlos Tobar; Joaquin Lara; Claudio Meneses, MD  
Clinica Alemana de Santiago, Santiago, Chile*

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## ePoster 10

### Subjectively Reported Hip Function and Activity Levels Weakly Correlate with Objective Temporospacial Parameters in Adolescent Patients Before and After Hip Preservation Surgery

*Wilshaw Stevens; Lauren Luginsland; David Podeszwa, MD; Kirsten Tulchin-Francis, PhD  
Scottish Rite for Children, Dallas, Texas*

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## ePoster 11

### Validation and initial results of international web-based survey of adults who had childhood Legg-Calvé-Perthes disease (LCPD)

*Harry Kim, MD; Bella Vakulenko-Lagun; Molly McGuire; Earl Cole; Roi Almakias; Michael Millis, MD  
International Perthes Study Group, Dallas, TX*

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## ePoster 12

### A Biomechanical Analysis of The Surface Contact Pressure After An Innominate Osteotomy For The Correction Of Acetabular Dysplasia

*Emmanuel Gibon, MD; Mackenzie Roof; Pablo Castaneda, MD  
NYU Langone Pediatric Orthopaedic Department, New York, NY*

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## ePoster 13

### The Importance of Globalization in Prospective Study Groups: Increasing the Relevance of Research on Developmental Dysplasia of the Hip to a Global Patient Population

*Emily Schaeffer, PhD; Alaric Aroojis; Hitesh Shah, MD; Venkatadass Krishnamoorthy; Sandeep Patwardhan, MD; CHITTA SAHU; Kishore Mulpuri, MD  
BC Children's Hospital, Vancouver, BC, Canada*

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## ePoster 14

### Patients With Ehlers-Danlos Syndrome Who Undergo Periacetabular Osteotomy for Symptomatic Hip Instability Report Sustained Improvements At Two Years Comparable To Those Observed in Patients Without Ehlers-Danlos Syndrome

*Patrick Whitlock, MD; Nicholas Auteri; Sydney Herold; Rachel Breitenstein; Molly Uchtman; James McCarthy, MD  
Cincinnati Children's Hospital Medical Center, Cincinnati, Ohio*

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## ePoster 15

### Femoral Head Coverage should be included in treatment protocols for Graf IIa Developmental Dysplasia of the Hip

*Margaret Siobhan Murphy-Zane, MD; Patrick Carry; Kaley Holmes; Brian Kohuth, PA-C; Debbie Burke PA; Tyler Freeman; Matthew Belton; Nancy Miller, MD; Gaia Georgopoulos, MD  
Children's Hospital Colorado, Aurora, CO*

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# ePOSTERS

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## **ePoster 16**

**Mountain or Mole Hill: The Clinical Significance of Infolded Labrum on Post-Reduction Arthrogram in Developmental Dysplasia of the Hip**

*William Morris, MD; Sai Susheel Chilakapati; Sean Hinds; John Herring, MD;*

*Harry Kim, MD*

*Texas Scottish Rite Hospital for Children, Dallas, TX*

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## **ePoster 17**

**Oncological and Functional Outcomes in Joint Sparring Resections of the Proximal Femur for Malignant Primary Bone Tumors**

*Dipak Ramkumar; Sean Kelly; Santiago Lozano Calderon; Mark Gebhardt, MD;*

*Megan Anderson, MD*

*Boston Children's Hospital, Boston, MA*

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## **ePoster 18**

**Are "Quick" MRI scans reliable for diagnosis of pediatric peri-pelvic musculoskeletal infections?**

*Jarrett Warden; Ian Kuckelman; Scott Hetzel; Pamela Lang, MD; Laura Bellaire, MD;*

*Kenneth Noonan, MD*

*University of Wisconsin, Madison, WI*

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## **ePoster 19**

**Diffuse Tenosynovial Giant Cell Tumors: Case Series From a Large Pediatric Orthopaedic Hospital**

*Ryan Guzek; Max Cornell; Jie Nguyen; Alexandre Arkader, MD*

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

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## **ePoster 20**

**Guided Growth Treatment can improve Depression of the Medial Tibial Plateau in Infantile Blount Disease –An update**

*Regina Hanstein; Chris Schneble; Jacob Schulz, MD; Adrienne Socci, MD;*

*Melinda Sharkey, MD*

*Montefiore Medical Center, Bronx, NY*

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## **ePoster 21**

**Infantile Blount Disease: Radiographic Predictors of Spontaneous Resolution**

*Regina Hanstein; Chris Schneble; Jacob Schulz, MD; Adrienne Socci, MD;*

*Melinda Sharkey, MD*

*Montefiore Medical Center, Bronx, NY*

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## **ePoster 22**

**Creation and Validation of a "Shorthand" Knee MRI Bone Age Assessment Tool as an Alternative for Skeletal Maturity Assessment**

*Carey Politzer; James Bomar, MPH; Hakan Pehlivan, MD; Preet Gurusamy;*

*Eric Edmonds, MD; Andrew Pennock, MD*

*Rady Children's Hospital, San Diego, San Diego, California*

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# ePOSTERS

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## ePoster 23

◆ Novel application of the internal, magnetically-controlled, telescopic nail to the extramedullary femur in the skeletally immature patient: Early results.

*Katherine Rosenwasser; Nickolas Nahm, MD; Philip McClure, MD; John Herzenberg, MD; Shawn Standard, MD*  
Sinai Hospital of Baltimore/Lifebridge Health, Baltimore, Maryland

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## ePoster 24

Predictions of the Amount of Growth Remaining in the Lower-Limb

*Kyung Rae Ko; Jong Shim, MD; Jaesung Park*  
Samsung Medical Center, Seoul, Korea, Republic of

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## ePoster 25

Multicenter Series of Deformity Correction using Guided Growth in the Setting of Osteogenesis Imperfecta

*Jeanne Franzone, MD; Maegen Wallace, MD; Kenneth Rogers, PhD; Elizabeth Strudthoff; Richard Kruse, DO; Darko Anticevic*  
Nemours Alfred I. duPont Hospital for Children, Wilmington, DE

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## ePoster 26

Contractures in Cerebral Palsy and Brachial Plexus Birth Injury Are Similarly Caused by Short, Weak Muscles

*Roger Cornwall, MD; Sia Nikolaou; Jason Long; Kendra Eckstein*  
Cincinnati Children's Hospital, Cincinnati, OH

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## ePoster 27

Better Understanding the Orthopaedic Burden of Neurosurgical Hemispherectomy in Pediatric Patients

*William Belshe; Nicholas Gajewski; Rachel Thompson, MD*  
University of California, Los Angeles, Los Angeles, CA

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## ePoster 28

Nutrition Consult in the Year Leading up to Neuromuscular Scoliosis Surgery: Helpful Tool or Self-Inflicted Wound?

*Ariana Meltzer-Bruhn; Matthew Landrum, MD; David Spiegel, MD; Patrick Cahill, MD; Jason Anari, MD; Keith Baldwin, MD*  
Children's Hospital of Philadelphia, Philadelphia, PA

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## ePoster 29

Reliability and Utility of a Novel Classification Scheme for Gait Deviations in Children with Persistent Idiopathic Toe Walking

*Jon Davids, MD; Sancy Childers, BA; Sean Brown, BS; Anita Bagley, PhD; Vedant Kulkarni, MD*  
Shriners Hospital Northern California, Sacramento, 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).

# ePOSTERS

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## ePoster 30

### The Stability of Sagittal Plane Gait Patterns from Early Childhood to Maturity in Cerebral Palsy

*Bidzina Kanashvili, MD; Freeman Miller, MD; Jason Howard, MD; Julieanne Sees, DO; Kenneth Rogers, PhD; Chris Church; Nancy Lennon, MS; John Henley; Timothy Niiler; M Shrader, MD*  
Nemours - Alfred I duPont Hospital for Children, Wilmington, DE

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## ePoster 31

### Effect of Positioning Error on the Hilgenreiner Epiphyseal Angle and Head-shaft Angle Compared to the Femoral Neck-shaft Angle in Children with Cerebral Palsy

*Emily Sullivan; Carly Jones; Stacey Miller; Kyoung-Min Lee; David Wilson; Kishore Mulpuri, MD; Agnes D'Entremont*  
BC Children's Hospital, Vancouver, BC, Canada

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## ePoster 32

### Factors Associated with Gross Motor Recovery during Rehabilitation Following Single-Event Multilevel Surgery (SEMLS) for Youth with Cerebral Palsy

*M Shrader, MD; Nancy Lennon MS; Isabel Biermann; Grace Gerry; Jason Beaman; Nicole Mamula; Abigail Gilmore; Timothy Niiler; Laura Owens*  
Nemours duPont Hospital for Children, Wilmington, DE

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## ePoster 33

### Baseline Patient Reported Outcomes Measurement Information System (PROMIS) Scores in Children with Adolescent Idiopathic Scoliosis (AIS) and Their Relation to the SRS-22

*Daniel Bouton, MD; Graham Fedorak, MD; Donna Oeffinger; Purnendu Gupta, MD; Scott Luhmann, MD; Peter Stasikelis, MD; Michal Szczodry; Vishwas Talwalkar, MD; Man Hung*  
Shriners' Hospitals for Children, Tampa, FL

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## ePoster 34

### Proof of Concept for Artificial Intelligence Based Estimation of Skeletal Maturity from Biplanar Slot Scan Scoliosis Imaging

*Audrey Ha; Bao Do; Joanna Langner; Andrew Campion; Charles Fang; Michael Fadell; Steve Dou; Safwan Halabi; Emily Wang; YongJin Lee; Japsimran Kaur; John Vorhies, MD*  
Stanford University, Stanford, CA

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## ePoster 35

### Surgical Site Infection Following Neuromuscular Posterior Spinal Fusion: Comparing Incidence Before and After the 2013 Best Practice Guideline

*Stephen Stephan; Kenneth Illingworth, MD; Kavish Gupta; Lindsay Andras, MD; David Skaggs, MD, MMM*  
Children's Hospital Los Angeles, Los Angeles, CA

# ePOSTERS

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## **ePoster 36**

### **National Trends in Performing Osteotomies for AIS in North America: Greater Incidence Is Associated with Significant Complications and Greater Cost**

*Kiley Poppino; Chan-Hee Jo; Daniel Sucato, MD, MS*

*Texas Scottish Rite Hospital for Children, Dallas, TX*

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## **ePoster 37**

### **Evaluation of the AOSpine Injury Classification in the Pediatric Population: Results of a Multi-Center POSNA Grant**

*Daniel Hedequist, MD; Nora O'Neill; Andrew Mo; Patricia Miller, MS; Craig Birch, MD; Vidyadhar Upasani, MD; G Li, MD; Nicholas Fletcher, MD; Walter Kregel, MD; Sumeet Garg, MD; Anthony Riccio, MD; David Spence, MD; Jennifer Bauer, MD; Michael Glotzbecker, MD*

*Boston Children's Hospital, Boston, MA*

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## **ePoster 38**

### **Cervical Degenerative Disc Disease is Associated with Increased Cervical Kyphosis in Adolescent Idiopathic Scoliosis**

*Kenneth Illingworth, MD; Adrian Lin; David Skaggs, MD, MMM; Lindsay Andras, MD; Vernon Tolo, MD*

*Children's Hospital Los Angeles, Los Angeles, CA*

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## **ePoster 39**

### **Characterizing Mortality in Patients with Early Onset Scoliosis**

*Ryan Guzek; Robert Murphy, MD; Christina Hardesty, MD; John Emans, MD; Sumeet Garg, MD; John Smith, MD; George Thompson, MD; Benjamin Roye, MD; Michael Glotzbecker, MD; Peter Sturm, MD; Brian Snyder, MD; Selina Poon, MD; Connie Poe-Kochert; Pediatric Spine Study Group; Jason Anari, MD*

*Children's Hospital of Philadelphia, Philadelphia PA*

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## **ePoster 40**

### **A Wireless Intraoperative Neuromonitoring System is as Reliable and Accurate as the Traditional Wired Systems for Spinal Deformity Surgery**

*Wenyuan Shi; J-C Chiao; Steven Sparagana; Patricia Rampy; Kiley Poppino;*

*Daniel Sucato, MD, MS*

*Texas Scottish Rite Hospital for Children, Dallas, TX*

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## **ePoster 41**

### **Comparative analysis of Post-op Motion between Spinal Fusion and VBT**

*Firoz Miyanji, MD; Michelle Marks, PT; Amer Samdani, MD; Suken Shah, MD;*

*Tracey Bastrom, MA; Maty Petcharaporn; Peter Newton, MD*

*British Columbia Children's Hospital, Vancouver, BC, Canada*

# ePOSTERS

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## **ePoster 42**

### **Risk of Early Complication Following Anterior Vertebral Body Tethering for Idiopathic Scoliosis**

*Abdullah Abdullah; Stefan Parent, MD; Firoz Miyanji, MD; Kevin Smit, MD; Joshua Murphy, MD; David Skaggs, MD; Purnendu Gupta, MD; Michael Vitale, MD, MPH; Neil Saran, MD; Robert Cho, MD; Ron El-Hawary, MD IWK, Halifax, NS, Canada*

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## **ePoster 43**

### **Can Bone Health Improvement from the Initial 2-Year Calcium and Vit-D Supplementation Persist Towards Peak Bone Mass after 4-Year of Supplement Discontinuation in Adolescent Idiopathic Scoliosis – A Randomized Controlled Trial**

*Ping Lam, MBBS; Guangpu Yang; Henry Pang; Wayne Lee; MAN FUNG TANG; Hung Lik Hang; Jack Cheng, MD  
SH Ho Scoliosis Research Lab, Joint Scoliosis Research Center of the Chinese University of Hong Kong, Hong Kong SAR, China, People's Republic of China*

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## **ePoster 44**

### **Waterproof Mehta Casting for Early Onset Scoliosis**

*Lorena Floccari, MD; Keegan Conry; Melanie Morscher, PT; Todd Ritzman, MD Akron Children's Hospital, Akron, Ohio*

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## **ePoster 45**

### **Vertebral Column Resection Improves the Sagittal Plane Greater than Other Techniques but Risks Symptomatic Junctional Kyphosis**

*Daniel Sucato, MD, MS; Munish Gupta; Lawrence Lenke, MD; David Bumpass; Sumeet Garg, MD; Paul Sponseller, MD; Suken Shah, MD; Mark Erickson, MD; Amer Samdani, MD; Burt Yaszay, MD; Joshua Pahys, MD; Peter Newton, MD; Michael Kelly  
Texas Scottish Rite Hospital for Children, Dallas, TX*

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## **ePoster 46**

### **Changes in the Position of the Trochlear Groove in the Setting of Trochlear Dysplasia**

*James Pace, MD; Gregory Kanski; Christopher Cheng; David Chiu; Allison Crepeau, MD; Andrew Cohen; Michael Brimacombe  
Elite Sports Medicine at Connecticut Children's Medical Center, Farmington, CT*

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## **ePoster 47**

### **45° Flexion Anteroposterior Elbow Radiographs Improve Diagnostic Accuracy of Capitellum Osteochondritis Dissecans**

*Michael Saper; Viviana Bompadre, PhD; Monique Burton; Sarah Menashe; Kyle Nagle; Gregory Schmale, MD; Mahesh Thapa  
Seattle Children's, Seattle, WA*

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## **ePoster 48**

### **Osteochondral Lesions of the Talus: Factors Predictive of Cartilage Integrity**

*Crystal Perkins, MD; John Erickson, DO; Kiery Braithwaite; Michael Busch, MD; Samuel Willimon, MD*

*Children's Healthcare of Atlanta, Atlanta, GA*

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## **ePoster 49**

### **Nerve Blocks for Pediatric ACL Reconstruction: Comparing Function, Patient- Reported Outcomes, and Efficiency**

*Tomasina Leska; Joshua Bram; Nicolas Pascual-Leone; Brendan Williams, MD; Theodore Ganley, MD*

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

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## **ePoster 50**

### **Outcomes of Pediatric Meniscal Surgeries**

*Stephanie Logterman, MD; Alexia Gagliardi; David Howell; Jay Albright, MD*

*Children's Hospital Colorado, Aurora, CO*

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## **ePoster 51**

### **Post-operative Complications and Early Clinical Outcomes Following ACL Reconstruction with Soft Tissue Quadriceps Tendon Autograft in Adolescent Athletes**

*Benton Heyworth, MD; Naveen Jasty; Danielle Cook; Elizabeth Liotta*

*Boston Children's Hospital, Boston, MA*

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## **ePoster 52**

### **MAGNETIC RESONANCE IMAGING OF LATERAL MENISCAL ROOT TEARS IN THE ADOLESCENT KNEE: IS THE DIAGNOSIS MISSED, MENTIONED, OR MADE?**

*John Schlechter, DO; Edward McDonald; Theresa Pak; Bryn Gornick*

*Children's Hospital of Orange County, Orange, California*

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## **ePoster 53**

### **Predicting Arthrofibrosis Following Anterior Cruciate Ligament Reconstruction in the Pediatric Population: A Matched Case-control Study**

*Soroush Baghdadi, MD; Lawrence Wells, MD; Theodore Ganley, MD;*

*J Todd Lawrence, MD*

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

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## **ePoster 54**

### **What are the Causes and Consequences of Delayed Surgery for Pediatric Tibial pine Fractures?**

*Neeraj Patel, MD; Tomasina Leska; Theodore Ganley, MD; Julien Aoyama, BA;*

*Aristides Cruz, MD; Henry Ellis, MD; Peter Fabricant, MD; Daniel Green, MD;*

*Jason Jagodzinski, MD; Benjamin Johnson; Indranil Kushare, MD; R Lee, MD;*

*Scott McKay, MD; Jason Rhodes, MD; Brant Sachleben, MD; Mary Sargent, MD;*

*Gregory Schmale, MD; Yi-Meng Yen, MD; R Mistovich, MD*

*Ann & Robert H. Lurie Children's Hospital of Chicago, Chicago, IL*

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# ePOSTERS

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## **ePoster 55**

### **Pediatric Compliance of Lower Extremity Weight Bearing Restrictions Following Injury**

*Alexandria Case; Danielle Hogarth; Joshua Abzug, MD  
University of Maryland School of Medicine, Baltimore, Maryland*

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## **ePoster 56**

### **Secondary Displacement of Both Bone Diaphyseal Forearm Fractures: Risk Factors and Predictors of Closed Reduction and Cast Immobilization**

*Joaquín Nuñez De Armas, MD; Vidyadhar Upasani, MD; Luis Moraleda Novo, MD; Alyssa Carroll; Tracey Bastrom, MA; Gaspar González Morán; Eric Edmonds, MD  
Rady Children's Hospital, San Diego, San Diego, California*

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## **ePoster 57**

### **Outcomes of Operative Treatment of Pediatric Monteggia Fracture-Dislocations: Open Injuries as a Predictor of Poor Outcomes**

*Alfred Mansour, MD; Brennan Roper; Layla Haidar; Shrina Parikh; Ryan Warth; Lindsay Crawford, MD; Shiraz Younas, MD  
The University of Texas at Houston Orthopaedics, Houston, Texas*

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## **ePoster 58**

### **Disparities in Care Received for Treatment of Pediatric Fractures**

*Margaret Smythe; Katelin Nickel; Matt Keller; Pooya Hosseinzadeh, MD  
Washington University School of Medicine, Saint Louis, Missouri*

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## **ePoster 59**

### **Does an Associated Elbow Dislocation Lead to Worse Outcomes in Medial Epicondyle Fractures?**

*Sarah Toner; Alexandria Case; Danielle Hogarth; Joshua Abzug, MD  
University of Maryland School of Medicine, Baltimore, Maryland*

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## **ePoster 60**

### **Comparison of Short and Long Leg Casts for the Treatment of Distal Third Tibial Shaft Fractures in Children**

*Scott Barnett; Bailli Fontenot; Claudia Leonardi; Joseph Gonzales, MD; Dominic Gargiulo, DO; Michael Heffernan, MD  
Children's Hospital New Orleans, New Orleans, Louisiana*

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## **ePoster 61**

### **Predicting Failure of Closed Reduction in Paediatric Diaphyseal Forearm Fracture Elastic Stable Intramedullary Nailing (ESIN)**

*Kenneth Pak Leung Wong; Nicole Lee; Darryl Chew; Ling Hui Tay; Arjandas Mahadev, FRCS  
KK Women's and Children's Hospital, Singapore, Singapore*

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## **ePoster 62**

**Unicolumnar Pin Fixation of Type III Supracondylar Humeral Fractures is Associated with a Greater than Three Times Higher Odds of Lost Reduction**

*Jaime Denning, MD; Sarah Jenkins; Charles Mehlman, DO  
Cincinnati Children's Hospital Medical Center, Cincinnati, OH*

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## **ePoster 63**

**Pediatric and Adolescent Fractures of the Acetabulum treated with ORIF: What are their Functional Outcomes?**

*Wendy Ramalingam, BS; Brendan Southam; Adam Schumaier; Jaime Denning, MD;  
Patrick Whitlock, MD; Michael Archdeacon  
Cincinnati Children's Hospital Medical Center, Cincinnati, OH*

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## **ePoster 64**

**Ulnar Epiphysiodesis: Success of the Index Procedure**

*Wade Faulk, MBA; Kristen Vossler; Allison Goodrich; Tanner Campbell; Andy Lalka;  
Sarah Sibbel, MD; Micah Sinclair  
Children's Mercy Hospital, Kansas City, MO*

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## **ePoster 65**

**Outcomes of Displaced Forearm Fractures in Children Treated With Closed Reduction and Casting and a Loop and Sling Attached to the Cast Proximal to the Fracture Site**

*William Hennrikus, MD; Samuel Dressler  
Penn State College of Medicine, Hershey, PA*

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## **ePoster 66**

**Analysis of Adolescent Idiopathic Scoliosis Care Path and its Effectiveness**

*Swetha Sundar; Brittany Hudson; Ernest Young, MD; Ryan Goodwin, MD;  
David Gurd, MD; Thomas Kuivila, MD; Robert Ballock, MD  
Cleveland Clinic, Cleveland, Ohio*

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## **ePoster 67**

**Caregiver literacy in a pediatric orthopedic population: a cross-sectional study**

*Rachel Garfinkel; Ian Singleton; Jason Malone, DO; M'hamed Temkit;  
Mohan Belthur, MD  
Phoenix Children's Hospital, Phoenix, Arizona*

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## **ePoster 68**

**Liposomal Bupivacaine Decreases Opioid Consumption, Length of Stay and Hospital Costs After Pediatric Spine Surgery: A Retrospective Cohort Study**

*Robert Ballock, MD; John Seif; Ryan Goodwin, MD  
Cleveland Clinic, Cleveland, Ohio*

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## **ePoster 69**

### **Evaluation of Calibration Methods for Development of Skeletal Maturity Systems**

Ryan Furdock; Alex Benedick; FENG-CHANG LIN; Yajing Hao; James Sanders, MD; Daniel Cooperman, MD; Raymond Liu, MD

Rainbow Babies and Children's Hospital, Case Western Reserve University School of Medicine, Cleveland, Ohio

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## **ePoster 70**

### **Descriptive Epidemiology of Venous Thromboembolism after Pediatric Orthopaedic Surgery – A Multicenter Review**

Ryan Sanborn, BA; Danielle Cook; Jaime Denning, MD; Rachel Goldstein, MD; Benjamin Shore, MD, MPH, FRCSC; CORTICES Study Group

Boston Children's Hospital, Boston, MA

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## **ePoster 71**

### **Spine at Risk Program: 9-year Review of Novel Safety Screening Tool**

Amanda Galambas; Walter Kregel, MD; Cheryl Parker, PA-C; Ana Maria Kolenko MPH; Klane White, MD; Jennifer Bauer, MD

Seattle Children's Hospital, Seattle, WA

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## **ePoster 72**

### **Reducing Opioid Consumption in a Pediatric Orthopedic Practice**

Anthony Stans, MD; Courtney Baker, MD; A. Noelle Larson, MD; William Shaughnessy, MD; John Rutledge, PA-C; Dan Ubl; Elizabeth Habermann; Todd Milbrandt, MD

Mayo Clinic, Rochester, MN

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## **ePoster 73**

### **Earlier Bowel Movements and Decreased Length of Stay with Oral Methylsuxamethonium Following Posterior Spinal Fusion for Adolescent Idiopathic Scoliosis**

Adrian Lin; Andrew Costandi; Eugene Kim; David Skaggs, MD; Lindsay Andras, MD;

Neha Patel; Carl (Yuan-Feng) Lo; Kenneth Illingworth, MD

Children's Hospital Los Angeles, Los Angeles, CA

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## **ePoster 74**

### **Do Children's Hospitals Present Opportunities for Appropriate Disposal of Opioid Medications?**

Joseph Petfield; Anna Ptasinski; Arun Hariharan, MD; Margaret Baldwin

Nemours Al duPont Hospital for Children, Wilmington, DE

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## **ePoster 75**

### **Study Groups and POSNA: A Review of Podium Presentations from 2006-2020**

Hillary Mulvey; Mitchell Johnson; Andrew Parambath; Apurva Shah, MD;

Jason Anari, MD

Children's Hospital of Philadelphia, Philadelphia, PA

# ePOSTERS

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## ePoster 76

### High Volume Surgeons Have Better Surgical Outcomes and Lower Costs

Vishal Sarwahi, MBBS; Thomas Dowling; Jesse Galina; Yungtai Lo;

Terry Amaral, MD; Sayyida Hasan

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

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## ePoster 77

### Teaching Effective Management of Protective Equipment for Surgical Teams - Managing the COVID-10 Tempest

Craig Birch, MD; Donald Bae, MD; Patricia Miller, MS;

Donna Luff; Benjamin Shore, MD, MPH, FRCSC

Boston Childrens Hospital, Boston, MA

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## ePoster 78

### Patient Factors and Small Area Variations Impact Opioid Prescription after Surgical Treatment of Supracondylar Humerus Fractures

Nathan Markiewitz; Divya Talwar; Sachin Gupta; Apurva Shah, MD;

John (Jack) Flynn, MD

Children's Hospital of Philadelphia, Philadelphia, Pennsylvania

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## ePoster 79

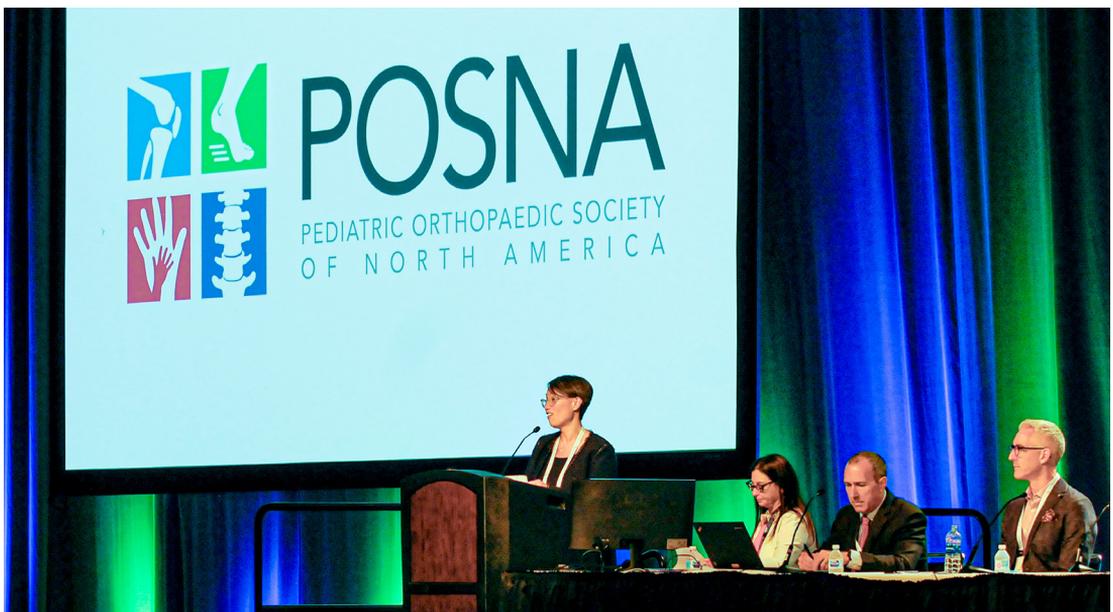
### Three-dimensional predictors of FAI disease progression in the contralateral hip

Lucas Fowler; John Clohisy, MD; Wahid Abu-Amer; Cecilia Pascual-Garrido;

Jeffrey Nepple, MD

Washington University School of Medicine, St. Louis, Missouri

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# RESEARCH GRANT ePOSTERS

POSNA research grant recipients are required to submit an ePoster at the conclusion of each grant cycle. The purpose of this presentation is to share the results of their research work and to highlight the types of research work supported by POSNA.

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## 2019 QSVI Research Grant

An Initiative to Increase Patient Safety During Pediatric Orthopedic Surgery Cases Requiring the Use of Fluoroscopy

*Mara Karamitopoulos, MD*

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## 2019 QSVI Research Grant

Improving GI Bundle Compliance for Pediatric Patients Undergoing Orthopaedic Surgery

*Julie Samora, MD*

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## 2019 Start Up Grant

Primary Cilia Alterations in the Hypothyroid Porcine Growth Plate

*Mark Adamczyk, MD*

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## 2019 Start Up Grant

Shared Decision Making in the Treatment of Scoliosis

*Juan Brito Campana, MD*

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## 2017 Registry Grant

A Prospective, International Hip Dysplasia Registry with Follow-up to Skeletal Maturity: An Analysis of Risk Factors, Screening Practices & Treatment Outcomes

*Kishore Mulpuri, MD*

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## 2019 Zimmer Biomet Spine Research Grant

Reliability of the AOSpine Classification System in Children

*Daniel Hedequist, MD*

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## 2019 Fall Micro Grant

Komfo Anokye Teaching Hospital Research Program

*Kellie Leitch, MD*

# RESEARCH GRANT ePOSTERS

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## 2019 Fall Micro Grant

The Effectiveness of Counseling Using Objective Monitoring Feedback on Compliance of Clubfoot Brace Wear

*Cynthia Nguyen, MD*

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## 2019 Fall Micro Grant

Top 10 Pediatric Sports Medicine Research Articles for Parents of Young Children

*Henry Ellis, MD*

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## 2019 Fall Micro Grant

Hip Surveillance Manual Outlining the Background & Treatment Algorithm for Primary Care Pediatric Physicians Managing Children with CP

*Sean Tabaie, MD*

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## 2019 Spring Micro Grant

Evaluation of Deferoxamine Impregnated Suture as a Deterrent to Surgical Site Infection in a Rat Model

*Anna Vergun, MD*

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## 2019 Spring Micro Grant

Barriers to Access Faced by Non-English Speaking Families of Children with Neuromuscular Condition or Cerebral Palsy: A Quality Improvement Project to Address the Disparity

*Mara Karamitopoulos, MD*

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## 2019 Spring Micro Grant

Female Initiative: Evaluation and Rehabilitation Care Excellence in Schools

*Corinna Franklin, MD*

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## 2019 Spring Micro Grant

Simulating a Mechanistic Data Driven Model of the Human Spine to Predict the Growth and Spinal Curve Progression in Adolescent Idiopathic Scoliosis

*John Sarwark, MD*

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## 2019 Spring Micro Grant

A Prospective Audit of Pain Management for Pediatric Orthopedic Patients after Discharge from Hospital

*Elaine Joughin, MD*

# RESEARCH GRANT ePOSTERS

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## 2019 Spring Micro Grant

Promoting Bone Health in Communities: Early Use of Calcium and Vitamin D Supplements

*Christen Russo, MD*

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## 2019 Spring Micro Grant

Sponsorship of Ponseti Course in Hanoi, Vietnam

*Maryse Bouchard, MD*

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## 2019 Spring Micro Grant

Training Clinical Examination Skills for Diagnosing Infants with Developmental Dysplasia of the Hip

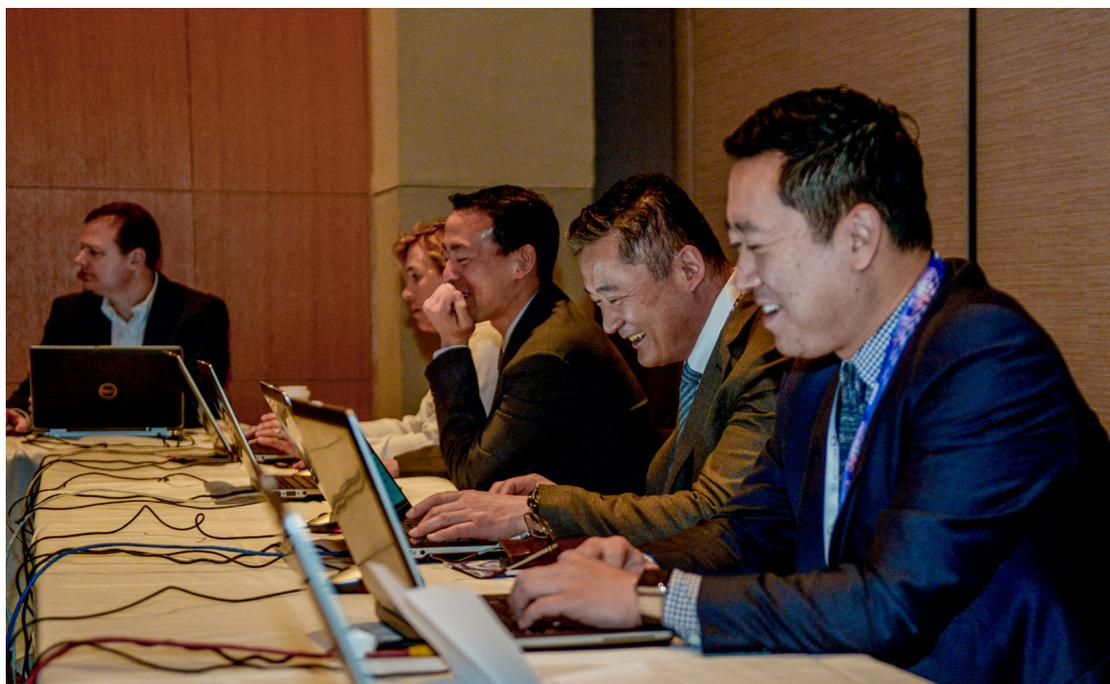
*Meredith Lazar-Antman, MD*

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## 2019 Spring Micro Grant

Post-operative Pain Scores and Opioid Use Following ACL Reconstruction with Quadriceps versus Hamstring Autograft in Adolescents and Young Adults

*Elizabeth Liotta, MD*



## 2020 POSNA

# RESEARCH GRANT WINNERS

### 2020 Kuo Memorial Research Award

*Apurva Shah, MD*

"Opioid vs. Non-opioid Analgesia in Pediatric Supracondylar Humerus Fractures"  
The Children's Hospital of Philadelphia

### 2020 Huene Memorial Research Award

*Theodore Ganley, MD*

"Tibial Spine Fractures Prospective Cohort Study"  
The Children's Hospital of Philadelphia

### 2020 St. Giles Young Investigator Research Award

*Neeraj Patel, MD*

"Anterolateral Ligament Reconstruction in Children: A Randomized, Controlled Trial"  
Lurie Children's Hospital, Chicago

### 2020 POSNA/Zimmer Biomet Spine Research Grant

*John Vorhies, MD*

"Erector Spinae Plane Catheters and Clinical Outcomes after Spinal Fusion"  
Stanford University

### 2020 Clinical Trial Planning Research Grant

*Firoz Miyanji, MD*

"Effect of Mix-Metal Instrumentation on Blood Metal Ion Levels in Scoliosis"  
University of British Columbia

### 2020 POSNA Start Up Research Grants

*Stefan Parent, MD*

"Lung Development & Congenital Spine Deformities: An In-vivo Ovine Model"  
CHU Sainte-Justine, Montreal

*Haluk Altiok, MD*

"The Effect of Knee Height Asymmetry on Gait Biomechanics"  
Shriners Hospital for Children, Chicago

### 2020 POSNA Directed Research Grants

*Peter Newton, MD*

"Post-Op Flexibility & Segmental Motion in Idiopathic Scoliosis—Anterior Spinal Growth Tethering vs. Posterior Spinal Fusion"  
Rady Children's Hospital, San Diego

*Michael Vitale, MD, MPH*

"Evaluation of Sagittal and Axial Parameters in Braced Adolescent Idiopathic Scoliosis Patient"  
Columbia University Medical Center, New York

## 2020 POSNA

# RESEARCH GRANT WINNERS

### 2020 POSNA Registry Grant

*Andrea Bauer, MD*

"GUPI: Growing Up with a Plexus Injury"  
Boston Children's Hospital

### 2020 POSNA Research Grants - Basic Research

*Jason Howard, MD*

"Muscle Stiffness in Cerebral Palsy: The Effect of Botulinum Toxin"  
Nemours/Alfred I duPont Hospital for Children

*Yinshi Ren, PhD; Harry Kim, MD, CoPI*

"Determining the Effect of Obesity on Necrotic Bone Healing in  
Legg-Calve-Perthes Disease"  
Texas Scottish Rite Hospital for Children, Dallas

*Jennifer Laine, MD*

"Development of a Minimally Invasive Model of Legg-Calve-Perthes Disease"  
Gillette Children's Specialty Healthcare, St. Paul, MN

### 2020 POSNA Research Grant—Clinical Research

*Kristen Tulchin-Francis, PhD*

"Outcomes of Amputation or Limb Reconstruction in Severe Fibular Deficiency"  
Texas Scottish Rite Hospital for Children, Dallas

### 2021 QSVI Challenge Projects

*Jason Malone, MD*

Opioid Prescription Reduction After Surgically Treated Supracondylar Humerus Fractures

*V. Salil Upasani, MD*

Quality Improvement: Orthopedic Urgent Care

*Karen Bovid, MD*

Assessment of an Electronic Medical Record Prompt to Consider Evaluation for Non-Accidental Trauma in Children Less than 2 Years of Age Presenting with Fracture

### 2020 AAP Section on Orthopaedics Award Winners

*Vaibhav Tadepalli, MD*

"Non-Accidental Trauma in Pediatric Elbow Fractures—Beware of Non-Ambulatory Elbow Fractures"

*Holly Conger, MD*

"Developmental Dysplasia of the Hip: Quantifying if Patients Read, Understand, and Act on Online Resources?"

*Scott Barnett, MD*

"Comparison of Long vs. Short Leg Casts for Distal Third Tibial Shaft Fractures in Children"

*Lydia McKeithan, MD*

"Platelet Dysfunction in Major Pediatric Scoliosis Surgery: A Cause of Common Surgical Bleeding Phenotypes"

# VIDEO ABSTRACTS

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## Video Abstract 1

### Transcapitellar pinning for proximal radius shaft fracture

*Barbara Minkowitz, Jennifer Ristic, Eytan Mendelow  
Morristown Medical Center, Morristown, NJ*

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## Video Abstract 2

### Open Reduction Internal Fixation of Displaced Pediatric Radial Neck Fractures using Intramedullary Nailing

*Kamil Amer, Michael Fields, Folorunsho Edobor-Osula  
Rutgers New Jersey Medical School, Newark, NJ*

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## Video Abstract 3

### Reconstruction of a Congenital Patellar Dislocation

*Lauren Hyer, David Westberry, Franklin Gettys  
Shriners Hospitals for Children, Greenville, Greenville, SC*

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## Video Abstract 4

### Patellar Tendon Imbrication for Correction of Crouch Gait

*Lauren Hyer, David Westberry, Jon Davids  
Shriners Hospitals for Children, Greenville, Greenville, SC*

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## Video Abstract 5

### Lateral Epicondyle Avulsion in a Skeletally Mature Adolescent

*Barbara Minkowitz, Jennifer Ristic, Alice Chu, Allie Davanzo, Kelsey Kaplowitz,  
Eytan Mendelow  
Morristown Medical Center, Morristown, NJ*

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## Video Abstract 6

### Tibial Spine/Eminence Fracture – Suture Fixation

*Indranil Kushare, R Mistovich, John Shilt, Aristides Cruz  
Texas Children's Hospital, Houston Texas*

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## Video Abstract 7

### Radial Neck Fractures: Metaizeau Intramedullary Technique

*Philip Nowicki  
Helen DeVos Children's Hospital, Grand Rapids, MI*

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## Video Abstract 8

### Waterproof Mehta Casting for Early Onset Scoliosis

*Todd Ritzman, Jaysson Brooks, Lorena Floccari, Ryan Fitzgerald  
Akron Children's Hospital, Akron, OH*

# VIDEO ABSTRACTS

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## Video Abstract 9

### The Metaizeau Technique For Displaced Pediatric Radial Neck Fractures

Jay Patel, Jeremy Hreha, Folorunsho Edobor-Osula

Rutgers-New Jersey Medical School, Newark, New Jersey

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## Video Abstract 10

### Pediatric Trigger Finger Release

Matthew Michel, Dominick Congiusta,

Folorunsho Edobor-Osula

Rutgers- New Jersey Medical School, Newark, New Jersey

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## Video Abstract 11

### Posterior Approach to Knee and Contracture Release for Arthrogyrosis

Brian Batko, Steven Rivero, Folorunsho Edobor-Osula

Rutgers New Jersey Medical School, Newark, NJ



# EXHIBITOR LISTING

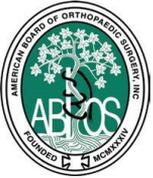
## 7D Surgical



7D Surgical develops advanced, cutting-edge optical and machine-vision technologies for surgical navigation to improve surgical workflow and patient care. The FLASH™ Navigation System utilizes technology that is similar to GPS navigation in self-driving vehicles to create a three-dimensional image for surgical navigation in just seconds, resulting in shorter and more efficient procedures. The technology uses only visible light, thus eliminating unnecessary intraoperative radiation exposure to the patient and hospital staff. 7D Surgical's FLASH Navigation System delivers profound improvements to surgical workflow and harnesses the true potential of image guidance - through fast, efficient, accurate, cost-effective, and radiation-free surgical navigation.

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## 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 Web-Based Longitudinal Assessment (ABOS WLA).

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## Allstate Medical



We are medical supply company, that, now serves hundreds of health care facilities nationwide steadily growing in medical equipment field with a vivid experience of 12 years, currently growing the relationships with Overseas and South American manufacturers.

We offer a vast amount of Healthcare, Industrial, and Scientific supplies and equipment. Our up-to-date industrial knowledge enables us to cater to your needs. Every one of our clients can trust that they are receiving our best prices upfront. We work in the health care industry, just like you. We take the time to get to know you, and we always keep your best interests in mind when adding and adjusting products in our catalog.

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## AquaCast Liner



Now more than ever with COVID-19, AquaCast® Liner's waterproof & breathable cast padding is trusted by leading pediatric hospitals and clinics as a proven option to improve hygiene and reduce unscheduled visits to your facility for costly recasts. Our innovative solutions are easy to use and enable patients to wash their hands, shower, swim and exercise. Our remodeled Hipster® pantaloons, used for DDH, femur fractures and other body casts, make application quicker and easier, reducing skin excoriation, and improving patient satisfaction— while simultaneously lowering overall costs. AquaCast is the standard of care in modern casting.

# EXHIBITOR LISTING CONTINUED

## C-Pro Direct



C-Pro Direct exists to support medical professionals, parents and children affected by paediatric orthopaedic conditions of the lower limbs.

C-Pro Direct designs, manufactures and sells various products to help parents and children better manage a variety of conditions affecting the lower limbs, particularly conditions which affect the ability of the foot to abduct and dorsiflex.

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## DePuy Synthes



DePuy Synthes, part of the Johnson & Johnson Medical Devices Companies, provides one of the most comprehensive orthopaedics portfolios in the world.

DePuy Synthes solutions, in specialties including joint reconstruction, trauma, craniomaxillofacial, spinal surgery and sports medicine, are designed to advance patient care while delivering clinical and economic value to health care systems worldwide. For more information, visit [www.depuysynthes.com](http://www.depuysynthes.com).

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## Elsevier



Elsevier is a world-leading provider of information solutions that enhance the performance of science, health, and technology professionals, empowering them to make better decisions, and deliver better care.

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## Globus Medical



Globus Medical, a leading musculoskeletal solutions company, is driving significant technological advancements across a complete suite of products ranging from spinal, trauma and orthopedics therapies to imaging, navigation and robotics. Founded in 2003, Globus has become one of the fastest growing companies 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.

# EXHIBITOR LISTING CONTINUED

## MD Orthopaedics



MD Orthopaedics, based in Wayland, Iowa, is an orthopedic device company focused on design, manufacture, assembly and distribution of Ponseti Method clubfoot products. Founded in 2004 by John Mitchell, MD Orthopaedics is advancing footwear devices for non-surgical clubfoot treatment and is an industry leader in the production of ankle and foot orthotics in North

America. MD Orthopaedics works closely with the orthopedic and prosthetic community and aspires to be continually innovative to offer the best possible products for the teaching, training, and implementation of the Ponseti Method of Clubfoot Treatment.

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## Medtronic



Medtronic Cranial and Spinal Technologies (CST), the market leader in spinal implants, robotics, and navigation is redefining cranial and spinal procedures to reduce variability and improve outcomes with the goal of restoring long-term

quality of life for more patients. Medtronic is the first company to offer an integrated solution that includes artificial intelligence-driven surgical planning, personalized spinal implants, and robotic-assisted surgical delivery to make patient care more customized.

As a global leader in medical technology, we improve the lives and health of millions of people each year—with our innovative therapies, services, and solutions. Learn how we're taking healthcare Further, Together at [medtronic.com](https://www.medtronic.com).

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## MHE Research Foundation



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

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## NuVasive



NuVasive (NASDAQ: NUVA) is the leader in spine technology innovation, with a mission to transform surgery, advance care, and change lives. The

Company's less-invasive, procedurally integrated surgical solutions are designed to deliver reproducible and clinically proven outcomes. The Company's comprehensive procedural portfolio includes surgical access instruments, spinal implants, fixation systems, biologics, software for surgical planning, navigation and imaging solutions, magnetically adjustable implant systems for spine and orthopedics, and intraoperative neuromonitoring technology and service offerings. With more than \$1 billion in net sales, NuVasive has approximately 2,700 employees and operates in more than 50 countries serving surgeons, hospitals, and patients. For more information, please visit [www.nuvasive.com](https://www.nuvasive.com).

# EXHIBITOR LISTING CONTINUED

## nView Medical



nView medical, based in Salt Lake City, UT, is a startup whose mission is to make surgery safer, faster, and consistently accurate. nView develops imaging systems, bringing breakthrough AI solutions for image creation, image processing, and image visualization to surgery. nView medical backers include; the National Science Foundation (NSF), the National Institutes of Health (NIH), the State Of Utah, the National Consortium for Pediatric Device Innovation, MedTech Innovator, Dr. Kevin Foley, MD, and Fusion Fund.

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## OrthoPediatrics Corp.



Founded in 2006, OrthoPediatrics is an orthopedic company focused exclusively on advancing the field of pediatric orthopedics. As such it has developed the most comprehensive product offering to the pediatric orthopedic market to improve the lives of children with orthopedic conditions. OrthoPediatrics currently markets 35 surgical systems that serve three of the largest categories within the pediatric orthopedic market. This product offering spans trauma and 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 44 countries outside the United States. For more information, please visit [www.orthopediatrics.com](http://www.orthopediatrics.com).

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## Orthofix Medical Inc.



Orthofix Medical Inc. is a global medical device and biologics company with a spine and orthopaedics focus. The Company's mission is to deliver innovative, quality-driven solutions as we partner with health care professionals to improve patients' lives.

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## OrthoHeal



OrthoHeal is an Indo-American startup founded in 2015 with a vision to revolutionize the way fractures are treated. With initial hard work of 3 years in R & D, OrthoHeal invented world's most comfortable and absolute washable orthopedic immobilizer, FlexiOH, which can be used to immobilize for treatment of musculoskeletal injuries. So far we have reached across 35+ countries across the globe since the launch of FlexiOH in late 2019. FlexiOH is certified and approved in majorities of Medical device regulatory bodies i.e. US FDA, CE, CDSCO, SFDA, K FDA, TAIWAN FDA, Thai FDA to list few. FlexiOH is well accepted clinically and Patients are liking it for ultimate comfort it gives throughout treatment.

# EXHIBITOR LISTING CONTINUED

## Pacira BioSciences, Inc.

**NON-OPIOID  
EXPAREL®**  
(bupivacaine liposome injectable suspension)

Pacira BioSciences, Inc. (Nasdaq: PCRX) is the industry leader in its commitment to non-opioid pain management and regenerative health solutions to improve patients' journeys along the neural pain pathway. The company's long-acting local analgesic,

EXPAREL® (bupivacaine liposome injectable suspension) was commercially launched in the United States in April 2012. EXPAREL utilizes DepoFoam®, a unique and proprietary product delivery technology that encapsulates drugs without altering their molecular structure, and releases them over a desired period of time. In April 2019, Pacira acquired the iovera° system, a handheld cryoanalgesia device used to deliver precise, controlled doses of cold temperature only to targeted nerves. To learn more about Pacira, including the corporate mission to reduce overreliance on opioids, visit [www.pacira.com](http://www.pacira.com).

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## Pega Medical



For more than two decades, Pega Medical has been offering innovative deformity correction solutions in Pediatric Orthopedics. Pega's family of IM Nails (Fassier-Duval Telescopic Rod, SLIM, GAP Endo-Exo Medullary

Systems) are specifically designed for small bones, often seen with metabolic and genetic diseases. 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. The LolliPOP modular hip plating system is our latest innovation, as part of forward thinking technologies developed in collaboration with orthopedic surgeons from around the world.

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## Stryker

**stryker**

We are a global leader of complex spine and minimally invasive solutions focused on achieving three-dimensional Total Body Balance.

Our spine business unit offers one of the most comprehensive and diverse product portfolios, including our leading 3D-printed technologies, enabling surgeons to provide their patients with treatment options.

Our products include implants, instruments, and biologic solutions for the cervical, thoracic and lumbar spine.

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## 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.

# DALLAS GETTING AROUND

*From trains and buses to streetcars and trolleys, Dallas gets you moving with your choice of easy transportation options. With more than 5,000 hotel rooms with direct light rail access Downtown, getting around Dallas has never been quicker.*



## DALLAS AREA RAPID TRANSIT (DART) LIGHT RAIL

Daily 4 - 12 a.m. | \$3 half-day pass/\$6 day pass

DART is the longest light rail system in the country with over 90 miles of rail lines.

### WHERE CAN YOU GO?

DART connects you to most of Dallas' entertainment districts, Kay Bailey Hutchison Convention Center Dallas, American Airlines Center, DFW International and Love Field airports, as well as Trinity Railway Express (TRE).

## TRINITY RAIL EXPRESS (TRE)

Mon-Sat 4 - 12 a.m. | \$5-12 day pass

TRE is a rail service provided jointly by DART and the Fort Worth Transportation Authority.

### WHERE CAN YOU GO?

TRE connects Dallas and Fort Worth and offers free Wi-Fi. Popular Fort Worth attractions include Sundance Square, Stockyards and the Cultural District.



### GET YOUR TICKETS ON GOPASS

Get up-to-date train and bus schedules and purchase passes with GoPass, a free mobile ticketing app. [DART.org/gopass](http://DART.org/gopass)

## FREE RIDES

### MCKINNEY AVENUE TROLLEY

Restored vintage trolley cars ride along McKinney Avenue and connect Uptown and Downtown.

- Mon-Thurs 7 a.m. - 10 p.m.
- Fri 7 - 12 a.m. / Sat 10 - 12 a.m.
- Sun and holidays 10 a.m. - 10 p.m.

### Where can you go?

Downtown, West Village, Uptown, Dallas Arts District, Klyde Warren Park

### DALLAS STREETCAR

Dallas Streetcar connects Oak Cliff and Bishop Arts to Dallas Union Station in Downtown Dallas Daily 5:30 - 12 a.m.

- Streetcar runs every 20 minutes

### Where can you go?

Reunion District, Kay Bailey Hutchison Convention Center Dallas, Oak Cliff, Bishop Arts District

## GET GOING NOW

Dallas has you covered with options across the board. Log into the Uber or Lyft app on your smartphone, or grab Efrogs or the newcomer Wingz, for a ride. Taxis line up outside every major hotel so getting to your destination is easy.

VISIT **DALLAS**  
BIG THINGS HAPPEN HERE

[VisitDallas.com](http://VisitDallas.com)

# DALLAS THINGS TO SEE & DO

*Dallas is a city of many sides. Here, Southern meets modern, legacy meets luxury and heritage meets hospitality. Come explore it all!*



GeO-Deck



Dallas Zoo



George W. Bush Presidential Library & Museum

## CITYPASS ATTRACTIONS

Explore the city with the Dallas CityPASS®, a ticket booklet that saves you 39 percent off admission to four top attractions in Dallas, including the **Perot Museum of Nature and Science**, **Reunion Tower GeO-Deck**, **The Sixth Floor Museum at Dealey Plaza**, and **Dallas Zoo** or the **George W. Bush Presidential Library and Museum**. Even better, the Dallas CityPASS® saves you time with expedited entry at many locations. [VisitDallas.com/CityPASS](http://VisitDallas.com/CityPASS)

## PEROT MUSEUM OF NATURE & SCIENCE

The **Perot Museum of Nature & Science**, home to 11 permanent exhibit halls and various traveling exhibitions throughout the year, delivers hours of fun for children, adults and life-long learners. Catch a view of Downtown Dallas from the museum's glass-encased escalator as you go to the top floor.

2201 N. Field St., Dallas 75201 | 214.428.5555  
[PerotMuseum.org](http://PerotMuseum.org)

## SIXTH FLOOR MUSEUM

The **Sixth Floor Museum at Dealey Plaza** chronicles the life and legacy of President John F. Kennedy with documentary films, photographs and artifacts. Walk through a timeline of Kennedy's life, presidency and the moments of Nov. 22, 1963, as the entire nation stood still.

411 Elm St., Dallas 75201 | 214.747.6660 | [jfk.org](http://jfk.org)

## GEORGE W. BUSH PRESIDENTIAL LIBRARY & MUSEUM

The **George W. Bush Presidential Library & Museum** holds the largest electronic records collection in the entire presidential library system with more than 200 million email messages and nearly four million photographs. Visit Freedom Hall, a massive, one-of-a-kind high-definition screen showing multimedia clips blending art, history and entertainment. Don't forget to take a photo in the full-sized Oval Office replica.

2943 SMU Blvd., Dallas 75205 | 214.346.1650  
[GeorgeWBushLibrary.smu.edu](http://GeorgeWBushLibrary.smu.edu)

## DALLAS ZOO

Named one of the "10 Best Zoos" by *USA Today*, the **Dallas Zoo** is the largest zoological experience in Texas with a 106-acre park, thousands of animals and an education department that offers programs for all ages. Visit the Giants of the Savanna exhibit, an 11-acre safari experience where visitors can get up close and personal with giraffes, elephants, lions, cheetahs and many other African species.

650 S. RL Thornton Frwy, Dallas 75203  
469.554.7500 | [DallasZoo.com](http://DallasZoo.com)

## GEO-DECK AT REUNION TOWER

See Dallas from 470 feet in the air at one of Dallas' most recognized structures. Enjoy the view and interact with Halo, the deck's digital information system, to learn about Dallas, its landmarks, Reunion Tower's light shows, milestone events in the city and more.

300 Reunion Blvd. East, Dallas 75207  
214.712.7040 | [ReunionTower.com](http://ReunionTower.com)

VISIT **DALLAS**  
BIG THINGS HAPPEN HERE

[VisitDallas.com](http://VisitDallas.com)

# DALLAS DINING MAP



## DISTANCE FROM KAY BAILEY HUTCHISON CONVENTION CENTER DALLAS

<span style="color: green;">■</span> Cedars/Southside	4 Blocks	<span style="color: grey;">■</span> Downtown	1 Block	<span style="color: blue;">■</span> Uptown/West Village	2 Miles
<span style="color: orange;">■</span> Dallas Arts District	17 Blocks	<span style="color: brown;">■</span> Farmers Market	6 Blocks	<span style="color: purple;">■</span> Victory Park	12 Blocks
<span style="color: yellow;">■</span> Deep Ellum	1.5 Miles	<span style="color: lightgreen;">■</span> Harwood	16 Blocks	<span style="color: yellow;">■</span> West End	8 Blocks
<span style="color: pink;">■</span> Design District	3 Miles	<span style="color: lightblue;">■</span> Trinity Groves (inset)	2.5 Miles		

# ANTI-TRUST 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.

# ANTI-TRUST POLICY

## 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.









## WIFI

HILTON MEETINGS NETWORK

PASSWORD: POSNA2021

## FUTURE ANNUAL MEETINGS

May 11–14, 2022  
Vancouver, BC, Canada

April 26–29, 2023  
Nashville, Tennessee

### EPOSNA

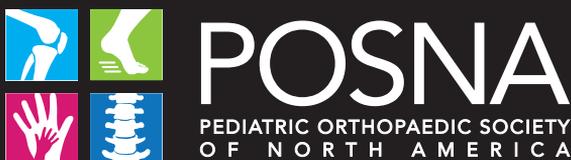
May 7-11, 2024  
Washington, D.C.

## FUTURE IPOS® MEETINGS

December 7 - 11, 2021  
Orlando, FL

December 6 - 10, 2022  
Orlando, FL

December 5 - 9, 2023  
Orlando, FL



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