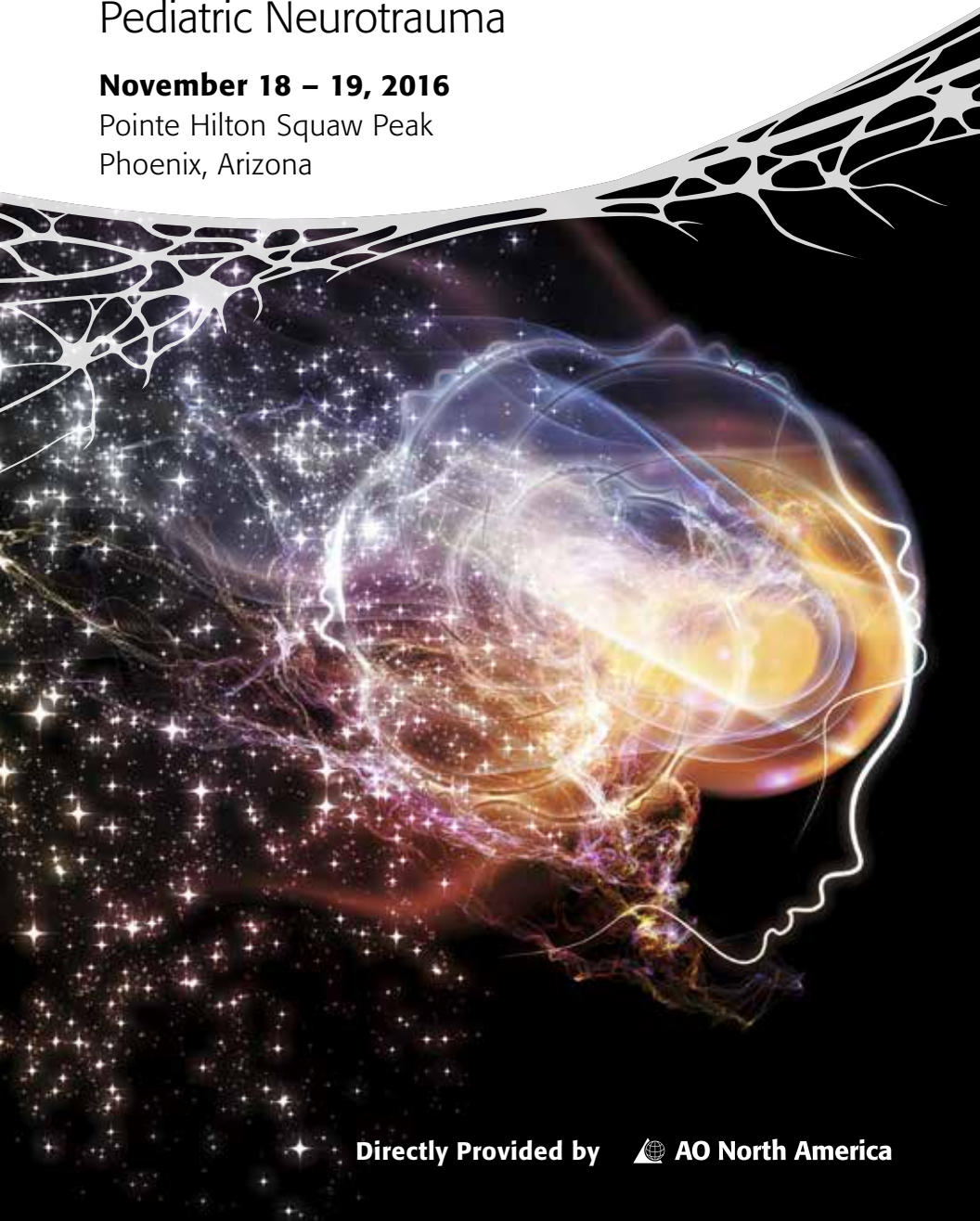


Preliminary Program

# AONeuro Course — Pediatric Neurotrauma

**November 18 – 19, 2016**

Pointe Hilton Squaw Peak  
Phoenix, Arizona



# Welcome

Welcome to AONeuro! In AO North America’s continued commitment to surgeon education:

It is our distinct pleasure to announce a special educational offering for Neurotrauma which represents a collaborative effort between AOSpine North America and AONeuro North America.

This unique course will provide participants with an outstanding opportunity to advance their knowledge and surgical skills in brain, spine and spinal cord trauma through didactic lectures and case-based discussions. Faculty selection includes recognized Neurotrauma leaders who are eager to share their knowledge and experience with you. We hope that you will consider registering for this course and sharing this opportunity with your colleagues.

## Course Chairpersons

P. David Adelson, MD, FACS, FAAP, FAANS

Sandra Buttram, MD

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## Message from the Program Coordinator

On behalf of AO Foundation and your local and international faculty, I would like to welcome you to this AONeuro educational event.

AONeuro is a unique worldwide multi-specialty community that includes cranial Neurosurgeons, Neurologists, Neurointensivists, Neuro Anesthesiologists, Neuro Traumatologists and Neurological professionals who are involved in cranial neurological trauma, cranial oncologic and cerebrovascular surgery, cranial reconstruction and cranial congenital anomalies surgery.

Our organization creates a forum for specialists from all over the world who have common interests and enthusiasm in these fields. It is our goal to encourage and inspire residents, fellows, and experienced practitioners by means of education, academic stimulation, instruction and international communication to pursue more fulfilling, rewarding and productive careers in these fields.

Education has always been a major pillar in the AO Foundation. Currently, more than 46,000 surgeons participate in over 750 AO educational events worldwide per year. AONeuro is committed to communicating the latest advances, treatment information, protocols in patient management, equipment and new developments as we strive to improve your educational experience by providing you education at the forefront of your specialty.

Your cranial neurological colleagues are working diligently to bring you the latest in cranial neurological education, and most specifically have initiated programs in the area of traumatic brain injury. Cranial AO Neurosurgeons collaborate with their AOSpine colleagues to bring you the latest developments in combined brain and spinal cord trauma. For years, cranial neurological surgeons have cooperated with craniomaxillofacial colleagues in the areas of facial and cranial trauma, congenital craniofacial anomalies, and skull base trauma and surgery to provide the multidisciplinary perspective necessary to manage these areas.

AONeuro is an initiative of the AO Foundation, established to learn the needs and educational structure which cranial neurosurgeons require to improve their worldwide educational efforts. AONeuro cooperates with AOSpine and AOCMF (Craniomaxillofacial) to provide multidisciplinary course education, and seeks to add a cranial dimension to existing AO Education in the present specialty areas of Orthopedics, Spine, Craniomaxillofacial and Veterinary surgery.

We hope that your experience with us over the next few days will result in the acquisition of new knowledge, skills and understanding that can directly translate into improved care for your patients.

We also hope that, as a result of this educational event, you will develop a longer term relationship with AOSpine and AONeuro, become a member of our communities, take advantage of our website [www.AOFoundation.org](http://www.AOFoundation.org), explore our comprehensive online medical reference tool and phone app AO Surgery Reference ([www.AOSurgery.org](http://www.AOSurgery.org)), take up AO Membership, and participate in AONeuro and AOSpine courses and educational opportunities. You may also even wish to acquaint yourself with AOCMF educational events in the areas of congenital anomalies surgery, craniofacial trauma and skull base surgery.

Make these organizations yours by bringing your opinions, ideas and contributions. Enjoy the camaraderie of our unique network, and help us maintain and expand the preeminent educational position that the AO Foundation enjoys worldwide.

Yours sincerely,



Paul Manson, MD  
Coordinator, AONeuro Initiative

## CME Mission Statement

The Continuing Medical Education (CME) mission of AO North America (AONA®) is to provide comprehensive multidisciplinary needs-based education to surgeons, fellows, and residents in the specialties of orthopedic, hand, craniomaxillofacial, spine, neurosurgery, and veterinary surgery in the areas of trauma (i.e., operative reduction and fixation), degenerative disorders, deformities, tumors, and reconstruction.

Expected results of AONA's CME activities for surgeons, fellows, and residents are to:

- Increase their knowledge base and surgical skill level
- Improve competence by applying advances in knowledge of patient care in the areas of trauma, degenerative disorders, deformities, tumors, and reconstructive surgical techniques
- Address practice performance gaps by improving management of all aspects of traumatic injuries and disorders (i.e., pre-operative planning to post-operative care)





## Course Overview

Clinical and surgical management of traumatic cerebral, maxillofacial, spine and spinal cord injuries differs greatly in children as compared to adults. Recognizing the clinically relevant pathophysiology underlying these injuries in children is key to developing a successful treatment plan. Aggressive clinical management with meticulous adherence to clinical algorithms based on evidence can improve outcomes and decrease complications in these patients.

The AO Pediatric Neurotrauma Course is designed specifically for residents to provide an in-depth understanding of the theoretical and practical principles for neurotrauma and neurocritical care for brain, spine and spinal cord injuries in children. Acute care, clinical and surgical management of these injuries in children will be addressed through lectures, case presentations, and practical exercises. Treatment options for maxillofacial and cranial reconstruction techniques following trauma and surgical decompression, as well as how to promote good outcomes with decreased complications in the pediatric neurotrauma patient, will be discussed.

## Target Audience

This course is primarily designed for surgeons in training in the field of Neurosurgery. Practicing surgeons may also find this course beneficial.

## Learner Objectives

At the conclusion of this Course, the participant should be able to:

- Recognize the clinically relevant pathophysiology underlying traumatic brain, spine and spinal cord injuries in children
- Identify the indications for measuring intracranial pressure in pediatric patients
- Differentiate between the treatment of a pediatric spinal cord trauma patient and an adult patient
- Assess the strengths and limitations of the literature and current management guidelines in directing treatment of pediatric neurotrauma
- Analyze the utility and limitations of currently available neurological monitoring systems
- Identify indications and opportunities for developing personalized individualized treatment modalities for TBI and spinal cord injuries in children
- Formulate a plan for the acute care and management of the pediatric neurotrauma patient
- Describe how aggressive management of cranial reconstruction following trauma and surgical decompression can improve outcomes and decrease complications

## Accreditation



AO North America is accredited by the Accreditation Council for Continuing Medical Education to provide continuing medical education for physicians.

AONA has been resurveyed by the Accreditation Council for Continuing Medical Education (ACCME) and awarded **Accreditation with Commendation**.

## Designation Statement

AO North America designates this **live** educational activity for a maximum of 13.5 *AMA PRA Category 1 Credits™*. Physicians should claim only the credit commensurate with the extent of their participation in the activity.

### For Canadian Based Physicians Attending AONA Courses

All live conferences or live courses held outside of Canada can be reported as accredited group learning activities under Section 1 of the MOC Program if they are developed by a university, academy, college, academic institution or physician organization.

Courses sponsored by AO North America meet the criteria of the Royal College of Physicians and Surgeons for accredited group learning activities.

## Faculty

### Course Chairpersons

P. David Adelson, MD, FACS, FAAP, FAANS

Director, Barrow Neurological Institute at  
Phoenix Children's Hospital

Chief, Pediatric Neurosurgery

Diane and Bruce Halle Endowed Chair for

Pediatric Neurosciences

Professor and Chief, Neurological Surgery,

Department of Child Health, University of Arizona

College of Medicine – Phoenix

Professor, Mayo Clinic

Adjunct Professor Ira A. Fulton School of Biological and

Health Systems Engineering, Arizona State University

Phoenix, Arizona

Sandra Buttram, MD

Assistant Professor

Department of Child Health

University of Arizona College of Medicine – Phoenix

Phoenix, Arizona

### Education Advisor

Paul Matz, MD

Partner

Brain and Spine Center

St. Luke's Hospital

Progress West Healthcare

Missouri Baptist Medical Center

Chesterfield, Missouri

### Faculty

Douglas Brockmeyer, MD

Professor of Neurosurgery

Chief of Pediatric Neurosurgery

University of Utah Medical Center

Primary Children's Hospital

Salt Lake City, Utah

Christopher Giza, MD

Professor

Pediatric Neurology & Neurosurgery

Director, UCLA Steve Tisch BrainSPORT Program

Medical Director, Operation MEND –

Wounded Warrior Project for mild TBI

Interdepartmental Programs for Neuroscience &

Biomedical Engineering

Los Angeles, California

Gerald Grant, MD

Associate Professor

Neurosurgery

Stanford University

Stanford, California

Paul Liu, MD

Assistant Professor of Pediatrics

University of Arizona – Phoenix

College of Medicine

Phoenix, Arizona

Andres M. Rubiano, MD, PhD Candidate

Professor

Neurosciences & Neurosurgery

Director of Neurotrauma Research

Neurosciences Institute

El Bosque University

Bogota, Colombia

Nicholas Theodore, MD, FACS

Chief, Spine Section

Director, Neurotrauma Program

Clinical Professor of Surgery

Barrow Brain and Spine

Phoenix, Arizona

*Faculty list subject to change.*

## Preliminary Program

### Friday, November 18, 2016

| Time                 | Agenda Item                                                                |
|----------------------|----------------------------------------------------------------------------|
| 08:45 – 09:00        | Welcome                                                                    |
| 09:00 – 09:30        | Pediatric Traumatic Brain Injury: Epidemiology and Overview of the Problem |
| 09:30 – 10:15        | Neurobiology of Pediatric Traumatic Brain Injury                           |
| <b>10:15 – 10:45</b> | <b>Coffee Break</b>                                                        |
| 10:45 – 11:15        | Neuroimaging in Pediatric Traumatic Brain Injury                           |
| 11:15 – 12:00        | Pediatric Neurocritical Care for Traumatic Brain Injury                    |
| <b>12:00 – 13:30</b> | <b>Lunch</b>                                                               |
| 13:30 – 14:00        | Pediatric Multimodal Monitoring                                            |
| <b>14:00 – 14:05</b> | <b>Travel to Lab</b>                                                       |
| <b>14:05 – 14:50</b> | <b>Hands On Workshop Station #1:</b><br>Neurocritical Care Monitoring      |
| <b>14:50 – 15:05</b> | <b>Hands On Workshop Station #2:</b><br>Cranial Reconstruction             |
| <b>15:05 – 15:20</b> | <b>Coffee Break / Travel to Lecture Hall</b>                               |
| 15:20 – 16:05        | Concussion in Children                                                     |
| 16:05 – 16:35        | Hydrocephalus and Shunting                                                 |
| <b>16:35 – 17:20</b> | <b>Case Presentations:</b> Pediatric Traumatic Brain Injury                |
| 17:20 – 17:35        | Questions                                                                  |
| <b>17:35</b>         | <b>Adjourn for the Day</b>                                                 |



## Preliminary Program

### Saturday, November 19, 2016

| Time                 | Agenda Item                                                            |
|----------------------|------------------------------------------------------------------------|
| 09:00 – 09:45        | Genomics, Proteomics and Biomarkers in Pediatric Neurotrauma           |
| 09:45 – 10:15        | Clinical Trials in Pediatric Neurotrauma                               |
| <b>10:15 – 10:45</b> | <b>Coffee Break</b>                                                    |
| 10:45 – 11:30        | Pediatric Spinal Cord Injury                                           |
| 11:30 – 12:15        | Pediatric Thoracolumbar Spinal Column Injury                           |
| <b>12:15 – 13:30</b> | <b>Lunch</b>                                                           |
| 13:30 – 14:15        | Pediatric Cervical Spine Injury                                        |
| <b>14:15 – 14:20</b> | <b>Travel to Lab</b>                                                   |
| <b>14:20 – 15:05</b> | <b>Hands On Workshop Station #3:</b><br>Cervical Plating               |
| <b>15:05 – 15:50</b> | <b>Hands On Workshop Station #4:</b><br>Pedicule Screw Fixation        |
| <b>15:50 – 16:05</b> | <b>Coffee Break / Travel to Lecture Hall</b>                           |
| 16:05 – 16:50        | Neurotrauma and Neurocritical<br>Care in Resource Poor<br>Environments |
| <b>16:50 – 17:35</b> | <b>Case Presentations:</b><br>Pediatric Spine Trauma                   |
| 17:35 – 17:50        | Questions                                                              |
| 17:50 – 18:00        | Closing                                                                |
| <b>18:00</b>         | <b>Adjourn</b>                                                         |

*Preliminary program  
subject to modification.*



## Presentation Information

### Faculty Disclosure

It is the policy of AO North America to abide by the Accreditation Council for Continuing Medical Education Standards for Commercial Support. Standard 2: "Disclosures Relevant to Potential Commercial Bias and Relevant Financial Relationships of Those with Control over CME Content", requires all planners, including course directors, chairs, and faculty, involved in the development of CME content to disclose their relevant financial relationships prior to participating in the activity. Relevant financial relationships will be disclosed to the activity audience. The intent of the disclosure is not to prevent faculty with relevant financial or other relationships from teaching, but to provide participants with information that might be of importance to their evaluation of content. All potential conflicts of interest have been resolved prior to the commencement of this activity.

### Conflict of Interest Resolution Statement

When individuals in a position to control or influence the development of the content have reported financial relationships with one or more commercial interests, AO North America utilizes a process to identify and resolve potential conflicts to ensure that the content presented is free of commercial bias.

### Off-Label / Investigational / Experimental Discussions

Some medical devices used for teaching purposes and/or discussed in AO North America's educational activities may have been cleared by the FDA for specific uses only or may not yet be approved for any purpose. Faculty may discuss off-label, investigational, or experimental uses of products/devices in CME certified educational activities. Faculty have been advised that all recommendations involving clinical medicine in this CME activity are based on evidence that is accepted within the profession of medicine as adequate justification for their indications and contraindications in the care of patients. All scientific research referred to, reported or used in this CME activity in support or justification of a patient care recommendation conforms to the generally accepted standards of experimental design, data collection and analysis.

### Liability Statement

AO North America faculty and staff assume no personal liability for the techniques or the use of any equipment and accessories used for teaching purposes in the laboratory. The certificate provided pertains only to the participants' completion of the course and does not, in any way, attest to the proficiency of the participants' clinical experience.

### AONA Disclaimer

AONA does not endorse nor promote the use of any product/device of commercial entities. Equipment used in this course is for teaching purposes only with the intent to enhance the learning experience.

## Course Tuition and Registration

**Tuition:** The tuition for this course has been waived for residents and fellows. The fee for attending surgeons is \$400.00. Cancellation of your registration must be received 2 weeks prior to the start of the course otherwise a cancellation fee of \$200 will be charged to the credit card on file with AONA Customer Service.

Laboratory materials, breakfasts, coffee breaks and lunch will be provided.

Registration is available online only at [www.aona.org](http://www.aona.org)

**We encourage early registration, as seating is limited.**

Upon receipt of your online registration you will be sent via email a confirmation of your registration in the Course, along with hotel and travel information to assist you in making your arrangements.

**PLEASE NOTE:** Registration deadline is **October 28, 2016.**

### **ADA Statement**

AO North America fully intends to comply with the legal requirements of the Americans with Disabilities Act. If any registrant is in need of accommodation, please do not hesitate to submit a written request at least one month prior to this activity.

**Until an email confirmation is received, please do not consider yourself registered in this Course.**

### **For Information:**

Contact AONA Customer Service Department

Phone: (800) 769-1391

(610) 695-2459

Fax: (610) 695-2420

Email: [customerservice@aona.org](mailto:customerservice@aona.org)



## Hotel and Travel

### North American Resident Hotel Accommodations:

North American Residents and Fellows traveling from out-of-town (distance greater than 60 miles) will be provided with a standard hotel room for 2 nights (Thursday and Friday). Upon check-in at the hotel, you will be required to provide a credit card to cover individual incidentals. Please complete the reservation information during registration at [www.aona.org](http://www.aona.org). If you register for the course but do not attend, your credit card will be charged one night's hotel room rate plus tax. In the event you do not utilize your hotel room for all nights reserved, and AO North America incurs a "no-show" fee for your reservation, your credit card, on file with customer service, will be charged.

### All International Participants and North America Attending Surgeon Hotel Accommodations and Travel:

All International Participants and North American Attending Surgeons' hotel reservations are the responsibility of the individual registrant. If you have not done so, please make your reservation with the hotel as soon as possible as the room block tends to fill up quickly. Be sure to indicate that you are attending the "AO North America Course" when making your reservation to ensure that you receive the group discount rate that has been negotiated per night (plus applicable taxes and fees) for a 2 night stay. This group discount rate will be available until one month before the course date or until the room block fills (whichever comes first).

Check-in time is 4:00 pm and check-out time is 11:00 am.

### Hotel Site:

Pointe Hilton Squaw Peak Resort  
7677 North 16th Street  
Phoenix AZ 85020  
[www.PointeHiltonSquawPeak.com](http://www.PointeHiltonSquawPeak.com)  
Reservations 602-997-2626

### Hotel Concessions:

While at the Pointe Hilton Squaw Peak Resort, you will enjoy:

- Use of the Tocasierra Fitness Center for up to two guests.
- Complimentary wi-fi for surfing or steaming, not downloading.

### Air Transportation:

AAA Travel is AO North America's preferred travel agent. You may wish to contact AAA Travel (800-259-4023 FREE) to make your flight arrangements. Please refer to code N16US4013 when making your reservations.

### Transportation and Travel:

The Pointe Hilton Squaw Peak Resort is located approximately 20 minutes from the Sky Harbor Airport in Phoenix, Arizona. It is approximately 10 miles from the airport.

ExecuCar, the resort's preferred car service, is a private black car service that offers luxury transportation at special fares offered to resort guests. Advance reservations from the airport are suggested and can be confirmed by contacting [www.execucar.com](http://www.execucar.com) or 800-291-9434. Without advance reservations you may request a vehicle upon arrival by calling ExecuCar Dispatch at 602-232-4606. Service is based on availability.

## Sign up for the AONeuro Newsletter



<http://tiny.cc/27189x>



Visit the AONeuro  
Website for recorded  
webinars, lectures  
and much more ...

**[www.aoneuro.org](http://www.aoneuro.org)**



## Membership

Join the leading global community of spine surgeons

### AOSpine community

AOSpine is the leading global academic community for innovative education and research in spine care, inspiring lifelong learning and improving patients' lives.

### Education and Career Development



Online Education  
– Videos  
– Webinars  
– Webcasts



Educational Events  
Special Discounts



Fellowships  
Mentorships



CaseBase online

### Information and Networking



Member Directory



AOSpine Website



Newsletter



AOSpine News App

### AOSpine Publications



Global Spine Journal  
Evidence-Based Spine-Care Journal



Books and e-books  
Discounts

### Online Journals (Membership Plus)



OVID online journals  
– Spine  
and many other top rated  
spine journals



European Spine Journal  
Journal of Neurosurgery: Spine



**-50% discount**  
for students and residents

For further information on the latest benefits available to you, please visit [www.aospine.org/membership](http://www.aospine.org/membership)  
[membership@aospine.org](mailto:membership@aospine.org)

We look forward to welcoming you to the AOSpine global community!





### Preliminary Program

## AONEURO Course — Pediatric Neurotrauma

AO North America

Department of Continuing Medical Education

1700 Russell Road

Paoli, PA 19301

Registration is available only online: [www.aona.org](http://www.aona.org)  
Hotel and Registration deadline: October 28, 2016