North American Spine Society
35th Annual Meeting

October 7-10, 2020
San Diego Convention Center, San Diego, CA

www.spine.org/am

Preliminary Program
We all have been impacted during this unprecedented time in our history. The financial and emotional ramifications of COVID-19 have taken a toll on spine care professionals, patient care and our health care partners.

NASS would like to reinvigorate the spine community with a collegial, interactive event to share experiences, reconnect with colleagues, hear and see the latest science and innovations, and earn CME.

We understand it will take time to recover. Some will be unable to attend this meeting due to a backlog of surgical procedures and medical treatments or budget cuts.

As we work through this to get to a new normal, planning continues for the NASS 2020 Annual Meeting in San Diego this October.

This year’s Annual Meeting will continue its long tradition of offering attendees a dynamic educational program that provides the latest information, innovative techniques and procedures, state-of-the-art training, best practices, and new advanced technologies for spine care.
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Abstract Data

Total Abstracts Submitted: 1,233

810 Surgical
464 Medical

Total Abstracts Accepted: 385

231 Surgical
154 Medical

Percentage of Abstracts Accepted: 31%

29% Surgical
33% Medical

Important Dates

- **Through July 14:**
  Early Registration Discount (save $300)
- **Through September 15:**
  Housing Open
- **Through October 10:**
  Registration Open

Questions?

Please visit [www.spine.org/am](http://www.spine.org/am) for more information. Contact the following departments via email with questions:

**Educational Programming:**
education@spine.org

**Registration:**
registration@spine.org

**Housing:**
meetingservices@spine.org

**Exhibits:**
exhibits@spine.org

**Membership:**
membership@spine.org
NEW THIS YEAR

NASS Discussions, Debates and Drinks
Wednesday-Thursday, October 7-8

Visit the Learning Lounge located in the Technical Exhibition for presentations from key opinion leaders. Hear debates and in-depth discussions with Q&A concluding each session. Libations will be on hand for your enjoyment.

4:00-5:00 p.m.: Poster Grand Rounds
5:00-6:00 p.m.: Star Debates and Cocktail Receptions

**Wednesday:** Section on Minimally Invasive Procedures: MIS Debate

**Thursday:** Section on Robotics & Navigation: Technical Advances in MIS with Navigation, Robot, AR/VR and Endoscopy

### Beverage Stations

**Wednesday–Saturday, October 7–10**

Attendees will enjoy complimentary beverages during the breaks that will occur twice daily on Wednesday, Thursday, Friday and on Saturday morning.

### SpinePAC Luncheon

**Friday, October 9**

Speaker information will be available at a later date.

### NASS Advocacy and Political Action Committee: SpinePAC

Founded in July of 1999, the National Association of Spine Specialists serves as the advocacy arm of the North American Spine Society. The “other” NASS advocates in the legislative and regulatory arenas for public policies that protect members’ ability to practice medicine and give patients access to the specialists, technologies and treatments they require for quality spine care.

As the primary voice for spine specialists on Capitol Hill, NASS helps frame the debate in Washington, DC by sponsoring a political action committee, SpinePAC. SpinePAC’s purpose is to work within the federal election process to further the goals of the spine care community by supporting candidates for the U.S. House of Representatives and Senate. In short: SpinePAC serves as the voice of our profession in elective politics. Last election cycle, SpinePAC endorsed more than 50 candidates for Congress, 90% of whom were elected to the U.S. House of Representatives or Senate. These efforts ensured YOUR VOICE will be championed in the important debates that stand to impact our profession.

NASS members are encouraged to visit the SpinePAC booth located in the south lobby to learn more about ongoing NASS advocacy initiatives and how to get involved.
Guest Speaker

Presidential Guest Speaker: Mona Hanna-Attisha, MD, MPH, FAAP
Thursday, October 8
11:00 a.m.–12:00 p.m.

Guest speaker Mona Hanna-Attisha, MD, MPH, FAAP, will discuss her role in uncovering the Flint, Michigan water crisis and leading recovery efforts.

Hanna-Attisha is founder and director of the Michigan State University and Hurley Children's Hospital Pediatric Public Health Initiative, an innovative and model public health program in Flint, Michigan. She is an associate professor of pediatrics and human development at Michigan State University College of Human Medicine.

NASS 2020 App Coming in July
Your Comprehensive Tool for Navigating the Meeting

- Build your personal planner, plan your itinerary, add personal notes, tag your favorite sessions and exhibitors.
- View the meeting schedule, search for and rate sessions, add and email session notes and view handouts.
- Search for exhibitors and mark with visited tags, request meetings and add personal notes. Download a personalized walking map.
- View ePosters and contact ePoster authors
- Tap into local San Diego attractions, restaurants and more.
- Read, follow and comment using Twitter.

Available in July at www.spine.org/mobile.
Monday-Tuesday, October 5-6
8:00 a.m.–5:00 p.m.

Coding Update 2020:
Mastering the Coding Maze

During this highly interactive course, physician faculty who lead NASS’ CPT, and RUC efforts will address ICD-10, E&M coding and CPT4 coding of spinal surgical, medical and radiologic procedures. Attendees will leave this course with the necessary knowledge and critical tips on how to utilize new E&M codes and guidelines for 2021, navigate through the authorization and denial process, identify nuances that affect proper billing and cause rejected/delayed claims, utilize Medicare NCCI edits, and properly document to receive reimbursement.

Credits: The North American Spine Society designates this educational activity for a maximum of 14.0 AMA PRA Category 1 Credits™.

Tuesday, October 6
1:30–6:00 p.m.

Hands-on Course:
Section on Minimally Invasive Procedures:
Minimally Invasive Spine Surgery

Faculty will provide a targeted focus on current minimally invasive spine techniques, including laser endoscopy (LESS), augmented reality, navigation enabled Exoscopy and MIS surgeries from incision to closure. In addition, there will be opportunity for those who would like to advance their MIS techniques, including, correction of deformity with MIS systems. Materials providing a basic approach to MIS surgery, pros and cons, patient selection and information on the procedures demonstrated in the cadaver lab will be sent to attendees prior to the course for review.

Credits: The North American Spine Society designates this educational activity for a maximum of 4.0 AMA PRA Category 1 Credits™.

Friday, October 9
7:00 a.m.–12:00 p.m.

Hands-on Course:
Basic Fluoroscopic Guided Lumbar Spinal Injections

Faculty will provide an opportunity to improve your knowledge of patient selection and technique for lumbar epidural steroid injections, facet injections, sacroiliac joint injections, transforaminal injection/selective nerve blocks, medial branch blocks and lumbar RFA. Gain hands-on training of multiple injection procedures. Physicians and Residents/Fellows/In-training only.

Note: Attendees will receive the didactic lectures prior to the course so focus on-site will be primarily in the lab.

Credits: The North American Spine Society designates this educational activity for a maximum of 4.0 AMA PRA Category 1 Credits™.
**Wednesday, October 7**

7:35–8:35 a.m.

**Surgical Symposium: Endoscopic Spine Surgery: Cost, Data and Advances**
Faculty will cover important considerations for incorporating endoscopy in your practice, including the cost of developing an endoscopy practice, training and proper coding of endoscopic techniques. Endoscopy in ambulatory care surgery, laser endoscopic spine surgery and robotics in combination with endoscopy also are on the program in addition to a debate—is endoscopy a fad or the best thing ever—with Q&A to follow.

8:35–10:00 a.m.

**Plenary Session: Defining a Pathway to Optimize Outcomes in Degenerative Cervical Myelopathy: From Current Guidelines to the RECODE Pathway**
Faculty will discuss degenerative cervical myelopathy (DCM) research priorities, unanswered research questions, and set of baseline characteristics and outcomes measurements as well as partnerships to maximize research impact and new opportunities to contribute to care advances in DCM through research.

10:35 a.m.–12:00 p.m.

**Multidisciplinary Symposium: COVID-19**

**Thursday, October 8**

7:25–8:25 a.m.

**Surgical Symposium: Oblique Lumbar Interbody Fusion—Why is it Better?**
Faculty will address the evolution and anatomic basis of the oblique anterolateral approach, advantages and potential pitfalls of the oblique technique, different variations of the technique and approach as well as assess the special anatomic considerations when including L5-S1 in the fusion.

8:30–9:30 a.m.

In this session, faculty will cover the major statutes and regulations governing health care providers as well as present recent examples of enforcement initiatives and tips on how to stay off the government’s radar. Hear from a former federal healthcare fraud prosecutor turned defense lawyer about trends and priorities in government enforcement.

**Medical Symposium: Physiological Modifications for Cost Effectiveness and Enhanced Recovery: Enhanced Recovery after Spine Surgery (ERASS)—Early Results and Implementation**
Faculty will provide an overview of ERASS and key interventions, as well as discuss the results from early protocols implementation in different institutions, anesthesia protocols to minimize redundancy and EMR incorporation for data translation. The symposium will conclude with a panel discussion and Q&A.
1:00-2:00 p.m.

**Surgical Symposium:**
**Complex Cervical Deformity: Optimizing Management**

Faculty will address assessment and treatment options for adult cervical spine deformity, specifically identifying the radiographic parameters most predictive of disability for cervical spine deformities, reviewing how the cervical spine classification can differentiate between deformity types and guide surgical treatment, differentiate between flexible and rigid cervical deformities to help guide treatment options in addition to identifying catastrophic complications associated with cervical deformity surgery and how to avoid these complications.

**Multidisciplinary Symposium:**
**Social Media: How and How Not to Use It**

Faculty will explain how to develop a social media presence, the importance of #hashtag for information search, how to uphold patient privacy in media posting and the deterrents of using social media. Additionally, participants will learn about website optimization, different social media platforms, the management of bad comments and how to create patient chat groups.

2:05-3:05 p.m.

**Surgical Symposium:**
**Transforming Your Practice with Minimally Invasive Spine Care Using Evidenced-Based Validation**

This symposium is for spine surgeons who recognize the need to modernize their practice by including minimally invasive and endoscopic spine surgery but are not sure how and need practical hands-on tips.

Faculty will discuss preoperative diagnostic workup and surgical care of patients suffering from sciatica-type low back and leg pain using cutting-edge MIS technologies to manage herniated disc and spinal stenosis. Participants will be able to measure the improvement of their specific knowledge base by comparing responses to an identical set of controversial clinical questions asked of them at the beginning and the conclusion of the symposium.

**Surgical Symposium:**
**Perioperative Optimization in Adult Spinal Deformity**

Faculty will highlight research findings from the International Spine Study Group to help diagnose and prevent complications associated with spine deformity surgery, review recent innovations developed for surgical techniques and patient diagnostics to improve surgical outcomes, and address perioperative optimization to decrease risks and improve clinical outcomes in adult spine deformity patients.

3:35-5:05 p.m.

**Medical Symposium:**
**Perioperative Spinal Cord Injury**

Faculty will present novel strategies to reverse the functional loss after severe SCI, ranging from stem cells, epidural stimulations, brain-machine interface and neuroplasticity enhancement. Additionally, they will discuss the newest advances in translational spinal cord injury research and enrolling in new SCI trials, as well as review strategies to minimize the risk of perioperative spinal cord injury and discuss strategies on how to manage injury once occurred.

**Surgical Symposium:**
**A Global Perspective on Cervical Spine (International session)**
Friday, October 9

7:30-8:55 a.m.
**Surgical Symposium:**
Intraoperative Neuromonitoring (IONM): To Use or Not to Use, That is the Question: Intraoperative Neuromonitoring and Deformity Surgery

In this symposium, faculty will review the basics of intraoperative neuromonitoring, discuss algorithms for intraoperative changes, and review pathology/technique specific applications of intraoperative neuromonitoring. The goal is to facilitate decision-making regarding the utilization of IONM.

**Medical Symposium:**
Section on Biologics: Choosing the Perfect Bone Graft: What are the Biologic Requirements for Fusion by Procedure?

As the correlation between frailty and perioperative risk is becoming widely accepted, faculty will explore the multidisciplinary approaches likely to optimize clinical outcomes following spine surgery in the geriatric population, as well as present the types of osteobiologics and related evidence with an emphasis on recombinant proteins/peptides, and include small molecules or biologics with a similar mode of action as BMP2.

9:00-10:00 a.m.
**Plenary Session:**
The Future of Value-Based Health Care in Spine Care: A Multi–Stakeholder Perspective

A multi-stakeholder group of faculty will explain the differences between fee-for-service health care and value-based health care, identify data elements required to participate in VBHC (cost/quality) and explain VBHC programs of today and the recent past and how to participate.

10:30 a.m.-12:00 p.m.
**Surgical Symposium:**
AOSpineNA: Failed Back Surgery Syndrome

(International session)

1:00-2:30 p.m.
**Multidisciplinary Symposium:**
Health Care and the 2020 Elections

Faculty will take an in-depth look at what the 2020 election may mean for the future of health care, especially as it pertains to spine care providers’ ability to deliver high quality care to patients. Participants will gain a better understanding of how potential outcomes align with NASS priorities and how NASS Advocacy efforts are working to shape this conversation.

**Surgical Symposium:**
The Sacroiliac Joint: Where Does It Fit Within Your Practice?

Participants will gain insight about the anatomy and biomechanics of the SI joint and the current state of the art evidence-based SI joint medical and surgical treatments as well as understand the SI joint as a possible source of pain vs. lumbar spine and/or hip.

3:00-4:00 p.m.
**Medical Symposium:**
Muscle Health as a Biomarker for Functional Recovery Following Spine Pain and Injury

Faculty will classify spinal muscle structure, function, and pathological changes in the presence of spinal disease, address the impact of muscle health on pre- and post-operative outcomes, and identify new technologies and advancements for characterizing muscle health and their value in clinical decision making. Additionally, they will describe the benefits of exercise for general health and various conditions relevant to spine care and present essential knowledge to help spine providers make informed decisions to appropriately match exercise programs to the unique characteristics of each patient.

**Surgical Symposium:**
A Global Perspective on Trauma (International session)

4:05-5:05 p.m.
**Medical Symposium:**
Ambulatory Care Surgery Practice and Applications; Spine Surgery in the Ambulatory Care Setting: Getting Patients Home Happy

Faculty will present the pros and cons of working in an ambulatory surgery center (ASC) practice as well as discuss ASC vs. hospital-based practice, reimbursement patterns for Medicare and private insurance, adopting ASC in your practice, and common surgeries performed in ASCs.
Saturday, October 10

8:00-9:00 a.m.
**Plenary Session:**
Health Care Disruption—To Brace or Embrace? Health Care Finance Implications for Surgeons and Patients: Taking the Bull by the Horns
Faculty will discuss the aspects of spine surgery facing disruption, pros and cons of financial issues in ASCs vs. hospitals, the transformation of healthcare with big data and Blue Button technology, as well as present Medicare health policies and current CMS laws on pricing display for procedures.

9:00-10:00 a.m.
**Multidisciplinary Symposium:**
Artificial Intelligence and Machine Learning in Spine Surgery
Faculty will describe the core principles of machine learning for prognosis and diagnosis in spine care, review recent progress in applications of deep learning and natural language processing for spine surgery, present guidelines and best practices for development and use of machine learning tools in spine surgery, and identify emerging areas of artificial intelligence for future translation to spine surgery.

10:30 a.m.-12:00 p.m.
**Surgical Symposium:**
Surgical Strategies for Complications and Revision Surgery in Cervical Spine Surgery
During this symposium, faculty will cover the major causes for cervical revision surgery, explain why cervical spine revision surgery is more than a re-do surgery, present specific strategies to successfully solve typical case scenarios, and address how to minimize the risk of new complications in revision surgery.

Medical Symposium:
Section on Spinal Oncology Symposium:
A Multidisciplinary Approach to Difficult Spine Tumor Cases
During this case-based symposium, faculty will describe the appropriate workup/treatment of spinal tumors of unknown origin, the factors in determining treatment of a patient with a contaminated prior open approach to a primary lesion, and the criteria for diagnosis and treatment options for metastatic lesions. Additionally, participants will understand how to diagnose and treat high-grade spinal cord compression from metastatic tumors and when radiation is appropriate to perform.

**OnDemand Session Recordings**
**Free access to NASS members with general registration**

AMa PRA Category 1 Credits™ are available for recorded symposia.

Session recordings include abstract presentations, symposia and ePosters. These web-based, fully synchronized audio, video and slide presentations are available anywhere you can access the Internet. CME credit is available for recorded symposia and Interdisciplinary Spine Forum sessions.

Take advantage of this chance to view the archived online compilations of what you missed!
Wednesday, October 7

Use of ALIF at the lumbosacral junction results in less lumbopelvic fixation failure than TLIF or no interbody fusion following correction of adult spinal deformity
Robert Eastlack, MD

The reherniation after decompression (RAD) score identifies patients at low risk for reherniation after lumbar decompression surgery
Garrett Harada, MD

Global spine outreach (GSO): How to safely establish a sustainable short-term spine deformity outreach program
Gregory Mundis, MD

At what point should the thoracolumbar region be addressed in patients undergoing corrective cervical deformity surgery?
Peter Passias, MD

Are octogenarians at higher risk for complications after elective lumbar spinal fusion surgery compared with younger patients? A study from the Kaiser Permanente National Spine Registry
T. Kent Ganocy, MD

PLF or ALIF+PS: Which has a lower operative nonunion rate? Analysis of a cohort of 2,061 patients from a national spine registry
Elizabeth Norheim, MD

Mild and severe obesity reduce effectiveness of lumbar fusions: One-year patient-reported outcomes in 8,171 patients
Olivia Rice, MD

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Thursday, October 8

Low density pedicle screw constructs are associated with lower incidence of proximal junctional failure in adult spinal deformity surgery
Wesley Durand

Incidence and resolution strategies for early onset postoperative leg pain following lumbar total disc replacement
Richard Guyer, MD

Why are DBMs so variable? Influence of fibers, carrier and tissue bank
Gregory Mundis, MD

Rates of loosening, failure and revision of iliac fixation in adult deformity surgery
Robert Eastlack, MD

Cell stiffness decreases with severity of disc degeneration and inflammatory stimulation
Ronald Lehman, MD

Is academic department teaching status associated with adverse outcomes after lumbar fusion for degenerative spine diseases?
Dean, Perfetti, MD, MPH

Nanoroughened microstructured orthopedic implant surfaces induce osteogenesis via soluble signaling factors produced by MSCs
Michael Berger, BS

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Friday, October 9

Safer way for vertebroplasty under fluid mechanics theory
Hsuan Yu Chen, MD

Operative versus nonoperative treatment for adult symptomatic lumbar scoliosis at 5-6 year follow-up: Outcomes and impact of related serious adverse events
Justin Smith, MD, PhD

Do cells matter? In vitro and in vivo analysis of autograft viability
Gregory Mundis, MD

The effects of a single injection of NTG-101 upon neurotrophin expression in a canine model of degenerative disc disease
William Mark Erwin, DC, PhD

Efficacy of surgical decompression in patients with cervical spondylotic myelopathy: Results of the Canadian Prospective Multi-Center Study
Mohammed Karim, MD

Fusion for fracture has no place in a lumbar fusion bundled payment model: An analysis of Medicare beneficiaries
Azeem Malik, MBBS

Cervical disc replacement using a PEEK-on-ceramic implant: Prospective data from seven sites participating in an FDA IDE trial for single-level surgery
Richard Guyer, MD

Two-level cervical disc replacement using a PEEK-on-ceramic device: Prospective outcome data from an FDA IDE trial
Richard Guyer, MD

Predicting severe clinically relevant distal junctional kyphosis development following adult cervical deformity surgery with further distinction from mild asymptomatic episodes
Peter Passias, MD
Surgical Technique Demonstrations

Surgical technique cadaver demonstrations will occur in the general session room featuring top surgeons providing an overview, demonstrating particular techniques and taking questions from the audience.

**Wednesday, October 7**

10:15 a.m.-12:00 p.m.
Endoscopic Spine Fusion Surgery
Presenter: Michael Y. Wang, MD

3:15-5:05 p.m.
MIS Tubular Decompression
Presenter: John C. Liu, MD

**Thursday, October 8**

3:15-5:05 p.m.
Minimally Invasive Lateral Interbody Fusion
Presenter: Juan S. Uribe, MD

**Friday, October 9**

10:15 a.m.-12:00 p.m.
Cervical Spine Surgery
Presenter: Rick C. Sasso, MD

3:00-5:05 p.m.
Spine Deformity Surgery
Presenters: Sigurd Berven, MD and Christopher Shaffrey, MD
Section Specialty Track
Wednesday, October 7
Symposia and/or abstract presentations will focus on section specialty topics.

- Section on Biologics and Basic Research
- Section on Intraoperative Neurophysiological Monitoring
- Section on Minimally Invasive Procedures
- Section on Posterior Pelvic Girdle Pain
- Section on Radiology
- Section on Rehabilitation, Interventional and Medical Spine
- Section on Robotics and Navigation
- Section on Spinal Cord Injury
- Section on Spine Motion Technology
- Section on Spine Oncology

Interdisciplinary Spine Forum
Wednesday-Friday, October 7-9
Specialty educational sessions for physician assistants, nurse practitioners, nurses, chiropractors and other spine specialists.

Session topics include:
- Treating Olympic Athletes
- Worksite Health Centers
- Thoracic Spine Surgery
- Right Provider, Right Time
- Neurological Disease with Back Pain

NEW THIS YEAR

Abstract Presentations
35 multidisciplinary abstract presentation sessions will highlight detailed research, with discussion to follow.

Awards and Presentations
Research Grant Awards, Value Awards, Resident/Fellow Abstract Presentations
Previous research winners and other awarded winners will present at the end of selected topical abstract sessions throughout the week.

Outstanding Paper Awards
The Spine Journal and NASS present Outstanding Paper Awards to leading scholarly publications in multidisciplinary spine care science.

Recognition Awards
NASS presents this year’s Recognition Awards to outstanding society members who have made unique and outstanding contributions to the field of spine.
Experience the industry’s latest spine care products and services.

See and touch countless spine care products. Take advantage of hands-on learning experiences with in-booth demonstrations while you talk to designers and engineers. Make the most of your time by enjoying lunch in the exhibit hall.

The Learning Place
Looking for an alternative to sitting in a lecture hall? Continue your education in the Technical Exhibition. Come to the Learning Place.

Surgical Innovation Labs
View the latest surgical innovations in action. Come see industry demonstrate their latest products or join one of the surgical training workshops in the evening. These cadaveric demonstrations and workshops will run Wednesday through Friday. Check www.spine.org/am for schedules.

Poster Grand Rounds
Attendees will have the opportunity to meet with and ask questions of select ePoster authors.

ePosters
ePosters also will be viewable using your phone or tablet through the conference mobile app. More information about accessing ePosters will be available on-site.

Solution Showcase
Lunch ’n’ Learn in the Solution Showcase. Use your lunchtime to learn more about specific products and solutions to help you provide your professional care. The theater presentation schedule will be available at www.spine.org/am in June.

Practical Theater
Attend specific topics of interest to you and your practice as presented by selected speakers. Presentations will occur during breaks throughout the day.

Innovative Technology Presentations (Non-CME)
Attention NASS Exhibitors:
Please submit abstracts about new and innovative technologies for presentation during these non-CME sessions. Each presentation will be approximately six minutes and presented by a MD, DO or PhD. The submission deadline is June 15, 2020. The NASS Program Committee will review/select the highest graded abstracts. Submit abstracts at sms.spine.org.

Want to exhibit or know a company that should exhibit? Go to exhibitatnass.org for information.
### Monday, October 5

<table>
<thead>
<tr>
<th>Time</th>
<th>Event</th>
<th>Location</th>
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<tbody>
<tr>
<td>8:00 a.m.-5:00 p.m.</td>
<td><strong>Ticketed Course:</strong> Coding Update 2020: Mastering the Coding Maze (Two-day course) <strong>ALL</strong></td>
<td>Room 4</td>
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<tr>
<td></td>
<td><strong>Exhibitor Registration</strong></td>
<td>Hall A Lobby</td>
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### Tuesday, October 6

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<tr>
<th>Time</th>
<th>Event</th>
<th>Location</th>
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<tbody>
<tr>
<td>6:30 a.m.-4:30 p.m.</td>
<td><strong>Attendee Registration</strong></td>
<td>Hall A Lobby</td>
</tr>
<tr>
<td>7:00 a.m.-12:00 p.m.</td>
<td><strong>Ticketed Hands-on Course:</strong> Section on Minimally Invasive Spine Surgery: Minimally Invasive Spine Surgery <strong>SUR</strong></td>
<td>Hall A Labs</td>
</tr>
<tr>
<td>8:00 a.m.-5:00 p.m.</td>
<td><strong>Ticketed Course:</strong> Coding Update 2020: Mastering the Coding Maze (Continued) <strong>ALL</strong></td>
<td>Room 4</td>
</tr>
<tr>
<td>8:00 a.m.-6:00 p.m.</td>
<td><strong>Exhibitor Registration</strong></td>
<td>Hall A Lobby</td>
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<tr>
<td>1:30-6:00 p.m.</td>
<td><strong>Ticketed Hands-on Course:</strong> Section on Spinal Deformity: Deformity <strong>SUR</strong></td>
<td>Hall A Labs</td>
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### Wednesday, October 7

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<thead>
<tr>
<th>Time</th>
<th>Event</th>
<th>Location</th>
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<tr>
<td>6:30-8:00 a.m.</td>
<td><strong>Continental Breakfast</strong></td>
<td>Ballroom 6 Lobby</td>
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<tr>
<td>6:30 a.m.-6:00 p.m.</td>
<td><strong>Attendee Registration</strong></td>
<td>Hall A Lobby</td>
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<tr>
<td>7:00 a.m.-6:00 p.m.</td>
<td><strong>Exhibitor Registration</strong></td>
<td>Hall A Lobby</td>
</tr>
<tr>
<td>7:25-7:30 a.m.</td>
<td><strong>Welcome Remarks</strong></td>
<td>ALL Room 6AB</td>
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<tr>
<td>7:30-7:35 a.m.</td>
<td><strong>NASS Working for You</strong></td>
<td>ALL Room 6AB</td>
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| 7:35-8:35 a.m. | **Symposia:**  
Surgical: Endoscopic Spine Surgery: Cost, Data and Advances **SUR**  
Surgical: A Global Perspective on Degenerative Lumbar Spine **SUR**  
**Best Papers**  
**Multidisciplinary Abstract Presentations:**  
Session 1  
Session 2  
**Resident/Fellow Education Pathway** | Room 6AB Room 6C Room 6D Room 6E Room 10 Room 6F |
<p>| 8:00-10:00 a.m. | <strong>Surgical Innovation Lab Demos</strong>                                    | IND Hall A Labs |
| 8:35-10:00 a.m. | <strong>Plenary Session:</strong> Defining a Pathway to Optimize Outcomes in Degenerative Cervical Myelopathy: From Current Guidelines to the RECODE Pathway <strong>ALL</strong> | Room 6AB |
| 10:00-10:30 a.m. | <strong>Networking Break Beverage Service</strong>                                | Halls ABC   |
| 10:00 a.m.-6:00 p.m. | <strong>Technical Exhibition</strong>                                             | Halls ABC   |</p>
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<tr>
<td>10:15 a.m.-12:00 p.m.</td>
<td>Surgical Technique Cadaver Demonstration: Endoscopic Spine Fusion Surgery</td>
<td>SUR</td>
<td>Room 6AB</td>
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<tr>
<td>10:30-10:35 a.m.</td>
<td>NASS Working for You</td>
<td>ALL</td>
<td>Room 6C</td>
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<tr>
<td>10:35 a.m.-12:00 p.m.</td>
<td>Symposia: Multidisciplinary: Leadership Perspective: Practical Solutions to Impact Physicians’ Professional Fulfillment Multidisciplinary: COVID-19 Multidisciplinary Abstract Presentations: Session 3 Session 4</td>
<td>ALL</td>
<td>Room 6C Room 6E</td>
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<tr>
<td></td>
<td>Interdisciplinary Spine Forum</td>
<td>ALL</td>
<td>Room 10</td>
</tr>
<tr>
<td>11:00 a.m.-1:00 p.m.</td>
<td>Surgical Innovation Lab Demos</td>
<td>SUR</td>
<td>Hall A Labs</td>
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<tr>
<td>12:00-1:00 p.m.</td>
<td>Complimentary Boxed Lunch (Medical Attendees Only)</td>
<td>ALL</td>
<td>Hall C Learning Lounge</td>
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<tr>
<td>12:55-1:00 p.m.</td>
<td>NASS Working for You</td>
<td>ALL</td>
<td>Room 6AB</td>
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<tr>
<td>1:00-2:00 p.m.</td>
<td>Surgical Symposium: A Global Perspective on Deformity</td>
<td>SUR</td>
<td>Room 10</td>
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<td></td>
<td>Multidisciplinary Abstract Presentations:</td>
<td>ALL</td>
<td>Room 6AB Room 6C Room 6D Room 6E</td>
</tr>
<tr>
<td></td>
<td>Innovative Technology Presentations (Non-CME)</td>
<td>IND</td>
<td>Room 6F</td>
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<tr>
<td>2:00-4:00 p.m.</td>
<td>Surgical Innovation Lab Demos</td>
<td>IND</td>
<td>Hall A Labs</td>
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<tr>
<td>2:05-3:05 p.m.</td>
<td>Section Specialty Day Symposia:</td>
<td>ALL</td>
<td>Room 6A Room 6C Room 6D Room 6F Room 10</td>
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<tr>
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<td>Section on Radiology</td>
<td>ALL</td>
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<td>Section on Spinal Cord Injury: Translational Spinal Cord Injury: Advances and Challenges</td>
<td>SUR</td>
<td>Room 6C</td>
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<tr>
<td></td>
<td>Section on Biologics and Basic Research: The Present and Future of Post BMP Biologics</td>
<td>ALL</td>
<td>Room 6D</td>
</tr>
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<td></td>
<td>Section on Spine Oncology</td>
<td>SUR</td>
<td>Room 6F</td>
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<tr>
<td></td>
<td>Section on Spinal Deformity: Diagnostic and Technology Innovations to Improve Safety, Outcomes and Efficiencies in Spine Deformity Surgery</td>
<td>SUR</td>
<td>Room 10</td>
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<tr>
<td></td>
<td>Multidisciplinary Abstract Presentations: Session 9</td>
<td>ALL</td>
<td>Room 6E</td>
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<tr>
<td>3:00-3:30 p.m.</td>
<td>Networking Break Beverage Service</td>
<td>ALL</td>
<td>Halls ABC Learning Lounge</td>
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<td></td>
<td>Practical Theater</td>
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<td>Learning Lounge</td>
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### Wednesday, October 7 (continued)

<table>
<thead>
<tr>
<th>Time</th>
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<th>Room</th>
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</thead>
</table>
| 3:35-5:05 p.m. | **Section Specialty Day Symposia:**  
Section on RIMS  
Section on Intraoperative Neurophysiological Monitoring: To Use or Not to Use, That is the Question  
Section on Robotics & Navigation: Pushing the Frontiers of Spine Surgery through Advanced Technologies and Robotics | Room 6D, Room 6F, Room 10 |
|              | **Multidisciplinary Symposium:** Exercise Committee Presents: The Role of Exercise as Medicine in Spine Care: Matching Exercise Programs to the Patient | Room 6C |
|              | **Multidisciplinary Abstract Presentations:** Session 10              | Room 6E |
| 4:00-6:00 p.m.| **NASS Discussions, Debates and Drinks**  
4:00-5:00: Poster Grand Rounds  
5:00-6:00: Star Debates: Section on Minimally Invasive Procedures: MIS  
5:00-6:00: Reception | Learning Lounge|
| 5:00-8:00 p.m.| **Surgical Innovation Lab Workshops**                                 | Hall A Labs|

### Thursday, October 8

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<thead>
<tr>
<th>Time</th>
<th>Event</th>
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<tbody>
<tr>
<td>6:30-8:00 a.m.</td>
<td><strong>Continental Breakfast</strong></td>
<td>Ballroom 6 Lobby</td>
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<tr>
<td>6:30 a.m.-6:00 p.m.</td>
<td><strong>Attendee Registration</strong></td>
<td>Hall A Lobby</td>
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</table>
| 7:25-8:25 a.m.| **Symposia:**  
Medical: Physiological Modifications for Cost Effectiveness and Enhanced Recovery: Enhanced Recovery After Spine Surgery (ERASS)—Early Results and Implementation  
Surgical: Oblique Lumbar Interbody Fusion—Why is it Better? | Room 6D, Room 6C |
<p>|              | <strong>Best Papers</strong>                                                      | Room 6E |
|              | <strong>Multidisciplinary Abstract Presentations:</strong> Session 1              | Room 6F |
|              | <strong>Resident/Fellow Education Pathway</strong>                                | Room 10 |
| 8:00-8:30 a.m.| <strong>General Session:</strong> NASS/Eurospine Live Feed                      | Room 6AB |
| 8:00-10:00 a.m.| <strong>Surgical Innovation Lab Demos</strong>                                   | Hall A Labs |
| 8:00 a.m.-6:00 p.m. | <strong>Exhibitor Registration</strong>                                        | Hall A Lobby |
| 8:30-9:30 a.m.| <strong>Plenary Session:</strong> Physicians in the Crosshairs: Government Enforcement Trends and Priorities Affecting Physicians and Physician Practices | Room 6AB |
| 9:30-10:00 a.m.| <strong>Networking Break Beverage Service</strong>                               | Halls ABC |
|              | <strong>Practical Theater</strong>                                                | Learning Lounge |
| 9:30 a.m-6:00 p.m. | <strong>Technical Exhibition</strong>                                         | Halls ABC |</p>
<table>
<thead>
<tr>
<th>Time</th>
<th>Event</th>
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<th>Location</th>
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<tbody>
<tr>
<td>9:45-10:00 a.m.</td>
<td>NASS Awards Presentations</td>
<td>9:45-9:55: NASS Recognition Awards</td>
<td>Room 6AB</td>
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<td>9:55-10:00: 2019 Research Grants and Fellowship Awards</td>
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<tr>
<td>10:00-10:15 a.m.</td>
<td>Incoming (2020-2021) Presidential Remarks: Eric Truumees, MD</td>
<td></td>
<td>Room 6AB</td>
</tr>
<tr>
<td>10:15-11:00 a.m.</td>
<td>2019-2020 Presidential Address: William J. Sullivan, MD</td>
<td></td>
<td>Room 6AB</td>
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<tr>
<td>11:00 a.m.-12:00 p.m.</td>
<td>Presidential Guest Speaker: Mona Hanna-Attisha, MD, MD, MPH, FAAP</td>
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<td>Room 6AB</td>
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<tr>
<td>11:00 a.m.-1:00 p.m.</td>
<td>Surgical Innovation Lab Demos</td>
<td></td>
<td>Hall A Labs</td>
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<tr>
<td>12:00-1:00 p.m.</td>
<td>Complimentary Boxed Lunch (Medical Attendees Only)</td>
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<td>Hall C</td>
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<tr>
<td>12:55-1:00 p.m.</td>
<td>NASS Working for You</td>
<td></td>
<td>Room 6AB</td>
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<tr>
<td>1:00-2:00 p.m.</td>
<td>Symposia:</td>
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<td></td>
<td>Multidisciplinary: Social Media: How to Use it and Not</td>
<td></td>
<td>Room 6C</td>
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<td>Surgical: Complex Cervical Deformity: Optimizing Management</td>
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<td>Room 6AB</td>
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<td><strong>The Spine Journal Outstanding Paper Awards Presentations</strong></td>
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<td>Room 6D</td>
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<td>Multidisciplinary Abstract Presentations: Session 2</td>
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<td>Room 6E</td>
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<td></td>
<td>Innovative Technology Presentations (Non-CME)</td>
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<td></td>
<td>Interdisciplinary Spine Forum</td>
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<td>Room 10</td>
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<tr>
<td>2:00-4:00 p.m.</td>
<td>Surgical Innovation Lab Demos</td>
<td></td>
<td>Hall A Labs</td>
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<tr>
<td>2:05-3:05 p.m.</td>
<td>Symposia:</td>
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<td></td>
<td>Surgical: Transforming Your Practice with Minimally Invasive Spine</td>
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<td>Room 6C</td>
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<td>Care Using Evidenced-Based Validation</td>
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<td>Surgical: Perioperative Optimization in Adult Spinal Deformity</td>
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<td><strong>Multidisciplinary Abstract Presentations:</strong></td>
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<td></td>
<td>Session 3</td>
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<td>Room 6AB</td>
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<td>Session 4</td>
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<td>Room 6D</td>
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<td>Session 5</td>
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<td>Interdisciplinary Spine Forum</td>
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<td>Room 10</td>
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<tr>
<td>3:05-3:35 p.m.</td>
<td>Networking Break Beverage Service</td>
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<td>Halls ABC</td>
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<td>Members’ Business Meeting</td>
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<td>Room 11AB</td>
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<td>Practical Theater</td>
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<td>Learning Lounge</td>
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<tr>
<td>3:15-5:05 p.m.</td>
<td>Surgical Technique Cadaver Demonstration: Minimally Invasive Lateral</td>
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<td>Room 6AB</td>
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<td>Interbody Fusion</td>
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### Thursday, October 8 (continued)

<table>
<thead>
<tr>
<th>Time</th>
<th>Event</th>
<th>Location</th>
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<tbody>
<tr>
<td>3:35-5:05 p.m.</td>
<td><strong>Symposia:</strong>&lt;br&gt;Medical: Spinal Cord Injury&lt;br&gt;Surgical: A Global Perspective on Cervical Spine</td>
<td>Room 6C, Room 10</td>
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<tr>
<td></td>
<td><strong>Multidisciplinary Abstract Presentations:</strong>&lt;br&gt;Session 6&lt;br&gt;Session 7&lt;br&gt;Session 8</td>
<td>Room 6D, Room 6E, Room 6F</td>
</tr>
<tr>
<td>4:00-6:00 p.m.</td>
<td><strong>NASS Discussions, Debates and Drinks</strong>&lt;br&gt;4:00-5:00: Poster Grand Rounds&lt;br&gt;5:00-6:00: Star Debates: Section on Robotics and Navigation: Technical Advances in Minimally Invasive Spine Surgery with Navigation, Robotics, AR/VR and Endoscopy&lt;br&gt;5:00-6:00: Reception</td>
<td>Learning Lounge</td>
</tr>
<tr>
<td>5:00-8:00 p.m.</td>
<td><strong>Surgical Innovation Lab Workshops</strong></td>
<td>Hall A Labs</td>
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### Friday, October 9

<table>
<thead>
<tr>
<th>Time</th>
<th>Event</th>
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<tbody>
<tr>
<td>6:30-8:00 a.m.</td>
<td><strong>Continental Breakfast</strong></td>
<td>Ballroom 6 Lobby</td>
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<tr>
<td>6:30 a.m.-5:00 p.m.</td>
<td><strong>Attendee Registration</strong></td>
<td>Hall A Lobby</td>
</tr>
<tr>
<td>7:00 a.m.-12:00 p.m.</td>
<td><strong>Ticketed Hands-on Course:</strong> Basic Fluoroscopic Guided Lumbar Spinal Injections</td>
<td>Hall A Labs</td>
</tr>
<tr>
<td>7:30-8:55 a.m.</td>
<td><strong>Symposia:</strong>&lt;br&gt;Medical: Section on Biologics: Choosing the Perfect Bone Graft: What are the Biologic Requirements for Fusion by Procedure?&lt;br&gt;Surgical: Intraoperative Neuromonitoring (IONM): To Use or Not to Use, That is the Question: Intraoperative Neuromonitoring and Deformity Surgery</td>
<td>Room 6C, Room 6AB</td>
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<tr>
<td></td>
<td><strong>Best Papers</strong></td>
<td>Room 6D, Room 6E, Room 6F</td>
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<tr>
<td></td>
<td><strong>Multidisciplinary Abstract Presentations:</strong> Session 1</td>
<td>Room 6D</td>
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<td><strong>Resident/Fellow Education Pathway</strong></td>
<td>Room 6F</td>
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<td><strong>Interdisciplinary Spine Forum</strong></td>
<td>Room 10</td>
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<tr>
<td>8:00 a.m.-1:00 p.m.</td>
<td><strong>Exhibitor Registration</strong></td>
<td>Hall A Lobby</td>
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<tr>
<td>8:55-9:00 a.m.</td>
<td><strong>NASS Working for You</strong></td>
<td>Room 6AB</td>
</tr>
<tr>
<td>9:00-10:00 a.m.</td>
<td><strong>Plenary Session:</strong> The Future of Value-Based Healthcare in Spine Care: A Multi-Stakeholder Perspective</td>
<td>Room 6AB</td>
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<tr>
<td>10:00-10:30 a.m.</td>
<td><strong>Networking Break Beverage Service</strong></td>
<td>Halls ABC</td>
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<tr>
<td>10:00 a.m.-1:30 p.m.</td>
<td><strong>Technical Exhibition</strong></td>
<td>Halls ABC</td>
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<tr>
<td>10:15 a.m.-12:00 p.m.</td>
<td><strong>Surgical Technique Cadaver Demonstrations:</strong> Cervical Spine Surgery</td>
<td>Room 6AB</td>
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<td>Time</td>
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<td>10:15 a.m.-12:00 p.m.</td>
<td>Surgical Technique Cadaver Demonstrations: Cervical Spine Surgery</td>
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<tr>
<td>10:30 a.m.-12:00 p.m.</td>
<td>Multidisciplinary Abstract Presentations:</td>
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<td></td>
<td>Session 2</td>
<td>ALL</td>
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<td>Session 5</td>
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<td>Surgical Symposium: AOSpine NA: Failed Back Surgery Syndrome</td>
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<td>12:00-1:00 p.m.</td>
<td>Complimentary Boxed Lunch (Medical Attendees Only)</td>
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<td>SpinePAC Luncheon</td>
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<td>12:55-1:00 p.m.</td>
<td>NASS Working for You</td>
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<td>1:00-2:30 p.m.</td>
<td>Symposia:</td>
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<td></td>
<td>Surgical: The Sacroiliac Joint: Where Does It Fit Within Your Practice?</td>
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<td>Multidisciplinary: Healthcare and the 2020 Elections</td>
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<td>Multidisciplinary Abstract Presentations:</td>
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<td></td>
<td>Session 6</td>
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<td>Session 7</td>
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<td>Resident/Fellow Education Pathway</td>
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<td>Interdisciplinary Spine Forum</td>
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<td>2:30-2:55 p.m.</td>
<td>Networking Break Beverage Service</td>
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<td>2:55-3:00 p.m.</td>
<td>NASS Working for You</td>
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<tr>
<td>3:00-4:00 p.m.</td>
<td>Symposia:</td>
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<td></td>
<td>Medical: Muscle Health as a Biomarker for Functional Recovery Following Spine Pain and Injury</td>
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<td>Surgical: A Global Perspective on Trauma</td>
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<td>Session 8</td>
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<td>Session 9</td>
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<td></td>
<td>Session 10</td>
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<tr>
<td>3:00-5:05 p.m.</td>
<td>Surgical Technique Cadaver Demonstrations: Spine Deformity Surgery</td>
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### Friday, October 9 (continued)

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<thead>
<tr>
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<th>Location</th>
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<tbody>
<tr>
<td>4:05-5:05 p.m.</td>
<td>Medical Symposium: Ambulatory Care Surgery Practice and Applications; Spine Surgery in the Ambulatory Care Setting: Getting Patients Home Happy</td>
<td>MED Room 6C</td>
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<td>Multidisciplinary Abstract Presentations:</td>
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<td></td>
<td>Session 11</td>
<td>ALL Room 6D</td>
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<td>Session 12</td>
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<td>Session 13</td>
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<td>Interdisciplinary Spine Forum</td>
<td>ALL Room 10</td>
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### Saturday, October 10

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<tr>
<td>7:30-8:00 a.m.</td>
<td>Continental Breakfast</td>
<td>Ballroom 6 Lobby</td>
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<tr>
<td>7:30-10:45 a.m.</td>
<td>Attendee Registration</td>
<td>Hall A Lobby</td>
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<tr>
<td>8:00-9:00 a.m.</td>
<td>Plenary Session: Healthcare Disruption: To Brace or Embrace? Healthcare Finance Implications for Surgeons and Patients: Taking the Bull by the Horns</td>
<td>ALL Room 6E</td>
</tr>
<tr>
<td>9:00-10:00 a.m.</td>
<td>Multidisciplinary Symposium: Artificial Intelligence and Machine Learning in Spine Surgery</td>
<td>ALL Room 10</td>
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<td>Multidisciplinary Abstract Presentations:</td>
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<tr>
<td></td>
<td>Session 1</td>
<td>ALL Room 6E</td>
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<td></td>
<td>Session 2</td>
<td>ALL Room 6F</td>
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<tr>
<td>10:00-10:30 a.m.</td>
<td>Networking Break Beverage Service</td>
<td>Ballroom 6 Lobby</td>
</tr>
<tr>
<td>10:30 a.m.-12:00 p.m.</td>
<td>Symposia: Medical: Section on Spinal Oncology: A Multidisciplinary Approach to Difficult Spine Tumor Cases</td>
<td>MED Room 6F</td>
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<td>Surgical: Surgical Strategies for Complications and Revision Surgery in Cervical Spine Surgery</td>
<td>SUR Room 6E</td>
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<td>Multidisciplinary Abstract Presentations: Session 3</td>
<td>ALL Room 10</td>
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<tr>
<td>12:00 p.m.</td>
<td>Meeting Adjourns</td>
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### Disclaimer

The material presented at the 35th NASS Annual Meeting is available from the North American Spine Society for educational purposes only. The material does not intend to represent the only, nor necessarily the best, method or procedure appropriate for the medical situations discussed; rather, the intent is to present an approach, view, statement or opinion of the faculty that may be helpful to others who face similar situations.

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

On occasion, changes in program content or faculty may occur after distribution of the preliminary program. The final program will contain confirmed program content, faculty and presenters. Any further changes from the published final program will be announced at the beginning of the session.
The official housing provider for NASS 2020 is onPeak.

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1. Complete Annual Meeting registration
2. Book your room online at www.spine.org/am or by phone: 800-545-1773 (US/Canada) or 312-527-7300 (International), 9:00 a.m.-6:00 p.m. ET

The cutoff date for reservations is September 15, 2020; discounted rates may not apply after this date. Reservations are on a first-come, first-served basis and are subject to room availability.

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Make changes to existing reservations online with the login credentials listed on your confirmation; by e-mail to nassannualmeeting@onpeak.com or by calling 800-545-1773. You must have the onPeak ID of the reservation you want to change to make modifications.

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- Pay Delay
  Book now, pay later to ease your commitment.
- Shuttles
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- Overbooking Protection
  Added protection from relocation to another property.
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Registration

NASS Membership Discounts and Rewards
All individuals registering for NASS 2020 are encouraged to become members to join the more than 8,000 spine care providers worldwide who rely on NASS to provide the resources needed to advance their careers. With a diverse membership of surgeons, physiatrists, pain specialists, researchers, allied health professionals and others, NASS fosters an atmosphere of multidisciplinary collaboration unmatched by other professional societies.

If you are not already a NASS member, join prior to registering to receive a discount of at least $300 on your registration fees as well as all of the other benefits of membership.

Included with membership are subscriptions to the #1 rated spine journal, The Spine Journal and the bimonthly magazine, SpineLine, significant discounts on all educational events and resources, increased opportunities to collaborate with colleagues, patient referral resources including a listing on our online Find a Specialist Search and much more.

Detailed information about benefits, qualifications for membership and an online application are available at www.spine.org. Questions? Contact the membership department by sending an email to membership@spine.org or calling 866-960-NASS (6277) or 001-630-230-3600 from outside the United States.

Already a Member?
Visit www.spine.org/refer to learn more about how you can get 20% off your dues for next year when you refer your colleagues to NASS.

General (in-person) registration fees include:
• All education sessions beginning on Wednesday, October 7 through Saturday, October 10
• Continental breakfasts and beverage breaks (Wed.–Sat.)
• Technical Exhibition and box lunches (Wed.–Fri.)
• Discussions, Debates and Drinks Receptions (Wed. & Thur.)
• Earn up to 25 AMA PRA Category 1 Credits™

One-day (in-person) registration fees include:
• Education sessions for Wed., Thurs., Fri., OR Sat.
• Technical Exhibition for Wed., Thurs., OR Fri.
• Discussions, Debates and Drinks Reception (Wed. & Thur.), continental breakfasts, beverage breaks and box lunch (closed Sat.) on your registered day
• AMA PRA Category 1 Credits™—Wed. (8.0), Thurs. (5.75), Fri. (7.75) OR Sat. (3.5)

One-day registration is only for one day. General registration is required to attend on multiple days.

Virtual registration fees include:
• Access to live stream of multiple surgical and medical symposia throughout the meeting;
• Access to OnDemand recordings of symposia, abstracts and discussions/debates;
• Ability to earn up to 61.5 AMA PRA Category 1 Credits™

Note: Virtual registration does not permit access to the discounted NASS hotel rates or attendance to the annual meeting. One-day virtual registration is not available.
<table>
<thead>
<tr>
<th>Registration Category and Type</th>
<th>Until Jul 14</th>
<th>Jul. 15–Oct. 10</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Member Physician or Commercial Affiliate</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>General or Virtual Registration</td>
<td>$699</td>
<td>$999</td>
</tr>
<tr>
<td>One-day Wednesday, Thursday or Friday</td>
<td>$349</td>
<td>$549</td>
</tr>
<tr>
<td>One-day Saturday Only</td>
<td>$233</td>
<td>$433</td>
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<tr>
<td><strong>Member Affiliated Health Care</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>General or Virtual Registration</td>
<td>$399</td>
<td>$699</td>
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<tr>
<td>One-day Wednesday, Thursday or Friday</td>
<td>$199</td>
<td>$399</td>
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<tr>
<td>One-day Saturday Only</td>
<td>$133</td>
<td>$333</td>
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<tr>
<td><strong>Member Emeritus</strong></td>
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<tr>
<td>General or Virtual Registration</td>
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<td>$599</td>
</tr>
<tr>
<td>One-day Wednesday, Thursday or Friday</td>
<td>$149</td>
<td>$349</td>
</tr>
<tr>
<td>One-day Saturday Only</td>
<td>$99</td>
<td>$299</td>
</tr>
<tr>
<td><strong>Member Resident/Fellow</strong></td>
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<td></td>
</tr>
<tr>
<td>General or Virtual Registration</td>
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<td>$359</td>
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<tr>
<td>One-day Wednesday, Thursday or Friday</td>
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<td>One-day Saturday Only</td>
<td>$53</td>
<td>$253</td>
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<td><strong>Nonmember Physician</strong></td>
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<tr>
<td>General or Virtual Registration</td>
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<td>$1299</td>
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<tr>
<td>One-day Saturday Only</td>
<td>$333</td>
<td>$533</td>
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<tr>
<td><strong>Nonmember Affiliated Health care</strong></td>
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<tr>
<td>Employed by a hospital, health care network, university or free-standing facility administering to patients (e.g., DC, PA, NP, RN, PT)</td>
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<tr>
<td>General or Virtual Registration</td>
<td>$549</td>
<td>$849</td>
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<tr>
<td>One-day Wednesday, Thursday or Friday</td>
<td>$274</td>
<td>$474</td>
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<tr>
<td>One-day Saturday Only</td>
<td>$183</td>
<td>$383</td>
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<tr>
<td><strong>Nonmember In-Training/Resident/Fellow</strong></td>
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<tr>
<td>Must provide a letter on letterhead from program director to 630-230-3709 or <a href="mailto:registration@spine.org">registration@spine.org</a>.</td>
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<tr>
<td>General or Virtual Registration</td>
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<td>One-day Wednesday, Thursday or Friday</td>
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<td>One-day Saturday Only</td>
<td>$76</td>
<td>$276</td>
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<tr>
<td><strong>Commercial Business (Industry)</strong></td>
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<tr>
<td>Nonclinical professional that does not treat patients.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>General or Virtual Registration</td>
<td>$999</td>
<td>$1299</td>
</tr>
<tr>
<td>One-day Wednesday, Thursday or Friday</td>
<td>$499</td>
<td>$699</td>
</tr>
<tr>
<td>One-day Saturday Only</td>
<td>$333</td>
<td>$533</td>
</tr>
<tr>
<td><strong>Guest Discussions, Debates and Drinks Reception</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Badge for guest to attend Wed. and/or Thurs., 5:00–6:00 p.m.</td>
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<tr>
<td>Wednesday</td>
<td>$50</td>
<td>$50</td>
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<tr>
<td>Thursday</td>
<td>$50</td>
<td>$50</td>
</tr>
<tr>
<td>Wednesday &amp; Thursday</td>
<td>$80</td>
<td>$80</td>
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**OnDemand Recordings**

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<tr>
<td><strong>Member</strong></td>
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<tr>
<td>With General Registration</td>
<td>$0</td>
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<tr>
<td>With One-day Registration</td>
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<tr>
<td><strong>Nonmember</strong></td>
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<tr>
<td>With General Registration</td>
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<tr>
<td>With One-day Registration</td>
<td>$315</td>
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**Coding Update 2020**

Monday/Tuesday, Oct. 5-6, 8:00 a.m.–5:00 p.m.

<p>| | | |</p>
<table>
<thead>
<tr>
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<tbody>
<tr>
<td><strong>Member</strong></td>
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<td></td>
</tr>
<tr>
<td>Physician or Commercial Affiliate</td>
<td>$700</td>
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</tr>
<tr>
<td>Affiliated Health Care</td>
<td>$550</td>
<td></td>
</tr>
<tr>
<td>In-training Resident/Fellow</td>
<td>$350</td>
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<tr>
<td><strong>Nonmember</strong></td>
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<tr>
<td>Physician</td>
<td>$800</td>
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<tr>
<td>Affiliated Health Care</td>
<td>$600</td>
<td></td>
</tr>
<tr>
<td>In-training Resident/Fellow</td>
<td>$400</td>
<td></td>
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</tbody>
</table>

**Hands-on Courses**

Section on Minimally Invasive Spine Surgery
Tuesday, October 6, 7:00 a.m.–12:00 p.m.

Section on Spinal Deformity
Tuesday, October 6, 1:30–6:00 p.m.

Basic Fluoroscopic Guided Lumbar Spinal Injections
Friday, October 9, 7:00 a.m.–12:00 p.m.

<p>| | | |</p>
<table>
<thead>
<tr>
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</thead>
<tbody>
<tr>
<td><strong>Member Physician</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Until July 14</td>
<td>$895</td>
<td></td>
</tr>
<tr>
<td>July 15–Oct. 9</td>
<td>$995</td>
<td></td>
</tr>
<tr>
<td><strong>Nonmember Physician</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Until July 14</td>
<td>$995</td>
<td></td>
</tr>
<tr>
<td>July 15–Oct. 9</td>
<td>$1095</td>
<td></td>
</tr>
</tbody>
</table>
Who Should Attend?
The multidisciplinary spine care community as well as those with an abiding interest in spine are welcome to attend the 35th Annual Meeting.

Learning Objectives
Upon completion of this meeting, participants should gain strategies to:
- Promote discussion of new scientific developments and best practices in spine care;
- Demonstrate the application of current techniques, procedures and research;
- Practice evidence-based medicine relative to spine care.

Continuing Medical Education (CME) Credit
This activity has been planned and implemented in accordance with the Essentials and Standards of the Accreditation Council for Continuing Medical Education (ACCME). The North American Spine Society is accredited by the ACCME to provide continuing medical education for physicians and takes responsibility for the content, quality and scientific integrity of this CME activity.

The North American Spine Society designates this live activity for a maximum of 25 AMA PRA Category 1 Credits™. Physicians should claim only the credit commensurate with the extent of their participation in the activity.

The American Medical Association has determined that physicians not licensed in the U.S. to participate in this CME activity are eligible for AMA PRA Category 1 Credits™.

Additional credit is available by attending the following courses:
- Coding Update 2020: Mastering the Coding Maze
- Hands-on course: Minimally Invasive Spine Surgery
- Hands-on course: Deformity
- Hands-on course: Lumbar Spinal Injections

Continuing Education (CE) Credit for Allied Health Professionals
NASS is proud to offer continuing education units (CEUs) to accommodate nonphysician attendees’ certification requirements. The following indicates the status of CEU accreditation for nonphysician attendees. Requirements vary for other allied health and advanced practice providers; please contact your licensing organization for their requirements.

Physician Assistants: The American Academy of Physician Assistants (AAPA) accepts Category 1 credit from AOACCME, prescribed credit from the American Academy of Family Physicians (AAFP) and AMA PRA Category 1 CME Credit™ for the Physician’s Recognition Award from organizations, such as NASS, accredited by the ACCME.

Nurse Practitioners: The American Association of Nurse Practitioners (AANP) accepts AMA PRA Category 1 Credit™ from organizations accredited by the ACCME.

Nurses: NASS has applied for approval from AXIS Medical Education for nursing CE credit. Approval information will be available soon. Contact education@spine.org to receive a notification when approvals occur.

Chiropractors: NASS has applied for approval from National University of Health Sciences and Southern California University of Health Sciences for chiropractic credit from select states. Approval information will be available soon. Contact education@spine.org to receive a notification when approvals occur.

Physical Therapists: NASS has applied for approval for continuing education credits to Physical Therapists from select states. Approval information will be available soon. Contact education@spine.org to receive a notification when approvals occur.

Evaluation and Education Certificates
After the meeting, submit evaluations electronically. Visit www.spine.org/CME to claim education credit and to print CME certificates. Contact education@spine.org with questions.
2019-2020 Board of Directors

NASS thanks the following Board members for their leadership and guidance throughout the year:

- William J. Sullivan, MD  
  President
- Eeric Truumees, MD  
  First Vice President
- Edward J. Dohring, MD  
  Second Vice President
- John G. Finkenberg, MD  
  Secretary
- David R. O’Brien, Jr., MD  
  Treasurer
- Jeffrey C. Wang, MD  
  Past President
- Charles A. Reitman, MD  
  Education Council Director
- Thomas E. Mroz, MD  
  Continuing Medical Education Chair
- Jonathan N. Grauer, MD  
  Education Publishing Chair
- Scott Kreiner, MD  
  Research Council Director
- Charles H. Cho, MD, MBA  
  Evidence Compilation & Analysis Chair
- Donna D. Ohnmeiss, PhD  
  Clinical Research Development Chair
- Patrick C. Hsieh, MD, MS  
  International Council Director
- Mitchell F. Reiter, MD, PC  
  Administration & Development Council Director
- Paul M. Arnold, MD  
  Ethics and Professionalism Committee Chair

Karin Swartz, MD  
Section Development Chair
Richard L. Skolasky, ScD  
Governance Committee Chair
Zoher Ghogawala, MD, FACS  
Health Policy Council Director
Christopher Kauffman, MD  
Payer Policy Review Committee Chair
William Mitchell, MD  
Coding Committee Chair
Philip L. Schneider, MD  
Advocacy Council Director
Michael G. Fehlings, MD, PhD, FRCSC  
At-Large Member
Donna M. Lahey, RNFA, CNOR  
At-Large Member
Eric J. Muehlbauer, MJ, CAE  
Executive Director

2020 Scientific Program Committee

NASS thanks the following members for their valued time, effort and dedication in planning the educational content for this year’s annual meeting:

- William J. Sullivan, MD  
  President
- Michael Fehlings, MD, PhD, FRCSC
- David J. Kennedy, MD
- Donna M. Lahey, RNFA, CNOR
- Alexander R. Vaccaro, MD, PhD

2020 Program Co-chairs

- E. Kano Mayer, MD
- Michael P. Steinmetz, MD

2021 Program Co-chairs

- Allen S. Chen, MD, MPH
- David E. Fish, MD, MPH
- Patrick C. Hsieh, MD, MS
- Thomas E. Mroz, MD
- Sanjog Pangarkar, MD

2021 Program Co-chairs

- Charles A. Reitman, MD  
  Education Council Director
NASS Financial Conflict of Interest Disclosure Policy

NASS recognizes that professional relationships with industry are essential for development of new spine technologies and medical advancement. According to the NASS Ethics Committee, which authored the disclosure policy, “the goal is to create an environment of scientific validity, in which learners can accurately judge whether the information they receive is objective and unbiased, and to be sure that our members are current and forthright in their dealings with one another and with their colleagues and patients.” The establishment of uniform disclosure requirements frees individuals from having to decide which relationships might influence his or her decision-making and which are irrelevant; transparent disclosure allows the audience to participate in the interpretation of the significance. All authors and faculty speaking at the annual meeting are required to provide complete disclosure of all conflicts of interest.

Commercial Support Disclosure

As a sponsor accredited by the ACCME, the North American Spine Society must ensure balance, independence, objectivity and scientific rigor in all its sponsored activities.

All individuals participating in a sponsored activity should disclose to the audience any significant financial interest or other relationship (1) with the manufacturer(s) of any commercial product(s) and/or provider(s) of commercial services discussed in an educational presentation and (2) with any commercial supporters of the activity. Significant financial interest or other relationships may include grants or research support, employee, consultant, major stockholder, member of the speaker’s bureau, etc. Disclosure information will be available visually on a PowerPoint® slide before each presentation, in the final program, orally by the moderator and in The Spine Journal Proceedings supplement.

Program Committee Statement on Resolution of Conflict of Interest in Presentations

The intent of this disclosure is to ensure that all conflicts of interest, if any, have been identified and have been resolved prior to the speaker’s presentation. By doing so, the North American Spine Society has determined that the speaker’s or author’s interests or relationships have not influenced the presentation with regard to exposition or conclusion; nor does the Society view the existence of these interests or commitments as necessarily implying bias or decreasing the value of the presentation.

FDA Disclosure

If a device or drug requiring FDA approval is identified as an important component of a presentation, the author must indicate the FDA status of those devices or drugs as Approved, Investigational or Not Approved for distribution within the United States. The final program and The Spine Journal Proceedings supplement will include all FDA status information. Certain medical devices and drugs identified at the NASS 35th Annual Meeting may have FDA clearance for use for specific purposes only, or in restricted research settings. The FDA states, “It is the responsibility of the physician to determine the FDA status of each drug or device he or she wishes to use in clinical practice and to use these products in compliance with applicable law”. 
Conflict of Interest Disclosure

Index

These ranges are as follows:
- None: Existing relationship but no remuneration in prior calendar year
- Level A. $100 to $1,000
- Level B. $1,001 to $10,000
- Level C. $10,001 to $25,000
- Level D. $25,001 to $50,000
- Level E. $50,001 to $100,000
- Level F. $100,001 to $500,000
- Level G. $500,001 to $1M
- Level H. $1,000,001 to $2.5M
- Level I. Greater than $2.5M

Annual Meeting 2020 Program Committee Disclosures

As of June 8, 2020

Chen, Allen S.: Nothing to Disclose
Fehlings, Michael G.: Nothing to Disclose
Finkenberg, John G.: Nothing to Disclose
Fish, David E.: Grants: Medtronic (C, Paid directly to institution/employer), St. Jude (C, Paid directly to institution/employer); Fellowship Support: Boston Scientific (C, Paid directly to institution/employer).
Ghogawala, Zoher: Board of Directors: Cervical Spine Research Society (Chair, Research Committee Director, CSRS Registry), GN2.0-Nidus (18,750 Shares, 66%), Joint Spine Section - AANS-CNS (Nonfinancial, Chair of the Spine Section).
Horn, Scott I.: Board of Directors: Spine Intervention Society (Travel expenses); Other Office: CPT Advisor for SIS (Volunteer position. Travel expenses.); Speaking and/or Teaching Arrangements: AAPMR (Travel expenses), NASS (Travel expenses.), SIS (AMA CPT advisor, Health Policy Chair, Travel expenses).
Hsieh, Patrick C.: Royalties: Medtronics (D), Nuvasive (C), Zimmer Biomet (B).
Kennedy, D.J.: Board of Directors: AAPM&R (Member at Large AAPM&R Board of Directors), Spine intervention Society (Non-renumerative position of influence. Member at Large AAPM&R Board of Directors), Consulting: State Farm Auto Insurance (B); Speaking and/or Teaching Arrangements: Spine Intervention Society (Travel expenses), Trips/Travel: AAPM&R (A), Spine Intervention Society (A).
Knight, Reginald Q.: Consulting: Stryker Spine (B), Vertebral Technology Inc (B), Vertera (F, Outside 12-Month Requirement).
Lahey, Donna M.: Nothing to Disclose
Mroz, Thomas E.: Royalties: Stryker (F).

2020 Board of Directors Disclosures

As of June 8, 2020

Ohnmeiss, Donna D.: Board of Directors: NASS (Travel expenses), Other: Texas Back Institute Research Foundation (Salary).
Pangarkar, Sanjog: Nothing to Disclose
Reitman, Charles A.: Board of Directors: NASS (Travel Expense Reimbursement); Other: NASS (Nonfinancial, Committee leadership); Scientific Advisory Board: Clinical Orthopaedics and Related Research (B, Paid directly to institution/employer).
Vaccaro, Alexander R.: Royalties: Alphatec (B), Atlas Spine (B), Elsevier (B), Globus (E), Jaypee (A), Medtronic (E), Stryker Spine (G), Thieme (B), Wolters Kluwer (D); Speaking and/or Teaching Arrangements: AO Spine (B); Stock Ownership: Advanced Spinal Intellectual Properties (None), Avaz Surgical (None), Bonovo Orthopaedics (None), Computational Biodynamics (None), Cytokines (None), Dimension Orthotics (None), Electrocore (None), Flagship Surgical (None), Flowpharma (None), Globus (None), Innovative Surgical Design (None), Insight Therapeutics (None), Jushi (None), Nuvasive (None), Paradigm Spine (None), Parvizi Surgical Innovation (None), Prime Surgeons (None), Progressive Spinal Technologies (None), Replication Medica (None), Spine Medica (None), Spinology (None), Stout Medical (None), Vertiflex (None).

Ohnmeiss, Donna D.: Board of Directors: NASS (Travel expenses), Other: Texas Back Institute Research Foundation (Salary).
Pangarkar, Sanjog: Nothing to Disclose
Reitman, Charles A.: Board of Directors: NASS (Travel Expense Reimbursement); Other: NASS (Nonfinancial, Committee leadership); Scientific Advisory Board: Clinical Orthopaedics and Related Research (B, Paid directly to institution/employer).
Vaccaro, Alexander R.: Royalties: Alphatec (B), Atlas Spine (B), Elsevier (B), Globus (E), Jaypee (A), Medtronic (E), Stryker Spine (G), Thieme (B), Wolters Kluwer (D); Speaking and/or Teaching Arrangements: AO Spine (B); Stock Ownership: Advanced Spinal Intellectual Properties (None), Avaz Surgical (None), Bonovo Orthopaedics (None), Computational Biodynamics (None), Cytokines (None), Dimension Orthotics (None), Electrocore (None), Flagship Surgical (None), Flowpharma (None), Globus (None), Innovative Surgical Design (None), Insight Therapeutics (None), Jushi (None), Nuvasive (None), Paradigm Spine (None), Parvizi Surgical Innovation (None), Prime Surgeons (None), Progressive Spinal Technologies (None), Replication Medica (None), Spine Medica (None), Spinology (None), Stout Medical (None), Vertiflex (None).
Hsieh, Patrick C.: Royalties: Medtronics (D), Nuvasive (C), Zimmer Biomet (B).
Kauffman, Christopher P.: Consulting: HealthTrust (C); Other: Turning Point (Salary).
Kreiner, Scott: Speaking and/or Teaching Arrangements: Spine Intervention Society (Travel expenses Reimbursed).
Lahey, Donna M.: Nothing to Disclose
Mitchell, William: Speaking and/or Teaching Arrangements: Aesculap (C, Outside 12-Month Requirement), DePuy (C, Outside 12-Month Requirement).
Mroz, Thomas E.: Royalties: Stryker (F).
Muehlbauer, Eric J.: Nothing to Disclose
O’Brien, David Reese: Nothing to Disclose
Ohnmeiss, Donna D.: Board of Directors: NASS (Travel expenses); Other: Texas Back Institute Research Foundation (Salary).
Reiter, Mitchell F.: Other: None (Future Compensation Expected)
Reitman, Charles A.: Board of Directors: NASS (Travel Expense Reimbursement); Other: NASS (Nonfinancial, Committee leadership); Scientific Advisory Board: Clinical Orthopaedics and Related Research (B, Paid directly to institution/employer).
Resnick, Daniel K.: Scientific Advisory Board: NIDUS (None).
Schneider, Philip L.: Nothing to Disclose
Skolasky, Richard L.: Board of Directors: North American Spine Society (Nonfinancial, Governance Committee, Chair Research Program Management, Chair, Board of Directors, voting member); Other: International Society for Quality Of Life Research (Nonfinancial, Associate Editor for Quality of Life Research).
Sullivan, William J.: Board of Directors: NASS (Board of Directors, Executive Committee); Trips/Travel: NASS (B).
Swartz, Karin R.: Research Support (Staff and/or materials): Veterans Affairs Administration (C, Paid directly to institution/employer); Speaking and/or Teaching Arrangements: AANS/CNS (B, Travel expenses), NACCME (B, Travel expenses), NASS (B, Travel expenses).
Truumees, Eric: Board of Directors: Seton Family of Doctors (None); Other Office: AAOS (Editor-in-Chief of AAOS Now); Research Support (Staff and/or materials): Medtronics (C, Paid directly to institution/employer), Pfizer (E, Outside 12-Month Requirement, Paid directly to institution/employer), Relievant (F, Paid directly to institution/employer), Stryker Spine (B, Outside 12-Month Requirement, Paid directly to institution/employer), Vertex Pharma (D, Outside 12-Month Requirement, Paid directly to institution/employer); Trips/Travel: AAOS (Travel Reimbursement (B).
Wang, Jeffrey C.: Board of Directors: AOFoundation (C), Cervical Spine Research Society (Travel Expenses), North American Spine Society (Travel Expenses); Fellowship Support: AO Foundation (E, Paid directly to institution/employer); Private Investments: Bone Biologics (<1%), electrocore (<1%), pearlriver (<1), surgitech (<1%); Royalties: Amedica (B), Biomet (F), DePuy Synthes (C), SeaSpine (C).