

Preliminary Program



NORTH AMERICAN SPINE SOCIETY 34TH ANNUAL MEETING

September 25-28, 2019 · McCormick Place West, Chicago, IL
www.spine.org/am



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STAND WITH THE FUTURE™

COME TO THE NASS 34TH ANNUAL MEETING

Winds of Change Blow into Chicago this September

These changes include: hands-on courses occurring during the meeting; ePosters with a physical and virtual presence; subject matter experts available for Q&A and surgical cadaver demonstrations happening all day Friday.

The annual Minimally Invasive Spine Surgery hands-on course will occur on Wednesday this year as well as a NASS/Neurospine Endoscopic Spinal Surgery and Cadaver Workshop co-sponsored with the Korean Minimally Invasive Spinal Surgery Society. In addition, there will be a Lumbar Spinal Injections hands-on course on Friday.

Grammy winner, conductor, producer and management coach Christian Gansch created a unique coaching concept, which demonstrates the similarities between orchestras and company structures. Leadership issues and complex integrated communications are a perfect example of how to bring a huge variety of specialists and instruments together to form one integrated harmonious unit.

Using a new hybrid system, ePosters will have a physical and virtual presence. Mini-poster walls will give attendees a throwback to the traditional poster hall and its traditional networking, but add the interactivity and functionality of modern technology. Using a phone or tablet through the NASS 2019 mobile app with the mini posters will allow for interaction via social media.

Brainstorm with a subject matter expert, ask questions and get advice. You, and a colleague or two, will have the opportunity to discuss spine issues, best practices, procedural questions, etc. throughout the week.

Top surgeons will demonstrate specific techniques using cadavers and take questions from the audience on Friday in the general session room.

And back by popular demand are: Coding Update: Mastering the Coding Maze in case you need some coding guidance or reimbursement clarification; the Section Specialty Track, symposia/abstract presentations on specialty topics; and the Interdisciplinary Spine Forum, allied health educational sessions.

For the "Second City," Chicago has many firsts: the Twinkie was created in Chicago in 1930; the zipper was invented in Chicago in 1851; and in 1885, Chicago became home to the first skyscraper, which was originally nine stories tall. Now Chicago has an incredible skyline, boutique shopping on the Mag Mile and Oak Street, and restaurants of every food type and taste.

Be blown away in the windy city.



Jeffrey C. Wang, MD
2018-2019
NASS President



Allen S. Chen, MD, MPH
David E. Fish, MD, MPH
Patrick C. Hsieh, MD, MS



Thomas E. Mroz, MD
Sanjog Pangarkar, MD
2019 Program Co-chairs



NASS Preliminary Program
Published annually by the
North American Spine Society
Spring 2019, Issue 1

TABLE OF CONTENTS

Networking Events	5
Guest Speakers	6
Coding and Hands-on Courses	7
Education Sessions	8
Attendee Resources	14
Technical Exhibition	16

Meeting-at-a-Glance	18
Housing Information	24
Registration Information	26
Education Details	28
Acknowledgements	29
Disclosure	30

**APRIL
18**

**Registration and
housing opens for
members only**

**APRIL
25**

**Registration and housing
opens for everyone**

**JULY
11**

Early registration deadline
Save \$300 with the early
registration discount

**AUGUST
27**

Housing deadline
Ensure you have
accommodations at an
official NASS hotel



Questions?

Please visit 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

Abstract Data

1434 Total Abstracts Submitted

970 Surgical and 464 Medical

270 Surgical and 208 Medical Abstracts Accepted

28% Surgical and 45% Medical Acceptance Rate

NASS2019
CHICAGO, IL | SEPT. 25-28



NETWORKING EVENTS

WEDNESDAY,
SEPTEMBER 25

NASS Social Hour

5:00–6:00 p.m.

Don't miss the social hour at the convention center after the sessions conclude Wednesday. Enjoy food and libations in a comfortable setting after a day of educational programs. Have fun with friends and colleagues before heading off to dinner.

WEDNESDAY–SATURDAY,
SEPTEMBER 25–28

Beverage Stations

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

THURSDAY,
SEPTEMBER 26

Resident, Fellow and Program Directors' Reception

5:15–6:15 p.m.

NASS is proud to announce the 17th Annual Resident, Fellow and Program Directors' Reception at the 34th Annual Meeting. This reception provides an opportunity for residents, fellows and potential fellows to mingle with each other and the program directors in a casual setting while enjoying beer, wine and hors d'oeuvres with colleagues.

FRIDAY,
SEPTEMBER 27

SpinePAC Luncheon

12:00–1:00 p.m.

Members of SpinePAC are invited to an exclusive luncheon. Note: NASS members may renew their SpinePAC membership online when registering for the NASS Annual Meeting. *Registration required for this event.*

GUEST SPEAKER

THURSDAY, SEPTEMBER 26

Presidential Guest Speaker: Christian Gansch

11:00 a.m.–12:00 p.m.

Grammy winner Christian Gansch is highly regarded internationally as a conductor, producer, author and consultant.

Born in Austria in 1960, Gansch was the leader of several high profile orchestras. From 1981 to 1990 Christian was leader of the Munich Philharmonic Orchestra. He then moved into the music industry and produced over 190 CDs worldwide with artists such as Pierre Boulez, Claudio Abbado and Anna Netrebko. Winner of four Grammys, amongst many other international awards, Christian lectures in German and English.

During his time as a conductor Christian worked with the English BBC Orchestra, the City of Birmingham Symphony Orchestra, the German Symphony Orchestra Berlin, the Russian National Orchestra, the Orchestre Philharmonique de Radio France in Paris and the NHK Symphony Orchestra Tokyo.

Gansch has two distinct perspectives of the musical world, as a musician and as a manager. He has been able to create a unique coaching concept, which demonstrates the similarities between orchestras and company structures.

Gansch compares these similarities and demonstrates what companies can learn from the complex structures in orchestras, which outwardly look like a perfect unit to the audience. Orchestras with their high potential for human conflicts, leadership issues and complex integrated communications are a perfect example of how to bring a huge variety of specialists and instruments together to form one integrated harmonious unit.

His book *From Solo to Symphony—What Businesses Can Learn From Orchestras* led him to work as a consultant for a number of major companies with direct reference to communication and “orchestral consciousness.”





CODING UPDATE AND HANDS-ON COURSES

**MONDAY–TUESDAY,
SEPTEMBER 23–24**

Coding Update 2019: Mastering the Coding Maze ➤

8:00 a.m.–5:00 p.m.

Whether you are a beginning or advanced coder, this highly interactive course led by physician faculty will provide comprehensive coding information you can immediately use. Faculty will cover the latest information on ICD-10, E&M coding, and CPT-4 coding of surgical, medical and radiologic procedures.

Upon completion of this course, you will be able to parlay your coding knowledge to optimize reimbursement, 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 meet medical necessity guidelines.

Additionally, you will have the opportunity to:

- Meet one-on-one with physician faculty who lead NASS' CPT, RUC and reimbursement efforts;
- Examine real life cases and perform operative note dissection in the hands-on coding sessions;
- Participate in an interactive panel discussion, which will explore claim denials and tips to avoid them with leading experts in the spine coding industry;
- Attend either an advanced breakout session delving into complex surgical case coding or a basic breakout session identifying anatomy and terminology in spine care.

**WEDNESDAY,
SEPTEMBER 25**

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

7:00 a.m.–12:00 p.m.

Faculty will focus on current minimally invasive techniques for the spine, including posterior, lateral, OLIF, navigation and robotic techniques. After short didactic lectures, there will be guided practice in the hands-on cadaver bio-skills lab. Attendees will receive the didactic lectures prior to the course so focus on-site will be primarily in the lab.

NEW Hands-on Course: NASS/Neurospine Endoscopic Spinal Surgery Symposium and Cadaver Workshop (Non-CME) ➤

8:00 a.m.–5:00 p.m.

Co-sponsored with Korean Minimally Invasive Spinal Surgery Society

Faculty will address the recent evolution of endoscopic spinal surgery (ESS), examine novel advances in the field of endoscopic optics and miniaturized surgical tools, and access the potential of replacing the conventional 'open' surgery using a microscope. Clinical scenarios will illustrate solutions using spinal endoscopy, including surgical tips and pearls on these emerging percutaneous procedures.



These educational offerings have an additional fee.

**FRIDAY,
SEPTEMBER 27**

NEW Hands-on Course: Lumbar Spinal Injections ➤

8:00 a.m.–1:00 p.m.

In this course, geared towards PM&R residents, faculty will focus on basic lumbar spinal injection procedures and the relevant literature. This course is organized and performed in association with the NASS Interventional Spine and Musculoskeletal Medicine (ISMM) Fellowship Program. Experienced faculty, all directly associated with the Fellowship Program, will provide an intimate opportunity to improve knowledge regarding patient selection and techniques for lumbar epidural steroid injections, lumbar medial branch blocks, and sacroiliac joint injections.

Attendance at this course will improve knowledge and skill with the goal of preparing residents for success in residency and in preparation for fellowship. Faculty will provide both formal didactics in a flipped classroom format and hands-on training with cadavers. Anatomic fluoroscopic structural correlations with various lumbar injection procedures will be covered. An up-to-date literature review pertinent to the included procedures also will be addressed.





EDUCATION SESSIONS

Symposia

WEDNESDAY, SEPTEMBER 25

7:30-8:55 a.m.

Surgical Symposium: Opioids

In 2017, 70,200 Americans died of a drug overdose with 68% of these deaths attributed to an opioid. The rates of overdose continue to rise yearly despite government interventions to stem the tide. In this symposium, faculty will highlight perioperative pain management strategies that improve safety and reduce the burden of opioid management.

Medical Symposium: Clinical Management of Spinal Cord Injury: Current Literature and Experience

Faculty will share experiences about the management of acute SCI, discuss various controversial aspects of SCI management, and clinical trial updates using case presentations. In addition, faculty will discuss operative vs. nonoperative management and timing of surgery.

9:00-10:00 a.m.

Surgical Symposium: Endoscopic Spine Surgery: New Techniques and Outcomes

Endoscopic spine surgery is gaining popularity and indications have been expanding more than ever. Endoscopy has not only replaced open and other MIS techniques among the early adopters, but also have been involved in combination with other technologies like laser and awake fusion techniques.

Integrated Symposium: Surgical Treatment of Low Back Pain: Evidence, Controversy and Debate

Faculty will address the evidence for the surgical treatment of lower back pain, assess well-defined indications and contraindications, identify the role of discography, and define patient characteristics that predict positive and negative outcomes.

10:35 a.m.-12:00 p.m.

Surgical Symposium: Predictive Analysis and Data Utilization to Improve Patient Assessment and Outcomes in Adult Spinal Deformity Surgery

From risk stratification to predictive models, faculty will cover the methods and science of predictive analytics as well as apply predictive models to complications, patient-reported outcomes (PROs), ideal spinal alignment and cost analysis.

Integrated Symposium: Leadership Perspective: Identifying and Managing Physician Burnout in Today's Health Care Environment

With a growing workload and increasing administrative tasks, physicians are facing significant challenges. Recognized leaders will discuss identification and management of burnout as well as the role that stigma plays in intervening in burnout.

Resident/Fellow Education Pathway: Transition to Practice I: Landing a Job

1:00-2:00 p.m.

International Surgical Symposium: Deformity

Medical Symposium: Ambulatory Surgical Centers: Is This the Next Big Thing?

Faculty will provide pros and cons about ambulatory surgical centers (ASC), ASC vs. hospital-based practice vs. both, common surgeries to perform, and reimbursement patterns for Medicare and private insurance as well as what to avoid in ASC.

3:35-5:05 p.m.

Exercise Committee Presents: Back to the Future: Low Back Pain Disability and Episode Risk Reduction

Ridiculous amounts of time and money have been aimed at treating an episode of low back pain. All this time and money are producing worsening outcomes. However, could the outcome improve if the same effort were put into reducing the risk of an episode of low back pain and the associated disability? What if, instead of attempting to treat the already present episode of low back pain, the focus was on reducing the probability of that episode from happening? Appropriate exercise is well accepted as a valid and effective treatment for an episode of low back pain. Also, those that exercise and are physically fit live longer, healthier lives. An intuitive step is to promote appropriate exercise while the population is asymptomatic to reduce the future risk of a low back pain episode. Faculty will provide the essential background to help the spine provider promote exercise as a preventative measure against the escalating prevalence of disability associated with low back pain.

THURSDAY, SEPTEMBER 26

7:25-8:25 a.m.

Surgical Symposium: Anticipating and Reducing Complications in Adult Spinal Deformity Surgery: Clinical Translatable Research Findings

Faculty will address the true incidence of complications in adult spinal deformity surgery, neurological complication occurrence and avoidance, avoiding proximal junctional kyphosis, and the importance of rod number and configuration to reduce rod breakage and nonunion in pedicle subtraction osteotomy.

Medical Symposium: Rehabilitation Interventional Medical Spine

8:30-9:30 a.m.

International Surgical Symposium: Minimally Invasive Spine Surgery

Medical Symposium: Rehabilitation Interventional Medical Spine

Resident/Fellow Education Pathway: Career Building

1:00-2:00 p.m.

Surgical Symposium: Adult Deformity: Pelvic Parameters, Getting It Right the First Time and Strategies for the Fused Flat Back

Faculty will discuss incorporating pelvic parameters into practice, present alternative fusion techniques to get proper sagittal balance and address fused flat back correction strategies. Attendees will hear a case and determine how to approach the patient.

Medical Symposium: Using Regenerative Medicine to Treat Chronic Pain Emanating from the Spine

Faculty will present various regenerative options for use in the spine, review the basic indications for specific options such as discogenic pain and facet-related pain, and present evidence and data to support best practice guidelines for these therapies.

2:05-3:05 p.m.

International Surgical Symposium: Cervical

Medical Symposium: Neuromodulation

Neuromodulation continues to advance as a treatment for chronic pain refractory to other interventional treatments. Faculty will explore the advanced uses of neuromodulation, in addition to examining and understanding the new neuromodulation platforms.

3:35-5:05 p.m.

Surgical Symposium: Lateral Approach Spine Surgery
Co-sponsored with the Society of Lateral Access Surgery

Faculty will provide an overview of lateral approaches, as well as address techniques and specific procedures, how to obtain fusion and prevent subsidence in LLIF, complications and avoidance, and advanced techniques for deformity and corpectomy.

Integrated Symposium: Opiates: The Changing Roles and Responsibilities of the Spine Surgeon

Despite the added regulatory and payer scrutiny and in spite of heightened vigilance as well as decreased prescriptions of opioids, the number of overdoses and deaths continue to increase. A series of short, moderated lectures by content experts provide a backdrop for a discussion on desirable outcomes in care models.

FRIDAY, SEPTEMBER 27

7:30-8:55 a.m.

Surgical Symposium: Complications Avoidance and Management Strategies

Faculty will address prevention and complication management strategies for cerebrospinal fluid leaks, anterior cervical spine surgery, neurological complex spine surgery, and lateral transposas interbody fusion.

Medical Symposium: The Utility of Functional Analysis in Patients Afflicted with Spinal Disorders

Faculty will identify and address practice gaps for spine surgeons. Topics include the interpretation of clinical functional analysis as an objective outcome measure during the treatment of those afflicted with spinal pathology; the benefit of clinical function analysis over the use of patient-reported outcome measures; and the benefit of clinical function analysis over the use of static imaging in assessing alignment, balance and function.

International Surgical Symposium: Trauma

7:30-10:00 a.m.

Resident/Fellow Education Pathway: Transition to Practice II: Essential Skills for Starting Practice

9:00-10:00 a.m.

International Surgical Symposium: Degenerative Lumbar

Surgical Symposium: Pelvic Fixation: Where Are We Now?

Faculty will discuss fixation options and their alternatives, describe the biomechanics of loading at the lumbosacral junction, and define the optimal length and diameter for S2AI screws.

10:30 a.m.-12:00 p.m.

Surgical Symposium: Augmented Reality, Virtual Reality and AI: Are We There Yet?

In this symposium, Faculty will examine the difference between augmented and virtual reality, recent advances in the AR/VR platforms, artificial intelligence platforms including Alexa and Google Home, as well as technological limitations and future advances.

Integrated Symposium: A Look at Medicare for All Prospects, the Legacy of the ACA and the Path Forward for American Health Care

Faculty will review the current “Medicare for All” proposals and assess the merits of the proposals for the future of the health care system as they pertain to the spine care providers’ ability to deliver quality care to patients. Additionally, attendees will hear how these proposals align with NASS objectives and how NASS advocacy efforts are working to shape this conversation.

1:00-2:30 p.m.

Surgical Symposium: Adult Cervical Spine Deformity: Assessment, Surgical Outcomes and Complications

Faculty will discuss the impact of standing regional cervical sagittal alignment on outcomes and critical measures for cervical deformity, as well as the reliability assessment of a novel cervical deformity classification. Additional discussion will focus on the anticipated surgical outcomes for adult cervical deformity compared to traditional adult spinal deformity.

3:00-4:00 p.m.

Surgical Symposium: Management Models for Complex Spine Surgery

Complex spine surgery remains a major challenge for hospital systems since patient care is resource intensive and prone to complications. Faculty will explore the economics of major spine surgery in a changing health care system and compare different management models and impact on outcomes.

4:05-5:05 p.m.

Surgical Symposium: Cervical Spine Surgery

Faculty will discuss causes, predictive and avoidance strategies, as well as the surgical treatment of proximal junctional kyphosis at the cervicothoracic junction.

SATURDAY, SEPTEMBER 28

8:00-9:00 a.m. / 9:00-10:00 a.m.

Integrated Symposium: Sports-related Cervical Spine Injuries and Update on Concussions/CTE Parts I and II

Educational institutions and coaches are asking orthopedic spine specialists and neurosurgeons what intervention can decrease the morbidity/mortality associated with concussions and chronic traumatic encephalopathy (CTE). Faculty will address studies about CTE and deposition of plaques associated with increased CTE neuropathologic stages as well as how multiple factors modify the risk of developing CTE.

10:30 a.m.-12:00 p.m.

Surgical Symposium: Emerging Technologies in Spine Surgery

Faculty will discuss the role of emerging technologies in improving the care of neurosurgical patients with spinal disorders, identify the indications to use and the expected outcomes of utilizing navigation and emerging technologies, and strategies to implement new technologies providing beneficial spinal care for patients.

A photograph of a man and a woman looking at a smartphone together. The man is wearing a dark suit and glasses, and the woman is wearing a light-colored top and a brown shoulder bag. They are standing in front of a blue background with some text and graphics.

NASS 2019 APP
Coming in July

Your Comprehensive Tool for Navigating the Meeting

- Build your personal planner, plan your itinerary, add personal notes, and tag your favorite sessions and exhibitors.
- View the meeting schedule, search for and rate sessions, add and email session notes, and view handouts.
- View ePosters and contact ePoster authors.
- Review the exhibitor list, search for exhibitors, mark exhibitors with visited tags, request meetings and add personal notes. Map booth locations on the interactive floor plan and download a personalized walking map.
- Tap into local Chicago attractions, restaurants and more.
- Read, follow and comment using Twitter.

Available in July at **www.spine.org/mobile**.



Section Specialty Track

Symposia and abstract presentations will focus on section specialty topics.

WEDNESDAY, SEPTEMBER 25

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

Research Grant Awards, Value Awards, Resident/Fellow Abstract Presentations

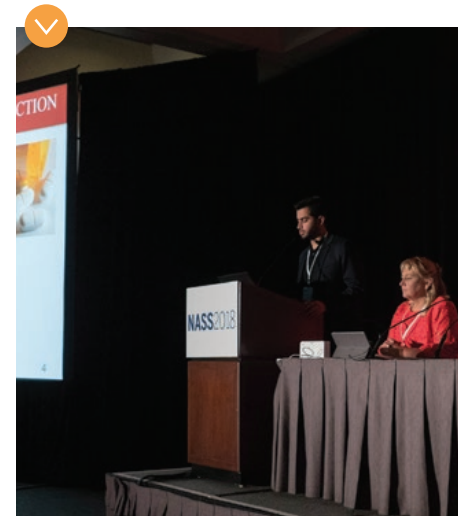
Previous research winners and other awarded winners will present at the end of selected topical abstract sessions throughout the week.

Abstract Presentations

Topic-specific abstract presentations highlighting detailed research with discussion to follow.

Session topics include:

- Best Papers
- Biomechanics
- Biomechanics and Basic Science
- Cervical Spine Surgery
- Spinal Deformity
- Thoracolumbar Surgery
- Improving Surgical Outcomes
- Interdisciplinary Care
- Functional Analysis and Therapy
- Updates in Technology
- Spine Interventions
- Socioeconomics of Spine Care
- Trauma and Biomechanics
- Radiology
- Biopsychosocial
- Complications Avoidance
- Perioperative Care



Interdisciplinary Spine Forum

Specialty educational sessions for physician assistants, nurse practitioners, nurses, chiropractors and other spine specialists.

WEDNESDAY-FRIDAY, SEPTEMBER 25-27

Session topics include:

- The Optimal Role of the First Contact Practitioner in Spine Care
- Psychologically Informed Practice
- Medical Marijuana
- Spine Care 2024
- Spine Masqueraders and Unusual Cases: An Interactive Forum
- Dietary and Nutritional Impacts on the Spine and Impact of Obesity and Diabetes
- Provocative Physical Exam Results and Nonspecific Back Pain
- Imaging for Nonsurgeons: Whose Image Is It Anyway?
- Spine Clinics: Where Are We Today and Where Are We Heading?



NEW

Surgical Technique Cadaver 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.

FRIDAY, SEPTEMBER 27

Endoscopic Spine Surgery

7:00-8:45 a.m.

Faculty: Michael Y. Wang, MD

MIS Tubular Decompression

8:45-10:30 a.m.

Faculty: TBD

Minimally Invasive Lateral Interbody Fusion

10:45 a.m.-12:00 p.m.

Faculty: Juan S. Uribe, MD

Cervicothoracic Osteotomy for Cervical Kyphosis

1:00-2:45 p.m.

Faculty: K. Daniel Riew, MD

Spinal Deformity Correction

3:00-5:05 p.m.

Faculty: Lawrence G. Lenke, MD



ATTENDEE RESOURCES

NEW

NASS Spotlight Zone

Led by subject matter experts, you and a colleague or two will have a more personalized setting to foster dynamic interactions in small groups. You can ask spotlight experts questions, get advice, exchange business ideas, etc.

NEW

Member Concierge

NASS will provide a designated area this year to assist all Members with various questions that they have throughout the meeting or to renew dues, print out a new Member Certificate, or purchase a NASS logo item.

NASS Research and Registry Resources

Come visit the Research and Registry Resources booth. NASS research and clinical resources will be available, including information on the NASS Spine Registry, grant funding, clinical practice guidelines, appropriate use criteria, and patient safety initiatives.

Publications Booth

Stop by the Publications booth (in the lobby) where you'll find:

- The NASS Bookstore, featuring essential clinical, coverage and patient education publications at substantial annual meeting discounts.
- *The Spine Journal* and *SpineLine*. Get information on submitting manuscripts, applying to become a *TSJ* peer reviewer, *SpineLine*'s 2019 20 Under 40 winners, and general reader, author or editor queries.
- Answers to Connection Questions on how to access benefits and NASS content through the many channels available to members and colleagues, e.g., *The Spine Journal* app, *SpineLine* app, *SpineLine* podcast, SpineConnect, free eBooks, Social Media, NASS Daily News, Videos and Podcasts for Patients, and more.



SAVE UP TO \$675 ON YOUR ANNUAL MEETING REGISTRATION FEES!

www.spine.org/join



NOT A MEMBER OF NASS?

Save up to \$675 on registration by becoming a member.

To take advantage of these savings, complete an online application at **www.spine.org/join** before registering for the meeting. Once your application is complete, you can register at the reduced member rate and begin enjoying the many benefits of membership!

To receive member pricing, individuals must complete an online application and upload a copy of their current curriculum vitae (CV) or send a copy of their CV via email to membership@spine.org. You will receive email confirmation once your application is complete at which time you can register for the meeting at the discounted member rate.

Technical Exhibition Means Activity.

See the latest products and services in spine from more than 350 companies.

Connect with industry experts from the leading companies in spine.

Get your hands on the actual products to compare and plan your purchase.

Get practical experience with the latest products on actual cadavers in the Surgical Innovation Labs.

TECHNICAL EXHIBITION

The Learning Place

Looking for an alternative to sitting in a lecture hall? Settle down with a cup of coffee and continue your education in the Learning Place in the Technical Exhibition.

Poster Grand Rounds

During the morning and afternoon networking breaks, you will have the opportunity to meet with and ask questions of select ePoster authors.

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 spine.org/am for schedules.

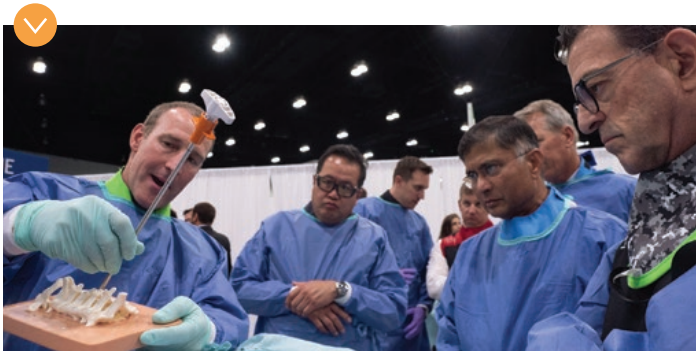
ePosters—Breaking Out of the Box

Using a new hybrid system, ePosters will have a physical and virtual presence. Mini-poster walls will give attendees a throwback to the traditional poster hall and its traditional networking, but add the interactivity and functionality of modern technology. Using a phone or tablet through the NASS 2019 mobile app with the mini posters will allow for interaction via social media.

Out is the dull PowerPoint. Posters can now include a wide range of multimedia and interactive material including videos, surveys, presentations, web links and even apps.

Attendees are able to post directly to the ePoster and have discussions with both the author and others viewing.

Easily sharable, this new system allows people to pass on the ePosters to others and interacting with their NASS peers. This means attendees can take their favorite ePosters with them on their phone and it allows the ePoster author to add to and update his/her ePoster following the discussions at the conference.





Experience the industry's largest display of spine care products and services.

See and touch countless spine care products. Take advantage of hands-on learning experiences with an in-booth demonstration while talking to the designers and engineers.

Make the most of your time by enjoying lunch in the exhibit hall.

Want to exhibit or know a company that should exhibit? Go to exhibitatnass.org for information.



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.

Solution Showcase

Lunch'n'Learn in the Solution Showcase. Enjoy a complimentary lunch while learning the latest advances in spine care practices, services and technologies. These presentations are always well attended so be sure to get there early.



Hungry?

You need to eat and NASS offers you a few different options to sate your appetite.

Box Lunch

Health Care Professional Attendees get a box lunch included with their registration.

Food Pod

In the center of the showfloor with an overlook from two stories up, this area features concessions.

NASS Bistro

Get a hot lunch at a good price. Better than your usual concession options. Reserve tables for a group lunch.

Need Coffee?

You can find coffee in the Technical Exhibition during the networking breaks in the learning place or booth 1567.

Break schedule:

Wednesday: 10:00–10:30 a.m.; 3:05–3:35 p.m.

Thursday: 9:30–10:00 a.m.; 3:05– 3:35 p.m.

Friday: 10:00–10:30 a.m.

MEETING AT-A-GLANCE

MONDAY, SEPTEMBER 23

8:00 a.m.—5:00 p.m.

Coding Update 2019:

Mastering the Coding Maze (Two-Day Course) 

8:00 a.m.—5:00 p.m.

Exhibitor Registration

TUESDAY, SEPTEMBER 24

8:00 a.m.—5:00 p.m.

Coding Update 2019: Mastering the Coding Maze
(Continued; Two-Day Course) 

8:00 a.m.—6:00 p.m.

Exhibitor Registration

1:00—4:30 p.m.

Attendee Registration

 Requires separate registration fee

Watch Anytime Session Recordings

Free Access to Members with General Registration

70.5 AMA PRA Category 1 Credits™ are available
for recorded symposia.

This recording includes 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. Don't miss your chance to view the archived online compilations of what you missed.

WEDNESDAY, SEPTEMBER 25

6:30—8:00 a.m.

Continental Breakfast

6:30 a.m.—5:00 p.m.

Attendee Registration

7:00 a.m.—12:00 p.m.

Hands-on Course:

Section on Minimally Invasive Procedures: Minimally Invasive Spine Surgery 

7:00 a.m. — 5:00 p.m.

Exhibitor Registration

7:20—7:25 a.m.

Welcome Remarks

7:25—7:30 a.m.

NASS Working for You

7:30—8:55 a.m.

Surgical Symposium:

Opioids

Medical Symposium:

Clinical Management of Spinal Cord Injury: Current Literature and Experience

Abstract Presentations:

Biomechanics and Basic Science I

Cervical Spine Surgery I

Spinal Deformity I

Thoracolumbar Surgery I

8:00—10:00 a.m.

Surgical Innovation Lab Demos

8:00 a.m.—5:00 p.m.

NEW Hands-on Course:

NASS/Neurospine Endoscopic Spinal Surgery Symposium and Cadaver Workshop Co-sponsored with KOMISS (Non-CME) 

9:00—10:00 a.m.

Surgical Symposium:

Endoscopic Spine Surgery: New Techniques and Outcomes

Integrated Symposium:

Surgical Treatment of Low Back Pain: Evidence, Controversy and Debate

Best Papers

Abstract Presentations:

Cervical Spine Surgery II

Improving Surgical Outcomes

Thoracolumbar Surgery II

 Requires separate registration fee

9:00 a.m.–5:00 p.m.

Technical Exhibition

Innovative Technology Posters

ePosters

Career Building Recruitment Event

Simulated Surgery Lab

10:00–10:30 a.m.

Networking Break Beverage Service

Exercise Video Demonstrations

Poster Grand Rounds

Simulated Surgery Lab Presentation

10:30–10:35 a.m.

NASS Working for You

10:35 a.m.–12:00 p.m.

Surgical Symposium:

Predictive Analysis and Data Utilization to Improve Patient Assessment and Outcomes in Adult Spinal Deformity Surgery

Integrated Symposium:

Leadership Perspective: Identifying and Managing Physician Burnout in Today's Health Care Environment

Abstract Presentations:

Spinal Deformity II
Interdisciplinary Care

Resident/Fellow Education Pathway:

Transition to Practice I

Interdisciplinary Spine Forum:

Role of First Contact Practitioner

11:00 a.m.–1:00 p.m.

Surgical Innovation Lab Demos

12:00–1:00 p.m.

Complimentary Boxed Lunch (Medical Attendees Only)

Spine Fellowship Directors' Meeting

Solution Showcase

12:55–1:00 p.m.

NASS Working for You

1:00–2:00 p.m.

International Surgical Symposium:

Deformity

Medical Symposium:

Ambulatory Surgical Centers: Is This the Next Big Thing?

Abstract Presentations:

Cervical Spine Surgery III
Thoracolumbar Surgery III
Functional Analysis and Therapy

Innovative Technology Presentations (Non-CME)

2:00–4:00 p.m.

Surgical Innovation Lab Demos

2:05–3:05 p.m.

Section Specialty Sections:

Biologics Back to the Future
Robotics and Navigation
Section on Motion Technology Abstract Presentations
Section on Intraoperative Neuromonitoring

3:05–3:35 p.m.

Networking Break Beverage service

Members' Business Meeting

Exercise Video Demonstrations

Poster Grand Rounds

Simulated Surgery Lab Presentations

3:35–5:05 p.m.

Section Specialty Sessions:

Oncology
Biologics Back to the Future
Robotics and Navigation
Motion Technology Abstract Presentations
Intraoperative Neurophysiological Monitoring

Exercise Committee Presents:

Back to the Future: Low Back Pain Disability and Episode Risk Reduction

5:00–6:00 p.m.

Social Hour

5:00–8:00 p.m.

Surgical Innovation Lab Workshops

THURSDAY, SEPTEMBER 26

6:30–8:00 a.m.

Continental Breakfast

6:30 a.m.–5:00 p.m.

Attendee Registration

7:20–7:25 a.m.

Announcements

7:25–8:25 a.m.

Surgical Symposium:

Anticipating and Reducing Complications in Adult Spinal Deformity Surgery: Clinical Translatable Research Findings

Medical Symposium:

Rehabilitation Interventional Medical Spine

Abstract Presentations:

Updates in Technology
Thoracolumbar Surgery IV
Biomechanics and Basic Science II

Interdisciplinary Spine Forum:

Medical Marijuana

8:00–10:00 a.m.

Surgical Innovation Lab Demos

8:00 a.m.–5:00 p.m.

Exhibitor Registration

8:30–9:30 a.m.

International Surgical Symposium:

Minimally Invasive Spine Surgery

Medical Symposium:

Rehabilitation Interventional Medical Spine

Best Papers

Abstract Presentations:

Spine Interventions

Resident/Fellow Education Pathway:

Career Building

Interdisciplinary Spine Forum:

Spine Care 2024

9:00 a.m.–5:00 p.m.

Technical Exhibition

Innovative Technology Posters

ePosters

Career Building Recruitment Event

Simulated Surgery Lab

9:30–10:00 a.m.

Networking Break

Beverage Service

Exercise Video Demonstrations

Practical Theater

Poster Grand Rounds

Simulated Surgery Lab Presentation

9:45–10:00 a.m.

NASS Awards:

9:45–9:55 a.m. NASS Recognition Awards Presentation
9:55–10:00 a.m. 2019 Research Grants and Fellowship Awards Presentations

10:00–10:15 a.m.

Incoming Presidential Remarks:

William J. Sullivan, MD

10:15–11:00 a.m.

2018-2019 Presidential Address:

Jeffrey C. Wang, MD

11:00 a.m.–12:00 p.m.

Presidential Guest Speaker:

Christian Gansch

11:00 a.m.–1:00 p.m.

Surgical Innovation Lab Demos

12:00–1:00 p.m.

Complimentary Boxed Lunch

(Medical Attendees Only)

Solution Showcase

1:00–2:00 p.m.

Surgical Symposium:

Adult Deformity: Pelvic Parameters, Getting it Right the First Time and Strategies for the Fused Flat Back

Medical Symposium:

Using Regenerative Medicine to Treat Chronic Pain Emanating from the Spine

***The Spine Journal* Outstanding Paper Awards Presentations**

Abstract Presentations:

Socioeconomics of Spine Care

Innovative Technology Presentations (Non-CME)

Interdisciplinary Spine Forum:

Psychologically Informed Practice

2:05–3:05 p.m.

International Surgical Symposium:

Cervical

Medical Symposium:

Neuromodulation

Abstract Presentations:

Trauma and Biomechanics I

Cervical Spine Surgery IV

Innovative Technology Presentations (Non-CME)

Interdisciplinary Spine Forum:

Psychologically Informed Practice (Continued)

2:00–4:00 p.m.

Surgical Innovation Lab Demos

3:05–3:35 p.m.

Networking Break Beverage Service

Exercise Video Demonstrations

Practical Theater

Poster Grand Rounds

Simulated Surgery Lab Presentation

3:30–3:35 p.m.

NASS Working for You

3:35–5:05 p.m.

Surgical Symposium:

Lateral Approach to Spine Surgery

Co-sponsored with the Society of Lateral Access Surgery

Integrated Symposium:

Opiates: The Changing Roles and Responsibilities of the Spine Surgeon

Abstract Presentations:

Thoracolumbar Surgery V

Spinal Deformity III

Radiology

Interdisciplinary Spine Forum:

Psychologically Informed Practice (Continued)

5:00–8:00 p.m.

Surgical Innovation Lab Workshops

5:15–6:15 p.m.

Resident, Fellow and Program Directors' Reception

FRIDAY, SEPTEMBER 27

6:30–8:00 a.m.

Continental Breakfast

7:00–8:45 a.m.

Surgical Technique Cadaver Demonstration:

Endoscopic Spine Surgery

7:00 a.m.–5:00 p.m.

Attendee Registration

7:25–7:30 a.m.

Announcements

7:30–8:55 a.m.

Surgical Symposium:

Complications Avoidance and Management Strategies

Medical Symposium:

The Utility of Functional Analysis in Patients Afflicted with Spinal Disorders

Abstract Presentations:

Spinal Deformity IV

International Surgical Symposium:

Trauma

Resident/Fellow Education Pathway:

Transition to Practice II

8:00–10:00 a.m.

Simulated Surgery Lab Presentation

8:00 a.m.–1:00 p.m.

NEW Hands-on Course:

Lumbar Spinal Injections ➤

8:45–10:30 a.m.

Surgical Technique Cadaver Demonstration:

MIS Tubular Decompression

8:55–9:00 a.m.

NASS Working for You

9:00–10:00 a.m.

International Surgical Symposium:

Degenerative Lumbar

Best Papers

Surgical Symposium:

Pelvic Fixation: Where Are We Now?

Resident/Fellow Education Pathway:

Transition to Practice II (Continued)

Interdisciplinary Spine Forum:

Spine Masqueraders and Unusual Cases: An Interactive Forum

➤ Requires separate registration fee

9:00 a.m.–1:30 p.m.

Technical Exhibition

Innovative Technology Posters

ePosters

Simulated Surgery Lab

Career Building Recruitment Event

10:00–10:30 a.m.

Networking Break Beverage Service

Exercise Video Demonstrations

Poster Grand Rounds

Simulated Surgery Lab Presentation

10:30 a.m.–12:00 p.m.

Surgical Symposium:

Augmented Reality, Virtual Reality and AI: Are We There Yet?

Integrated Symposium:

A Look at Medicare for All Prospects, the Legacy of the ACA and the Path Forward for American Health Care

Abstract Presentations:

Spinal Deformity V

Cervical Spine Surgery V

Interdisciplinary Spine Forum: Nutrition

10:45 a.m.-12:00 p.m.

Surgical Technique Cadaver Demonstration:

Minimally Invasive Lateral Interbody Fusion

12:00–1:00 p.m.

Complimentary Boxed Lunch (Medical Attendees Only)

SpinePAC Luncheon

1:00–1:05 p.m.

NASS Working for You

1:00–2:30 p.m.

Surgical Symposium:

Adult Cervical Spine Deformity: Assessment, Surgical Outcomes and Complications

Abstract Presentations:

Trauma and Biomechanics II

Spinal Deformity VI

Interdisciplinary Spine Forum:

Provocative Physical Exam Results and Nonspecific Back Pain

1:00–2:45 p.m.

Surgical Technique Cadaver Demonstration:
Cervicothoracic Osteotomy for Cervical Kyphosis

2:30–2:55 p.m.

Networking Break Beverage Service

2:55–3:00 p.m.

NASS Working for You

3:00–4:00 p.m.

Surgical Symposium:
Management Models for Complex Spine Surgery

Abstract Presentations:

Cervical Spine Surgery VI
Biopsychosocial

Interdisciplinary Spine Forum:
Imaging for Nonsurgeons

3:00–5:05 p.m.

Surgical Technique Cadaver Demonstration:
Spinal Deformity Correction

4:05–5:05 p.m.

Surgical Symposium:
Cervical Spine Surgery

Abstract Presentations:

Cervical Spine Surgery VII
Complication Avoidance

Interdisciplinary Spine Forum:
Spine Clinics—Where Are We Today and Where Are We Heading?

SATURDAY, SEPTEMBER 28

7:30–8:00 a.m.

Continental Breakfast

7:30–10:45 a.m.

Attendee Registration

7:55–8:00 a.m.

Announcements

8:00–9:00 a.m.

Integrated Symposium:
Sports-related Cervical Spine Injuries and Update on Concussions/CTE Part I

9:00–10:00 a.m.

Integrated Symposium:
Sports-related Cervical Spine Injuries and Update on Concussions/CTE Part I Part II

Abstract Presentations:

Biomechanics
Cervical Spine Surgery VIII

10:00 – 10:30 a.m.

Networking Break Beverage Service

10:30 a.m.–12:00 p.m.

Surgical Symposium:
Emerging Technologies in Spine Surgery

Abstract Presentations:

Perioperative Care
Spinal Deformity VIII

12:00 p.m.

Meeting Adjourns



HOUSING INFORMATION

Get the **FLEXIBILITY** to stretch your choice and dollars.

Plans change. Budgets get slashed. We can help.

onPeak offers a hotel booking solution that enables you to plan with ease, then make the most of your budget for NASS.



Best Rate Pledge

We comparison shop to ensure our rates remain lowest.

Pay Delay

Book now, pay later to ease your commitment.

Deep Discounts

Buy in bulk hotel rate, with the savings passed to you.

Keep Your Points

Earn your hotel brand points and reap the benefits.

Financial Freedom

Escape upfront payments and adjustment penalties.

Reservation Protection

Get peace of mind with support before, during and after your stay.



- 1 **Chicago Marriott Downtown Magnificent Mile**
540 N. Michigan Ave. (3.3 miles)
- 2 **Courtyard Chicago Downtown Magnificent Mile**
165 E. Ontario St. (3.4 miles)
- 3 **Courtyard Chicago Downtown River North**
30 E. Hubbard St. (3.2 miles)
- 4 **Embassy Suites Chicago Downtown**
600 N. State St. (3.4 miles)
- 5 **Fairmont Chicago Millennium Park**
200 N. Columbus Dr. (2.9 miles)
- 6 **Hampton Inn Chicago McCormick Place**
123 E. Cermak Rd. (0.5 miles)
- 7 **Hilton Chicago**
720 S. Michigan Ave. (1.9 miles)
- 8 **Hilton Garden Inn McCormick Place**
123 E. Cermak Rd. (0.5 miles)
- 9 **Home2 Suites Chicago McCormick Place**
123 E. Cermak Rd. (0.5 miles)
- 10 **Hyatt Centric Chicago Magnificent Mile**
633 N. St. Clair St. (3.4 miles)
- 11 **Hyatt Regency Chicago**
151 E. Upper Wacker Dr. (3.0 miles)
- 12 **Hyatt Regency McCormick Place**
2233 S. Martin Luther Dr. (0.2)
- 13 **InterContinental Chicago Magnificent Mile**
505 N. Michigan Ave. (3.2 miles)
- 14 **Marriott Marquis Chicago at McCormick Place**
2121 S. Prairie Ave. (0.4)
- 15 **Swissotel Chicago**
323 E. Upper Wacker Dr. (3.0 miles)
- 16 **The Gwen, a Luxury Collection Hotel**
521 N. Rush St. (3.2 miles)
- 17 **The Palmer House Hilton**
17 E. Monroe St. (2.6 miles)

(Distance from McCormick Place)



**HOW TO
SECURE
HOUSING**

**Complete
Meeting
Registration**

**Book
Room:**

ONLINE

www.spine.org/am

PHONE

800-545-1773 (US/Canada) or 312-527-7300 (International)
9:00 a.m.-6:00 p.m. ET

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REGISTRATION INFORMATION



General (in-person) registration fees include:

- All education sessions beginning on Wednesday, September 25 through Saturday, September 28;
- Continental breakfasts and beverage breaks (Wed.–Sat.);
- Technical Exhibition and box lunches (Wed.–Fri.);
- NASS Social Hour (Wed. evening).

One-day (in-person) registration fees include:

- Education sessions for Wed., Sept. 25; Thurs., Sept. 26; Fri., Sept. 27 **OR** Sat., Sept. 28;
- Technical Exhibition for Wed., Sept. 25; Thurs., Sept. 26; **OR** Fri., Sept. 27;
- NASS Social Hour (Wed. only), continental breakfasts, beverage breaks and box lunch (except Sat.) on your registered day;
- *AMA PRA Category 1 Credits*[™]—Wed. (7.5), Thurs. (5.5), Fri. (7.5) **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 Watch Anytime recordings of symposia, abstracts and discussions/debates;
- Ability to earn up to 70.5 *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.

MEETING REGISTRATION CATEGORY AND TYPE	Until July 11	July 12–Sept. 28
MEMBER PHYSICIAN		
General or Virtual Registration	\$699	\$999
One-day Wednesday, Thursday or Friday	\$349	\$549
One-day Saturday Only	\$233	\$433
MEMBER AFFILIATED HEALTH CARE		
General or Virtual Registration	\$399	\$699
One-day Wednesday, Thursday or Friday	\$199	\$399
One-day Saturday Only	\$133	\$333
MEMBER EMERITUS		
General or Virtual Registration	\$299	\$599
One-day Wednesday, Thursday or Friday	\$149	\$349
One-day Saturday Only	\$99	\$299
MEMBER RESIDENT/FELLOW		
General or Virtual Registration	\$159	\$359
One-day Wednesday, Thursday or Friday	\$79	\$279
One-day Saturday Only	\$53	\$253
COMMERCIAL AFFILIATE		
General or Virtual Registration	\$699	\$999
One-day Wednesday, Thursday or Friday	\$349	\$549
One-day Saturday Only	\$233	\$433
NONMEMBER PHYSICIAN		
General or Virtual Registration	\$999	\$1299
One-day Wednesday, Thursday or Friday	\$499	\$699
One-day Saturday Only	\$333	\$533
NONMEMBER AFFILIATED HEALTH CARE		
<i>Employed by a hospital, health care network, university or free-standing facility administering to patients (e.g., DC, PA, NP, RN, PT)</i>		
General or Virtual Registration	\$549	\$849
One-day Wednesday, Thursday or Friday	\$274	\$474
One-day Saturday Only	\$183	\$383
NONMEMBER IN-TRAINING/RESIDENT/FELLOW		
<i>Must provide a letter on letterhead from program director to 630-230-3709 or registration@spine.org.</i>		
General or Virtual Registration	\$229	\$429
One-day Wednesday, Thursday or Friday	\$114	\$314
One-day Saturday Only	\$76	\$276
COMMERCIAL BUSINESS (INDUSTRY)		
<i>Nonclinical professional that does not treat patients.</i>		
General or Virtual Registration	\$999	\$1299
One-day Wednesday, Thursday or Friday	\$499	\$699
One-day Saturday Only	\$333	\$533
GUEST SOCIAL HOUR		
<i>Badge for guest to attend Social Hour, Wednesday, Sept. 25, 5:00–6:00 p.m.</i>	\$50	\$50

WATCH ANYTIME RECORDINGS

MEMBERS

With General Registration	\$0
With One-day Registration	\$215

NONMEMBERS

With General Registration	\$75
With One-day Registration	\$315



CODING UPDATE 2019

Monday, Sept. 23–Tuesday, Sept. 24, 8:00 a.m.–5:00 p.m.

MEMBERS

Physician	\$700
Affiliated Health Care	\$550
In-Training Resident/Fellow	\$350
Commercial Affiliate	\$700

NONMEMBERS

Physician	\$800
Affiliated Health Care	\$600
In-Training Resident/Fellow	\$400

HANDS-ON COURSES:

SECTION ON MINIMALLY INVASIVE PROCEDURES:

MINIMALLY INVASIVE SPINE SURGERY

Wednesday, Sept. 25, 7:00 a.m.-12:00 p.m.

NASS/NEUROSPINE ENDOSCOPIC SPINAL SURGERY SYMPOSIUM AND CADAVER WORKSHOP

Co-sponsored with KOMISS

Wednesday, Sept. 25, 8:00 a.m.-5:00 p.m.

LUMBAR SPINAL INJECTIONS

Friday, Sept. 27, 8:00 a.m.-1:00 p.m.

MEMBERS

UNTIL JULY 11 JULY 12-SEPT. 27

Physician	\$895	\$995
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NONMEMBERS

Physician	\$995	\$1095
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NASS Membership Discounts and Rewards

All individuals registering for NASS 2019 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, affiliated health care professionals and others, NASS fosters an atmosphere of multidisciplinary collaboration unmatched by other professional societies.

If you are not already a 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 bi-monthly 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. You also can join by completing the membership section of the annual meeting registration form. 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.



EDUCATION DETAILS



Who Should Attend?

The multidisciplinary spine care community as well as those with an abiding interest in spine are welcome to attend the 34th 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 24 *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 2019: Mastering the Coding Maze
- Hands-on course: Section on Minimally Invasive Procedures: Minimally Invasive Spine Surgery
- Hands-on course: Lumbar Spinal Injections

Continuing Education (CE) Credit for Affiliated 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 Southern California University Health System for chiropractic credit 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. Claim education credit and print CME certificates at www.spine.org/CME. Email questions to education@spine.org.



ACKNOWLEDGEMENTS

2018-2019 Board of Directors

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

Jeffrey C. Wang, MD
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At-Large Member

Donna M. Lahey, RNFA, CNOR
At-Large Member

Eric J. Muehlbauer, MJ, CAE
Executive Director

2019 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:

Jeffrey C. Wang, MD
President

Thomas E. Mroz, MD
Patrick C. Hsieh, MD, MS
David E. Fish, MD, MPH
Allen S. Chen, MD, MPH
Sanjog Pangarkar, MD
2019 Program Co-chairs

Donna M. Lahey, RNFA, CNOR
Scott I. Horn, DO
Michael G. Fehlings, MD, PhD, FRCSC
2020 Program Co-chairs

Zoher Ghogawala, MD, FACS
Donna D. Ohnmeiss, PhD
2018 Program Co-chairs

John G. Finkenberg, MD
Education Council Director

Disclaimer

The material presented at the 34th 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.



DISCLOSURE

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 34th 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 2019 Program Committee Disclosures

As of March 28, 2019

Chen, Allen S.: Nothing to Disclose

Fehlings, Michael G.: Nothing to Disclose

Finkenberg, John G.: Other: Zimmer/Biomet (B).

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 (Nonfinancial, Research Committee Chair, Registry Director), GN2.0-Nidus (66%), Joint Spine Section - AANS-CNS (Nonfinancial, Chair).

Horn, Scott I.: Board of Directors: Spine Intervention Society (Travel Expenses Reimbursed); Other Office: SIS (CPT Advisor, Travel Expenses Reimbursed); Speaking and/or Teaching Arrangements: AAPMR (AMA Alternate CPT Advisor, Travel Expenses), NASS (Travel Expenses), SIS (AMA CPT Advisor, Health Policy Chair, Travel Expenses Reimbursed)."

Hsieh, Patrick C.: Royalties: Nuvasive (D), Medtronic (A), Zimmer Biomet (A).

Knight, Reginald Q.: Consulting: Stryker Spine (B), Vertebral Technology Inc (B), Vertera (F, Outside 12-Month Requirement).

Lahey, Donna M.: Speaking and/or Teaching Arrangements: NASS (B, Paid directly to institution/employer); Trips/Travel: NASS (Travel Expense Reimbursement, Paid directly to institution/ employer).

Mroz, Thomas E.: Royalties: Stryker (F).

Ohnmeiss, Donna D.: Board of Directors: NASS (Travel Expenses); Other: Texas Back Institute Research Foundation (Salary).

Pangarkar, Sanjog: Nothing to Disclose

Wang, Jeffrey C.: Royalties: Depuy Synthes (C), Amedica (B), SeaSpine (C), Biomet (F); Private Investments: Pearl Diver (<1%), Electrocore (<1%), Surgitech (<1%), Expanding Orthopedics (<1%), Bone Biologics (<1%); Board of Directors: North American Spine Society (Travel Expense Reimbursement), Cervical Spine Research Society (Travel Expense Reimbursement), AOFoundation (C); Fellowship Support: AO Foundation (E, Paid directly to institution/employer).

2019 Board of Directors Disclosures

As of March 28, 2019

Arnold, Paul M.: Board of Directors: AANS/CNS Joint Section on Neurotrauma (Nonfinancial), CSRS (Nonfinancial), LSRS (Nonfinancial), SpineEx (1%); Consulting: Asterias (A, Outside 12-Month Requirement), Cerapedics (C), Medtronic (B), Spine Wave (B); Research Support (Staff and/or materials): Evoke Medical (40%, Paid directly to institution/employer).

Cheng, Joseph S.: Trips/Travel: AANS (Travel Expense Reimbursement, Paid directly to institution/employer), AO (Travel Expense Reimbursement, Paid directly to institution/ employer); Other Office: Council of State Neurosurgical Societies (Corresponding Secretary).

Cho, Charles H.: Board of Directors: North American Spine Society (Travel Expense Reimbursement, Evidence Compilation and Analysis Chair).

Dohring, Edward J.: Royalties: Stryker (D, Paid directly to institution/employer); Private Investments: Anzu (.03%); Board of Directors: NASS Secretary (Travel Expense Reimbursement); Research Support - Staff and/or Materials: Medtronic (B, Paid directly to institution/employer).

Fehlings, Michael G.: Nothing to Disclose

Finkenberg, John G.: Other: Zimmer/Biomet (B).

Ghogawala, Zoher: Board of Directors: Cervical Spine Research Society (Nonfinancial, Research Committee Chair, Registry Director), GN2.0-Nidus (66%), Joint Spine Section - AANS-CNS (Nonfinancial, Chair).

Grauer, Jonathan N.: Consulting: TIDI Products (B, Relationship Dissolved).

Hsieh, Patrick C.: Royalties: Nuvasive (D), Medtronic (A), Zimmer Biomet (A).

Kreiner, Scott: Speaking and/or Teaching Arrangements: Spine Intervention Society (Travel Expense Reimbursement); Trips/ Travel: MPW AUC on Vertebral Augmentation (B).

Lahey, Donna M.: Speaking and/or Teaching Arrangements: NASS (B, Paid directly to institution/employer); Trips/Travel: NASS (Travel Expense Reimbursement, Paid directly to institution/ employer).

Mitchell, William: Private Investments: South Jersey Cyberknife (C); Speaking and/or Teaching Arrangements: NASS (B); Trips/Travel: NASS (Travel Expenses).

Mroz, Thomas E.: Royalties: Stryker (F).

Muehlbauer, Eric J.: Nothing to Disclose

O'Brien, David R.: Stock Ownership: Arrowlytics (<1%); Speaking and/or Teaching Arrangements: NASS (Travel Expenses), SIS (Travel Expenses); Trips/Travel: NASS (B), SIS (B).

Ohnmeiss, Donna D.: Board of Directors: NASS (Travel Expenses); Other: Texas Back Institute Research Foundation (Salary).

Reiter, Mitchell F.: Private Investments: CreOsso (4%).

Reitman, Charles A.: Board of Directors: NASS (Travel Expense Reimbursement); Other: NASS (Nonfinancial); 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.: Royalties: Biomet (D); Consulting: Collagen Matrix (B).

Skolasky, Richard L.: Board of Directors: North American Spine Society (Nonfinancial, Governance Committee Chair Research Program Management Chair, Board of Directors); Other: International Society for Quality Of Life Research (Associate Editor for Quality of Life Research).

Sullivan, William J.: Board of Directors: NASS (Board of Directors, Executive Committee); Trips/Travel: NASS (B).

Truumees, Eric: Trips/Travel: AAOS (Travel Expense Reimbursement); Board of Directors: Seton Family of Doctors (Salary); Other Office: AAOS Communications Cabinet (E, Travel Expense Reimbursement, Editor-in-Chief of AAOS Now, Communications Cabinet); Research Support - Staff and/or Materials: Relievant (B, Paid directly to institution/employer), Medtronic (A), Vertex Pharma (A), Dova Pharmaceuticals (A), Pfizer (B, Paid directly to institution/employer), Stryker Spine (B, Paid directly to institution/employer).

Wang, Jeffrey C.: Royalties: Depuy Synthes (C), Amedica (B), SeaSpine (C), Biomet (F); Private Investments: Pearl Diver (<1%), Electrocore (<1%), Surgitech (<1%), Expanding Orthopedics (<1%), Bone Biologics (<1%); Board of Directors: North American Spine Society (Travel Expense Reimbursement), Cervical Spine Research Society (Travel Expense Reimbursement), AOFoundation (C); Fellowship Support: AO Foundation (E, Paid directly to institution/employer).

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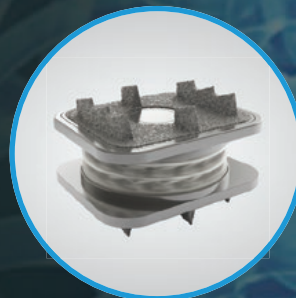
Our portfolio incorporates multiple treatment modalities: mechanical, biological and electromagnetic.

Restorative

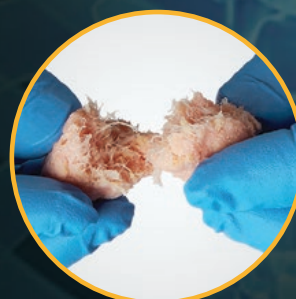
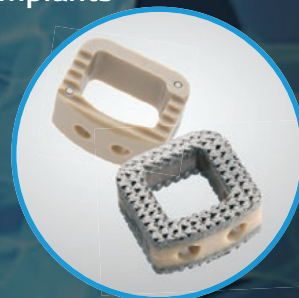
We are committed to helping patients with various spinal and bone related conditions regain their quality of life.



Bone Growth
Therapies



Spinal Implants



Biologics