

NASS2018 DAILY NEWS

THURSDAY, SEPTEMBER 27

INSIDE THIS ISSUE: **4** Outpatient Spine Surgery **6** Technical Exhibition **8** Questions of the Day **14** LA Attractions

TODAY'S HIGHLIGHTS

6:30–8 AM	Continental Breakfast Concourse Hall Foyer
6:30 AM–5 PM	Attendee Registration South Lobby
7:30–8:30 AM	Plenary Session: Envisioning a Narcotic-Free America: Role of Spine Physicians Concourse Hall 151/152
7:30–10 AM	Interdisciplinary Spine Forum: <i>The Lancet Low Back Pain Series</i> and the <i>European Spine Journal Series</i> on the Future of Spine Care Room 406AB
8:30–9:30 AM	Best Paper Presentations Concourse Hall 151/152
9 AM–5 PM	Technical Exhibition/ ePosters Technical Exhibition
10:15–11 AM	Presidential Address: Daniel K. Resnick, MD, MS Concourse Hall 151/152
11 AM–12 PM	Presidential Guest Speaker: Vijay Gupta Concourse Hall 151/152
12–1 PM	Complimentary Box Lunch Medical Attendees Only Location TBD
1:05–2:05 PM	The Spine Journal Outstanding Paper Awards Presentations Concourse Hall 152
	Symposium: Bone Health Optimization in the Spine Patient Room 403B
	Abstract Presentations: Lumbar Spine Surgery: What You Need to Know Room 403A
	Understanding Anxiety and Depression When Performing Spine Surgery Room 406AB

HIGHLIGHTS continued on page 3 »



Best Papers Explore Benefits of Spinal Decompression, Prevalence of Patient Recall Bias

The results of two studies presented during Wednesday's Best Papers session suggest that surgical decompression is associated with improved lower back pain in lumbar spinal stenosis, and that recall bias negatively impacts retrospectively collected patient reported outcomes.

Nicolas Dea, MD, MSc, FRCSC, Clinical Associate Professor in the Division of Neurosurgery at the University of British Columbia, presented the findings from a multicenter, ambispective review of consecutive spine surgery patients enrolled by the Canadian Spine Outcomes and Research Network (CSORN) between 2012 and 2015. The researchers looked at surgical intervention's effect on low back pain (LBP) in 1,340 consecutive patients with lumbar spine stenosis. Patient-reported



Nicolas Dea, MD

outcomes were reported at 3, 12 and 24 months after surgery.

"Our primary outcomes were change in lower back pain (NRS) and disability (ODI)," Dr. Dea said. "We considered a minimal clinically important difference (MCID) with change in NRS as 2 points and ODI as 10 points. The independent variables used in this study were measured on either categorical or continuous scales."

Among their findings, Dr. Dea reported that LBP significantly improved 3 months after surgery and was sustained at 24 months and that 74% of patients reached

MCID with regards to NRS. Predictive factors for sustained improvement (12 and 24 months) in LBP after surgical intervention were absence of narcotic usage, severity of LBP prior to surgery (high NRS) and being a non-smoker.

BEST PAPERS continued on page 3 »

Radio Personality Hugh Hewitt Warns of the Danger of 'Limited Inputs'

POLITICAL PUNDIT AND HOST of a nationally syndicated radio program Hugh Hewitt says he first discovered the importance of understanding "bubbles" while working for former President Richard Nixon in the 1980s.

Hewitt told the audience at Wednesday morning's Health Care Symposium of the day President Nixon found himself at a K-Mart — something he'd never experienced before. Hewitt recalls the former president's astonishment after

stepping outside of his own little bubble for the first time in decades.

This, Hewitt said, was his first insight into how people have a tendency to artificially limit the information they take in and how the bubbles we create have contributed to one of the most divisive eras in US politics.

"Bubbles mean you're artificially limiting your inputs," he said. "American politics right now is in its most bubbled-up form that I've ever seen. It's understandable. Everyone

has bubbles. Spine specialists have bubbles. That's why you have an association. You have a unique set of issues that impact how you go about your day."

However, Hewitt highlighted the problem with limiting your information intake by recounting the night of the 2016 presidential election, when he said he witnessed many people having their bubbles burst. He said many people experienced profound

HEALTH CARE SYMPOSIUM continued on page 3 »

TODAY'S HIGHLIGHTS » continued from page 1

1:05–3:05 PM

Symposium: Section on Minimally Invasive Procedures: Latest Advances in Minimally Invasive Spine Surgery
Concourse Hall 151

2:05–3:05 PM

Section Specialty Sessions: Section on Spinal Cord Injury: Controversies in Management
Room 403B

Section on Biologics and Basic Research Abstract Presentations
Room 404AB

Exercise Committee Presents: Muscle Imbalance in Back Pain—Chicken, Egg or Red Herring?
Room 406AB

3:05–3:35 PM

Members' Business Meeting
Room 308AB

Poster Grand Rounds
The Learning Place

Section Specialty Sessions: Section on Posterior Pelvic Girdle Pain: The Sacroiliac Joint—What Do We Know Now?
Concourse Hall 151

Section on Radiology: Radiation Reduction Strategies and Technologies for Spine Surgery and Interventional Procedures
Concourse Hall 152

3:35–5:05 PM

Section on Robotics and Navigation: Incorporating Emerging Spine Surgery Technologies into Your Operating Room
Room 403A

Section on Spine Oncology: Current Essentials of Spine Tumor Management
Room 403B

Section on Biologics and Basic Research: Injectable Biologic Therapies for Intervertebral Disc
Room 404AB

Section on Motion Technology Abstract Presentations
Room 406AB

5:15–6:15 PM

Resident, Fellow and Program Directors' Reception
The Learning Place, Red Theater



Best Papers continued from page 1

“Surgical factors such as type of surgical intervention, occurrence of intraoperative or postoperative adverse events, surgical time or length of stay had no predictive value in change in back pain scores,” he said.

In the next presentation, Ilyas Aleem, MD, MS, FRCSC, Clinical Assistant Professor in the Department of Orthopaedic Surgery, Spine Division, at the University of Michigan, reported on the findings of a “first of its kind” study in which investigators sought to characterize the accuracy of patient recall as a function of time on validated outcomes after cervical spine surgery.

“Although patient-reported outcomes (PROs) are being widely adopted, their interpretability may be limited by the accuracy of a patient’s ability to recall pre-intervention impairment,” Dr. Aleem said. “Recall bias has

been previously investigated in multiple orthopedic and lumbar spine studies, but recall accuracy in cervical spine patients remains unknown.”

In this study, researchers analyzed a consecutive series of 73 patients undergoing cervical spine surgery for degenerative myelopathy or radiculopathy at a single institution. Patients were asked to recall their preoperative status through a standardized phone script and results were stratified into short- and long-term follow-up subgroups (34 and 39 patients in the short-term and long-term follow-up subgroups patients, respectively). The mean period of recall from surgery was



Ilyas Aleem, MD

4.6 months for the short-term subgroup and 22.2 months for the long-term subgroup.

“We found that almost a third of patients cannot accurately remember their predominant symptom,

switching their dominant preoperative symptom from ‘neck pain’ to ‘arm pain,’ or ‘arm pain’ to ‘neck pain’ on recall,” Dr. Aleem said. “These findings demonstrate that relying on retrospectively recalled data for outcome assessment does not provide an accurate measure of preoperative status. Prospective collection of PROs remains the gold standard to measure outcomes following cervical spine surgery.” ■

Health Care Symposium continued from page 1

shock that night because of their bubbles.

“No one in the building that night thought he had a prayer, including me,” Hewitt said of Donald Trump winning. “What I have been thinking about since then, and it applies to the legislation that’s going to impact you, is if you can be that profoundly surprised once, you can be that profoundly surprised twice. And three times. And four times.”

Hewitt shared some advice, often by way of book recommendations, for how attendees can avoid such shocks by actively working to avoid confirmation bias.

“You have to build guardrails against the inability to perceive, much less process, information that is counterintuitive to your worldview,” he said.

Hewitt wrapped up his talk with some predictions for the mid-term elections, which included his expectation that Republicans will lose control of the House of Representatives. In the Senate, however, he said he believes Republicans will increase their majority.

ADVOCACY IN ACTION

Wednesday’s Health Care Symposium also included a brief presentation by moderator Philip Schneider, MD, Director of the NASS Advocacy Council, who provided an update on recent advocacy efforts.

Among the successes he highlighted, Dr. Schneider discussed the removal of language from the 2018 fiscal year defense appropriations



Hugh Hewitt

bill that would have eliminated a funding stream for spinal cord injuries through the US military.

He also discussed the passage of HR 849, which repeals the Independent Payment Advisory Board. The board, which was repealed before it went into effect, would have had the authority to make changes to the Medicare program. Congress would have been able to overrule the board’s decisions through supermajority vote.

NASS is currently revising its legislative agenda for 2019-2020, but going forward, Dr. Schneider said the Advocacy Council will be working on government affairs issues related to the opioid epidemic, the repeal of the medical device tax, revisions to the Stark Law and more. He encouraged everyone to join the SpinePAC to support the society’s advocacy efforts.

ALTERNATIVE PAYMENT MODELS

Finally, Bob Jasak, JD, who is Vice President of Coverage and Payment Policy for Hart Health Strategies Inc., helped attendees make sense of the latest developments in Medicare’s Advanced Alternative Payment models and the prospect for bundled payments in spine care.

Jasak reviewed some proposed models that might be applicable to the profession, however, none of those have been implemented to date, and whether they will be remains a question. ■

Symposium Examines Ongoing Evolution of Outpatient Spine Surgery

With increasing pressures on reducing health care costs, surgeons are constantly evaluating unique methods to reduce their cumulative costs over an episode of care. Outpatient surgery performed in ambulatory surgery centers (ASCs) is evolving as one method of reducing surgical costs. The recent announcement by CMS to reimburse total joint replacements performed in ASCs will most likely lead to many traditional inpatient procedures transitioning towards outpatient environments.

In a NASS 2018 symposium on Wednesday, Outpatient Spine Surgery: The Next Frontier, an expert faculty addressed the challenges, considerations and the recourses

required to develop an outpatient spine surgery practice.

"We are truly in a paradigm shift right now as more and more surgeons move into the outpatient realm," said symposium moderator Alok D. Sharan, MD, MHCDS, Co-Director of the Westmed Spine Center in Yonkers, NY. "There are a lot of different trends we're seeing in the outpatient world, but it's not about just simply changing the site of where you do surgery, it's a redefining, a rethinking, of how we actually want to deliver care."

An example of how minimally invasive outpatient spine surgery is evolving is a novel procedure known as "awake spinal fusion," of which Dr. Sharan is a proponent and one

of the early adopters. While the procedure is still in its infancy, Dr. Sharan said it can provide favorable outcomes with a shorter length of stay for the appropriately selected patients.

"Basically, what we do during an awake spinal fusion is perform a minimally invasive TLIF surgery with a spinal anesthetic," he said. "To date, we've performed about 66 awake lumbar fusions and the average length of stay is 0.8 days."

Recovery is quicker because patients do not undergo general anesthesia and they're able to ambulate quickly, Dr. Sharan said, noting that many patients are walking within a couple hours after surgery and experiencing less pain due to a

combination of the minimally invasive approach and an effective pain management regimen.

"There is a learning curve to the procedure, but like with everything else we do, over time there is constant improvement and we get better. As we do more of these procedures, we are seeing our OR time decreasing and, more importantly, patients are staying in the hospital for less time," Dr. Sharan said. "Ultimately, what we're trying to do is reimagine spine surgery. The need for spine surgery is going to increase as the population ages and so we need to be thinking about not only whether we can provide a safe and reliable cost-effective procedure, but whether we can we can also make it a better experience for the patient." ■

NASS 2018 Symposia Schedule

The NASS 2018 symposia program offers in-depth coverage of a broad range of clinical, practice management, health care advocacy and administration and career development topics. Following are the symposia scheduled for today, tomorrow and Saturday. Check the meeting program or NASS 2018 App for the most up-to-date information.

► THURSDAY

7:30–8:30 AM

Envisioning a Narcotic Free America: Role of Spine Physicians

Concourse Hall 151/152

1:05–2:05 PM

Bone Health Optimization in the Spine Patient

Room 403B

1:05–3:05 PM

Section on Minimally Invasive Procedures: Latest Advances in Minimally Invasive Spine Surgery

Concourse Hall 151

► FRIDAY

7:30–8:55 AM

Enhanced Recovery After Surgery (ERAS) A-Z and How to Implement in Your Hospital

Concourse Hall 151

Section on Rehabilitation, Interventional and Medical Spine (RIMS): Clinical Failure of Lumbar Surgery Part I: Diagnostic Considerations

Concourse Hall 152

1–2:30 PM

Predatory Publishing: What's Real and What's Fake News?

Concourse Hall 152

1:05–2:30 PM

Emerging Technologies in Spine Surgery

Concourse Hall 151

3–4 PM

Quest for Truth: Are Online Databases Reliable and Reflect True Outcomes

Concourse Hall 151

► SATURDAY

7:30–9 AM

Section on Rehabilitation, Interventional and Medical Spine (RIMS): Clinical Failure of Lumbar Surgery Part II: Treatment Options

Room 403A

9–10 AM

Medical Device Innovation: What to Do with Your Idea

Room 403A

10:30 AM–12 PM

State of the Union on Disc Replacement: 15 Years Later—What Is the Evidence and Reality?

Room 403B

Section on Biologics and Basic Research: Trends in Decision Making for Biologics—A Case-Based Review

Room 404AB

34TH ANNUAL MEETING CALL FOR ABSTRACTS

Chicago, IL | September 25-28, 2019

Submission deadline: Friday, February 1, 2019
(11:59 PM CDT)

Acceptance notifications sent on or before:
April 1, 2019

► Visit <http://sms.spine.org> for detailed submission instructions. Please contact education@spine.org with questions.

Attention Medical Attendees:

Wear a NASS 2019 button or ribbon for a chance to win Free Registration to the Annual Meeting in Chicago! President-elect Jeffrey Wang, MD will randomly select a winner each day.



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CAREER BUILDING EVENTS AT NASS 2018

Head over to the Career Building suite in The Learning Place to take advantage of career and networking events. There are educational sessions to attend, opportunities to take a professional headshot and a Recruitment Event with current open positions and a chance to meet with employers onsite.

North American Spine Society
7075 Veterans Boulevard
Burr Ridge, IL 60527
(630) 230-3600
spine.org

TriStar Publishing, Inc.
7285 West 132nd Street,
Suite 300
Overland Park, KS 66213
(913) 491-4200
tristarpub.com

Technical Exhibition Means Activity!

SIMULATED SURGERY LAB

Learn about and try the latest in virtual reality simulation. Powered by Immersive Touch, the Simulated Surgery Lab allows you to view CT scans in immersive virtual reality and feel the latest in haptic technology. What does that mean? It means it actually provides physical resistance. Virtual Reality with a touch factor.

Upload your own patient's CT imaging files to the HIPAA compliant drop box at www.immersivetouch.com/nass. You will then be able to view them in full VR. Powered by Immersive Touch and Dell. Presentations at 10 AM, 12 PM and 3:05 PM.

NEED COFFEE?

You can find coffee in the Technical Exhibition during the networking breaks in the Learning Place or booth 1567

Break schedule:

Thursday: 9:30–10:00 AM; 3:05 PM – 3:35 PM
Friday: 10:00–10:30 AM



NEED A MEETING ROOM AT THE CENTER?

Go to www.nass.simplybook.me to book a meeting room in the Meeting Place. Select your time, room size and reserve your room online. Then just come to the Meeting Place. No frills, just walls, tables and chairs, but it does have privacy. For registered attendees and exhibitors only.



HUNGRY?

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

Box Lunch

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

Food Court 1567

- Luscious Lemonade & Corn Dogs
- Street Kitchen BBQ
- Made in Brooklyn Pizza

Food Court 2611

- La Guerra Tacos
- Heritage LA Salads/Bowls
- Maui Wowi Smoothies and Coffee



Space still available. Register now!

NASS AFTER HOURS: HANDS-ON ENDOSCOPIC SURGERY WORKSHOP

Thursday

Didactic: 3:45 – 5:30 PM, Pink Theater • Lab: 5:30–8 PM, Blue Lab

Interested in endoscopy, but never been able to try it? This HANDS-ON non-CME event is a unique opportunity for NASS conference attendees to gain experience with cutting-edge endoscopy systems from Elliquence, Joimax and RiWolf Spine, A Richard Wolf Company. Register in advance or onsite at the registration desk.

NASS would like to thank our imaging providers for the Surgical Innovation Labs at NASS 2018:



PHILIPS



SIEMENS Healthineers

ziehm imaging



Attendees during the Simulated Surgery Lab Presentations

LEARN IN THE TECHNICAL EXHIBITION

The Surgical Innovation Labs and Solution Showcase allow you to learn about the latest advances in spine care practices, services and technologies.

Thursday Innovation Lab & Solution Showcase Presentations

► YELLOW LAB

8–10 AM

Surgical Innovation Lab Demo:
Hands-on Cadaveric Demonstration:
Opioid Minimizing Multi-Modal Pain Management with EXPAREL® (bupivacaine liposome injectable suspension)
Sponsored by: DePuy Synthes, A Johnson & Johnson Company

11 AM–1 PM

Surgical Innovation Lab Demo:
Second Generation Technology:
Enza-A Titanium ALIF
Sponsored by: Camber Spine Technology

2–4 PM

Surgical Innovation Lab: The MIS Approach to the Anterior Lumbar Column and the Case for Improving the Access/Spine Surgeon Partnership
Sponsored by: TeDan Surgical Innovations & Aesculap

5–8 PM

Surgical Innovation Lab Workshop:
Hands-on Cadaveric Course on The Unleash™ Solution: A data backed Solution for MIS TLIF Procedures, coupled with Introduction to Novel Enabling Technologies
Sponsored by: DePuy Spine, A Johnson & Johnson Co.
Speakers: Hyun Bae, MD; Stephen Bartol, MD, MBA, FRCSC; John Hall, MD

► GREEN LAB

8–10 AM

Surgical Innovation Lab Demo:
Autologous Biologics: A Novel Treatment Option in Spinal Fusion
Sponsored by: Terumo BCT
Speaker: Peter Passias, MD

11 AM–1 PM

Surgical Innovation Lab Demo
Sponsored by: Misonix

2–4 PM

Surgical Innovation Lab Demo: The Future of Herniated Disc Repair Procedures: A demonstration on the design and clinical application of the AnchorKnot® Tissue Approximation Kit
Sponsored by: Anchor Orthopedics
Speaker: Scott Blumenthal, MD

5–8 PM

Surgical Innovation Lab Workshop:
SI-Bone Primary Surgeon Training
Sponsored by: SI-Bone
Speakers: Joshua Heller, MD; Genne McDonald

► BLUE LAB

8–10 AM

Surgical Innovation Lab Demo: Life Spine — Sacroiliac Joint Fixation with SIm pact®
Sponsored by: Life Spine
Speaker: Ali Mesiwala, MD

11 AM–1 PM

Surgical Innovation Lab Demo: Life Spine — Micro-Invasive TLIF with Expandable Technology PROLIFT®
Sponsored by: Life Spine
Speaker: Peter Whang, MD, FACS

3:45–8 PM

NASS After Hours: Endoscopic Spine Surgery: Current Trends & Evidence of Spinal Endoscopic Procedures
Sponsored by: Elliquence; Joimax; RiWolf Spine, A Richard Wolf Company
Speakers: Choll Kim, MD, PhD; Martin Komp, MD, PhD; Paul Houle MD; Jin-Sung Kim, MD, PhD; Gun Choi, MD

► RED LAB

12–12:20 PM

Solution Showcase: Better Practices in Implant Handling and Delivery
Sponsored by: Spinal Balance
Speaker: Steven Garfin, MD

12:30–12:50 PM

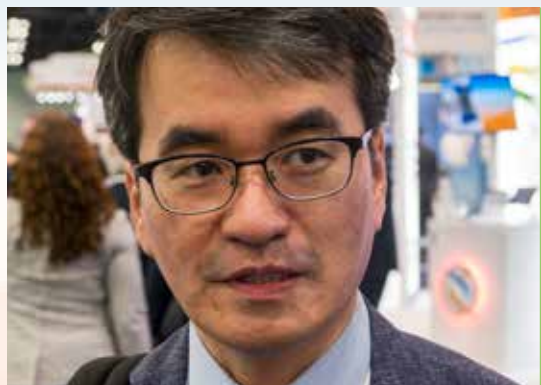
Solution Showcase: Fragility Fracture Alert: Treating Postmenopausal Patients with Osteoporosis at High Risk for Fracture with an Anabolic Agent
Sponsored by: Radius Health

► ORANGE LAB

3–4 PM

Titan Spine nanoLOCK® Real World Evidence Symposium: Highlighting Improved Clinical Outcomes and Reduced Postoperative Opiate Use
Sponsored by: Titan Spine
Speakers: Paul Slosar, MD; Barrett Woods, MD

QUESTIONS OF THE DAY



I'd like to go to the place where Emma Stone and Ryan Reynolds dance in "La La Land." I'd like to be there. The problem is my wife is at home.

JIN-SUNG KIM, MD, PHD,
Seoul, South Korea

What are you most excited about doing or seeing during your stay in LA?



I want to see the Hotel Bel-Air and have dessert there.

SUSAN ODUM, PHD, Charlotte, NC

I'm interested in In-and-Out Burger and good Mexican food. Those are the two primary things. Having lived in Southern California before, I know what I can no longer get in Philadelphia. I can only get good Mexican and In-and-Out Burger here, so those are my goals.

BRYAN WILENT, PHD, Philadelphia, PA



I'm staying in K-town — Koreatown. I had some killer bulgogi last night, so that was pretty good.

THOMAS EPPLIN-ZAPF, MS, MA, St. Louis, MO



NASS BOOKSTORE


The NASS Bookstore is traveling to Los Angeles for the 2018 Annual Meeting.

Stop by the Publications Booth & Book-store for essential clinical, coverage and patient education resources, including:

- **Clinical Guidelines**
Select from 7 essential topics*
- **Common Coding Scenarios for Comprehensive Spine Care**
Get the 2018 Coding Book at half-price and preorder the 2019 edition
- **Coverage eDocuments**
Defining Appropriate Coverage Decisions:
Select from 26 procedures*
- **Compendium of Outcomes Instruments for Assessment & Research of Spinal Disorders, 2nd Edition**
- **Orthopedic Knowledge Update Spine: 5**
- **Advanced Reconstruction: Spine**
- **Instructional Course Lectures: Spine 2**
- **Patient Education Brochures**
Select from 31 topics

****Digital versions are free to NASS members at spine.org**

If you can't make it to LA for NASS 2018, find all these resources and more online at:
<https://www.spine.org/shop>



NASS LAUNCHES DIAGNOSIS-BASED CLINICAL DATA REGISTRY

Sign up today to objectively measure and demonstrate the value of your care.

You care about your patients and the quality of their care.

You want to give patients the very best spine treatment possible.

You can collect and analyze your care data as well as compare your data to other spine care professionals' de-identified aggregate data.

Using a web-based platform, this unique multidisciplinary and longitudinal design captures different treatments and resulting outcomes across comprehensive spine care.

Additional Features:

Open to all spine physicians or allied providers who treat patients in the U.S. No NASS membership requirement.

Affordable for all practice types.

Collect data for quality improvement—includes PROs.

Own your data.

Confidential data de-identified at entry. No personal health information reaches NASS or its vendor.

No need to purchase software.

Details and registration at www.spine.org/Registry

QUESTIONS OF THE DAY

What are you most looking forward to during NASS 2018?



NASS is the platform where most of the newer technologies and latest advances are displayed. To be aware of those things and to see where technology is moving, I think NASS is the best place for that.

BHAVUK GARG, MD, New Delhi, India

NASS is an international platform where you get to see international faculties. You get to learn something new. For me it's mainly the networking.

PANKAJ KANDWAL, PHD, Rishikesh, India



Seeing what new innovative technology and research is available.

KELLY FRANK, MS, Shreveport LA



ePOSTER AND GRAND ROUNDS AT THE LEARNING PLACE

More than 180 ePosters will be available for viewing this week at The Learning Place in the Technical Exhibition. Poster Grand Rounds will take place during the morning and afternoon networking breaks on Thursday and the morning break on Friday. The Poster Grand Rounds offer attendees the opportunity to meet with and ask questions of ePoster authors.

WIN AN APPLE WATCH AT NASS 2018!



Want access to meeting-only specials including entry into an Apple Watch drawing? To enter, simply text the word NASS to 33222 to be registered for your chance to win*! For more information, stop by Member Services in the lobby!

*By entering this drawing through text, you agree to receive automated text messages from NASS (no more than 10 during the week of NASS' annual meetings, and no more than 1 per month following the meeting) regarding special offers and NASS membership. Message and data rates may apply. Reply STOP to end. Entry via text is limited to United States phone numbers only and is not required for participation in Apple Watch drawing. For further options to enter, stop by the Member Services booth before Friday at noon PST. Offer available to attendees of the 2018 NASS Annual Meeting. Winner will be chosen on Friday at noon PST and will be notified via email that day. Prizes are non-transferable and must be picked up at the Member Services booth by Saturday at noon PST.

Best Paper Sessions Feature NASS 2018 Highest Rated Abstracts

The NASS 2018 Scientific Program Committee received more than 1,200 abstract and session proposal submissions. The 21 highest-rated abstracts earned the coveted “Best Paper” designation and are being presented in morning sessions throughout the week. Following are the Best Papers to be presented today.

Best Papers: Thursday • 8:30–9:30 AM • Concourse Hall 151/152

Half of Unplanned Readmissions Following One or Two-Level Anterior Cervical Decompression and Fusion Are Unrelated to Surgical Site

Presenting author: David C. Sing, MD

Using data from the American College of Surgeons National Surgical Quality Improvement Program (NSQIP) database from 2012-2016, researchers examined complications and readmissions within 30 days, the reasons for readmission and the timing of readmission. Out of 18,883 patients undergoing one- or two-level anterior cervical decompression and fusion (ACDF), 3% were readmitted within 30 days. At least half of all readmissions were unrelated to the neck surgery.

The most influential independent risk factors for readmission identified were a history of steroid use and a patient age of 70 or older. The most influential risk factors for any complication included dependent functional status, patient age of 70 or greater, and an American Society of Anesthesiology score greater than or equal to three.

Ambulatory Anterior Cervical Discectomy and Fusion Is Associated with a Higher Risk of Perioperative Complications

Presenting author: Don Young Park, MD

In this retrospective review of 1,215 patients who underwent outpatient anterior cervical discectomy and fusion (ACDF) and 10,964 patients who underwent inpatient ACDF

from the Humana subset of a national subscription-based database, researchers determined nationwide trends and complication rates associated with outpatient ACDF as compared to inpatient ACDF.

The results demonstrated that the incidence of outpatient ACDF surgeries increased significantly from 2011 to 2016 and also showed a greater association with medical and surgical complications up to one year after surgery in an outpatient setting. The researchers were surprised to note that the outpatient cohort also had greater rates of postoperative renal failure, even though these patients are typically younger and healthier than patients in the inpatient setting.

In Vivo Biomechanics of Cervical Spine Manipulation

Presenting authors: William Anderst, PhD and Michael Schneider, DC, PhD

In this study of 15 living patients with acute neck pain, researchers used a precise biplane radiography system to measure the motion of the neck bones before and after a chiropractic spinal manipulation. Patients' pain was recorded before and after the spinal manipulation.

The researchers report that the facet joint space between adjacent bones in the neck doubled during the manipulation, from 0.8 mm before the manipulation, to 1.7 mm. Motion between neck

bones increased in the lower cervical spine after manipulation during flexion/extension, lateral bending and axial rotation. The gapping occurred at the target motion segment, as well as at motion segments adjacent to the target. Most importantly, the patients' pain scores improved from 3.7 before manipulation to 2.0 after manipulation.

Do Preoperative Epidural Steroid Injections Increase the Risk of Infection After Lumbar Spine Surgery?

Presenting author: Tyler Kreitz, MD

In this retrospective review of 15,011 patients who underwent elective lumbar surgery for radiculopathy or stenosis at a single institution, researchers examined whether there was an association and temporal relationship between preoperative ESI and postoperative infection. Those who underwent preoperative lumbar ESI were identified by CPT code. Patients were categorized as no ESI (10,541 patients), ESI less than 30 days before surgery (595 patients), ESI 30-90 days before surgery (1,709 patients) and ESI greater than 90 days before surgery (2,036 patients).

Of the patients who underwent lumbar spine surgery, 197 (1.3%) were diagnosed with postoperative infection that required reoperation within 90 days of the initial procedure. Overall, rate of infection was marginally higher among the cohort of patients who had a preoperative ESI, but it did not reach statistical significance.

Analysis of Lumbar Total Disc Replacement Removals and Revisions: A 17-Year Experience

Presenting author: Richard D. Guyer, MD

In this study, researchers analyzed the incidence of, and reasons for, removal or revision of lumbar total disc replacement (TDR) devices in a consecutive series of patients from a multisite spine specialty practice over a 17-year period. Among the patients, six different devices were used. The mean follow-up was 42.7 months with a median of 30 months and a maximum of 195 months.

In the series of 1,707 patients, 17 patients (0.99%) underwent TDR removal and three additional patients underwent TDR revision (0.17%). The rates based on the total number of 2,023 TDR devices implanted in the 1,707 patients were 0.89% removals and 0.15% revisions. Forty percent of removals or revisions occurred within one month after the index surgery, and 85% occurred within two years. It is important to note that the researchers also discovered that 40% of the revisions and removals occurred in the first 25 TDR cases performed by individual surgeons, suggesting a learning curve exists.

Spinopelvic Compensatory Mechanisms for Reduced Hip Motion (ROM) in the Setting of Hip Osteoarthritis

Presenting author: Aaron J. Buckland MD, FRACS

In this retrospective clinical and radiographic analysis at a single institution of consecutive patients with hip osteoarthritis (OA) between 2012 and 2017, researchers sought to describe the effects of hip OA on standing and sitting spinal alignment changes as a result of reduced hip range of motion. Of the 548 patients identified with sit-stand radiographs, 311 were patients with low-grade

severity of hip OA (LOA) and 237 had severe hip OA (SOA).

The LOA and SOA groups demonstrated differences in standing and sitting spinopelvic alignment for all global and regional parameters except pelvic incidence, sagittal vertical axis, sacrofemoral angle and knee flexion. When examining postural changes from standing to sitting, the researchers found that hip range of motion was less in patients with SOA versus patients with LOA. As a result, SOA patients had more change in pelvic tilt and T10-L2 to compensate. The SOA group had a small but statistically significant improvement in the sagittal vertical axis, more change in T1-pelvic angle and less change in proximal femoral shaft angle. Knee flexion change was not significantly different between LOA and SOA.

Healthcare Utilization and Costs Prior to Primary Single-Level Posterior Lumbar Fusions: What Happens Before Surgery?

Presenting author: Azeem Tariq Malik, MBBS

In this retrospective study of 10,281 patients, researchers aimed to understand health care utilization and costs associated with spine care in the two years prior to a primary single-level lumbar fusion for degenerative pathology. Using active national insurance claim records available through a subscription-based database, they categorized spine care as Medicare Advantage and commercial insurance enrollees. Per patient average reimbursements were calculated for each health care resource category (office visits, physical therapy, radiology, injections, non-opioid pain medications, muscle-relaxants and opioids) with regard to specified preoperative time periods.

Overall spine-related care in the two years preceding surgery was \$8,240,890 for the Medicare Advantage group and \$23,966,498 for the commercial insurance enrollee group. A high-resource utilization was seen for all health care resource categories (especially opioids and injections) in the last three months prior to a single level posterior lumbar fusion. ■

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- add personal notes. Map booth locations on the interactive floor plan and download a personalized walking map.
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To download the app, search “NASS 2018” at the Google Play Store for Android devices or the iTunes App Store for Apple devices.

NASS 2018 Daily Shuttle Schedule

HOTEL	ROUTE	SHUTTLE BOARDING LOCATION AT HOTEL
1 Courtyard LA Live 901 W. Olympic Blvd.	No Shuttle	Walk to LA Convention Center
2 Hotel Indigo 899 Francisco St.	No Shuttle	Walk to LA Convention Center
4 JW Marriott LA Live 900 W. Olympic Blvd.	No Shuttle	Walk to LA Convention Center
6 Luxe City Center 1020 S. Figueroa St.	No Shuttle	Walk to LA Convention Center
9 Residence Inn LA Live 901 W. Olympic Blvd.	No Shuttle	Walk to LA Convention Center
10 Ritz Carlton 900 W. Olympic Blvd.	No Shuttle	Walk to LA Convention Center
3 InterContinental Downtown* 900 Wilshire Blvd.	1	Front Entrance
11 Sheraton Downtown 711 S. Hope St.	1	Front Entrance
12 The Standard Downtown Hotel 550 S. Flower St.	1	Walk to Sheraton Downtown
13 Westin Bonaventure 404 S. Figueroa St.	2	Front Entrance
5 The LA Hotel 333 S. Figueroa St.	2	Walk to Westin Bonaventure
8 Omni LA Hotel 251 S. Olive St.	3	Front Entrance
7 Millennium Biltmore Hotel 506 S. Grand Ave.	3	Front Entrance

*Headquarter Hotel



SHUTTLE SCHEDULE

Schedule may vary due to traffic & weather conditions. Last bus leaves from hotel 60 minutes prior to end time with no return service.

For shuttle info and special assistance, call (310) 466-4699 at least 60 minutes prior to pick up.

Thursday	Friday	Saturday
6:30–10:30 AM Every 10-15 minutes	6–10:30 AM Every 10-15 minutes	7 AM–12 PM Every 30 minutes
10:30 AM–2:30 PM Every 30 minutes	10:30 AM–2:30 PM Every 30 minutes	
2:30–5:05 PM Every 10-15 minutes	2:30–5:05 PM Every 10-15 minutes	

NORTH AMERICAN SPINE SOCIETY

2019 RESEARCH FUNDING



RESEARCH GRANTS

YOUNG INVESTIGATOR GRANTS

NONTRADITIONAL NONSURGICAL TREATMENT GRANTS

CLINICAL TRAVELING FELLOWSHIPS

RESEARCH TRAVELING FELLOWSHIPS

DEADLINES

LETTER OF PROPOSAL:
February 11, 2019, 11:59 p.m. CST

GRANTS (BY INVITATION ONLY):
May 13, 2019, 11:59 p.m. CDT

TRAVELING FELLOWSHIPS:
May 13, 2019, 11:59 p.m. CDT

For guidelines, selection process details and how to apply, visit www.spine.org.

Questions? Contact Karen James at 630-230-3691 or kjames@spine.org.

NASS 2018 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 27 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™.

Obtain additional credit by attending the following courses: Coding Update 2018: Conquering Your Coding Hurdles and Hands-On Course: Minimally Invasive Spine Surgery.

EVALUATION AND EDUCATIONAL CERTIFICATES

After the meeting, you may submit your evaluation electronically and print your CME certificate directly from our website. Visit spine.org/CME to claim education credit and to print CME certificates. Contact education@spine.org with questions.

ANNUAL MEETING 2018 SESSIONS ONDEMAND

CME Credit Available!
Order the 2018 Annual Meeting session recordings and get 24/7 access to more

than 500 scientific presentations, including electronic posters, scientific sessions, symposia, breakout sessions, abstracts, featured lectures and more. These web-based, fully synchronized audio, video and slide presentations are available anywhere with Internet access. Topics covered include MIS, biomechanics, neuromonitoring, innovation, motion preservation, spinal deformity, diagnostics and imaging, interventions, and much more. Purchase through the online shop at www.spine.org/ondemand.

Members: The session recordings are provided at no charge to NASS members who attended the Annual Meeting.

CME credit is available for watching symposia and the Interdisciplinary Spine Forum. View recordings by visiting www.spine.org/presentations.

The North American Spine Society designates this enduring material for a maximum of 58.25 AMA PRA Category 1 Credits™. Physicians should claim only the credit commensurate with the extent of their participation in the activity.



HOW TO CLAIM YOUR CME

On Tuesday evening and Saturday afternoon, all attendees will receive an email with a link to www.spine.org.
org/CME to report session attendance each day. You will not be able to submit answers or print a certificate until the meeting has concluded on Saturday, September 29 at noon.

THINGS TO DO IN LOS ANGELES

Los Angeles offers a wide array of events and attractions for the times you're not at the Convention Center. Here's a small sampling of what's available.

CLOSE TO THE CONVENTION CENTER

ANGELS FLIGHT RAILWAY & STAIRS
351 South Hill St. (Lower Station) and
350 South Grand Ave. (Upper Station)
angelsflight.org

► The world's shortest railway was built in 1901. After shutting down for an extended period, this Los Angeles icon reopened in the summer of 2017. The Lower Station is across the street from another classic LA location, the Grand Central market, which has celebrated the city's cultures and cuisines since 1917.

EL PUEBLO DE LOS ANGELES HISTORICAL MONUMENT

845 N. Alameda St.
elpueblo.lacity.org and
olvera-street.com

► El Pueblo de Los Angeles Historical Monument is near the site of the early Los Angeles pueblo or town where a farming community was established in September 1781. Also known as Olvera Street, El Pueblo is a living museum that continues to fulfill a unique role as the historic and symbolic heart of the city. Many merchants today are descendants of the original vendors who started businesses in 1930 when Olvera Street was created.

EXPOSITION PARK ROSE GARDEN
701 State Dr.

laparks.org/expo/garden

► The Rose Garden opened in 1928 and has long been a favorite place of quiet and refuge and a picturesque spot for weddings and special events. The 7.5-acre garden opens at 9 AM each day and remains open until dusk.

THE GEFFEN CONTEMPORARY AT MOCA

152 North Central Ave.
moca.org

► This former police car warehouse in LA's Little Tokyo Historic District is one of three LA locations for The Museum of Contemporary Art. Renovated by noted California architect Frank Gehry, The Geffen Contemporary at MOCA (formerly The Temporary Contemporary) opened in 1983. This location offers 40,000 square feet of exhibition space.

GRAMMY MUSEUM AT LA LIVE
800 W. Olympic Blvd.
grammymuseum.org

► Established in 2008 during the 50th anniversary of the Grammy Awards, the GRAMMY Museum honors the history and significance of all forms of music. The museum is next to the Los Angeles Convention Center and the Staples Center. Scheduled exhibits in March include a look at 40 years of punk rock in Los Angeles. Permanent exhibits highlight more than 160 music genres and the Songwriters Hall of Fame Gallery.



JAPANESE AMERICAN NATIONAL MUSEUM

369 E. 1st St.
janm.org

► Through history and art exhibitions, a research center and video presentations, the museum tells the story of Japanese Americans, from immigration to the unconstitutional incarceration of Japanese Americans during World War II.

LA LIVE

800 W. Olympic Blvd.
lalive.com

► Downtown Los Angeles' sports and entertainment district sits between the Los Angeles Convention Center and most of the official NASS 2018 hotels. LA LIVE opened in 2007 and today has about 25 places to eat and drink and the 14-screen Regal Cinemas.

NATURAL HISTORY MUSEUM OF LOS ANGELES COUNTY

900 Exposition Blvd.
nhm.org

► The largest natural and historical museum in the western United States houses more than 35 million specimens and artifacts. Museum admission is \$15 for adults, and it's open 9 AM – 5 PM daily. For an extra fee, visit Tattoo: An Exhibition, looking at thousands of years of marking skin with ink.

FARTHER AWAY FROM DOWNTOWN LA

LA BREA TAR PITS
5801 Wilshire Blvd.
tarpits.org

► La Brea is one of the world's most famous fossil sites. The pits feature more than three million fossils of mammoths, saber-toothed cats, and giant ground sloths, which became trapped and entombed in the asphalt that's been seeping out of the ground for the past 40,000 years.

LOS ANGELES COUNTY MUSEUM OF ART

5905 Wilshire Blvd.
lacma.org

► With more than 120,000 works in its permanent collection, The LA County Museum of Art is the premier visual art museum in the western United States.

MALIBU BEACH & PIER

23000 Pacific Coast Highway, Malibu
malibupier.com

► For more than 100 years, the Malibu Pier has overlooked the famous Surfrider Beach in Malibu — the birthplace of surf culture. The pier has restaurants, retail space, maritime operations, sport fishing and whale watching.

PACIFIC PARK/SANTA MONICA PIER

380 Santa Monica Pier, Santa Monica
pacpark.com and
santamonicapier.org

► Pacific Park on the historic Santa Monica Pier is an oceanfront, two-acre park with thrilling rides, midway games, a food terrace and miniature golf course. Admission is free. Hours vary by season.



QUEEN MARY

1126 Queens Highway, Long Beach
queenmary.com

► This luxury liner sailed the Atlantic before, during and after World War II, eventually finding at home in Long Beach in the late 1960s. Since then, the Queen Mary has been a hotel with many different restaurants. Day tours of different lengths and amenities are also available.

VENICE BEACH/MARINA DEL RAY

3100-2700 Ocean Front Walk, Venice
beaches.co.la.ca.us and
visitmarinadelrey.com

► Venice Beach offers just about any activity and equipment rental. Some of the popular Venice Beach pastimes include swimming, surfing, fishing, cycling, skating, volleyball, basketball, shopping, weightlifting, handball, racquetball and picnics — and people watching.

Sources: L.A. Inc., The Convention & Visitors Bureau, and official location websites ■

