

PRELIMINARY PROGRAM

NORTH AMERICAN  
SPINE SOCIETY 25<sup>TH</sup>

# ANNUAL MEETING

OCTOBER 5-9, 2010

ORANGE COUNTY  
CONVENTION CENTER  
ORLANDO, FLORIDA

NORTH AMERICAN SPINE SOCIETY

1985

25 YEARS

2010





## WELCOME TO THE NASS 25<sup>TH</sup> ANNUAL MEETING!

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**For 25 years NASS has led the spine care field by fostering the delivery of quality spine care.** We invite you to join us in celebrating NASS' first 25 years and taking the first steps toward the next 25 years at the Annual Meeting of the North American Spine Society (NASS) in Orlando, October 5–9, 2010, at the Orange County Convention Center in the West Building.

Explore the latest in spine education, research and innovation with your colleagues and a diverse group of world renowned spine specialists. NASS has developed the following curriculum that promises to be topically relevant, professionally challenging and rewarding:

- A diverse group of presenters will give 124 distinctive podium presentations on the latest scientific studies on spine.
- National and international spine authorities will present eight symposia addressing controversial and timely topics.
- An outstanding collection of 101 focused paper presentations related to different areas of the spine will be featured.
- An exceptional selection of 107 e-posters, including presentations by authors of the top graded posters in each category.
- Distinguished faculty will present 11 premeeting courses (including technique workshops) focusing on increasing expertise on techniques and various practice-related topics.
- Ten dynamic Special Interest Group discussions will address multidisciplinary spine care topics.
- A Technical Exhibition will showcase the latest developments in equipment, supplies and services that are relevant to spine care.

Additionally, there are sessions for allied health professionals, including physician assistants, nurse practitioners, registered nurses, chiropractors, physical and occupational therapists, and rehabilitation professionals. There also is a Young Spine Surgeons symposium that will focus on the needs and education of the new resident/fellow in spine.

This year's guest speakers are Dan Ariely, PhD, and Regina E. Herzlinger, PhD. Dr. Ariely is an expert on how people actually act—and why they act—in all kinds of business and economic environments. Dr. Herzlinger is widely recognized for her innovative research in health care.

In Orlando, you will find a myriad of attractions, shops and fine dining restaurants as well as first-class hotels, including The Peabody, the headquarter hotel. There is so much to offer you in Orlando, and much of it located conveniently near the convention center.

Please join us for NASS' Annual Meeting in Orlando and celebrate 25 years of delivering quality spine care.

Ray M. Baker, MD  
*President*

Christopher J. Standaert, MD  
Alexander R. Vaccaro, MD, PhD  
*2010 Annual Meeting Program Co-chairs*

## GENERAL INFORMATION

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### Important Dates

**Early Registration Deadline: July 19, 2010**

Save \$200 with the early registration discount.

**Housing Deadline: September 10, 2010**

Ensure that you will have accommodations at an official NASS hotel.

**Registration After September 10, 2010**

After September 10, online and on-site registration fees increase by \$100.

### How to Register

Register quickly and easily at [www.nassannualmeeting.org](http://www.nassannualmeeting.org). See page 15 for registration details.

### Credit Information

NASS designates this educational activity for a maximum of 27.25 *AMA PRA Category 1 Credits*<sup>™</sup>. Participants should only claim credit commensurate with the extent of their participation in the activity. Additional information about education credits is available on page 10.

### Who Should Attend?

Join the leading authorities in spine care, representing a multidisciplinary community that includes: orthopedic surgeons, neurosurgeons, radiologists, physiatrists, pain management specialists, anesthesiologists, psychologists, chiropractors, physician assistants, nurse practitioners, nurses, physical therapists, researchers, administrators and all other health care professionals with an abiding interest in the spine.

### Learning Objectives

Learning outcomes of participation in the Annual Meeting include:

- Present current research and data to our multidisciplinary membership relevant to the advancement of spine care.
- Promote discussion of new scientific developments and best practices in spine care.
- Foster research and training through interactive panel discussions and instructional courses.
- Demonstrate the application of current techniques, procedures and research.
- Practice evidence-based medicine relative to spine care.

### New for 2010

- Top-rated e-poster presentations: Authors of the top-rated e-posters in each category will facilitate discussion about their posters in the NASS Resource Center.
- Advocacy Training Program: Receive vital information on current issues in health policy and gain greater comprehension of the political process and the role of advocacy. See page 9 for more details.
- Show daily: NASS will publish a daily newspaper during the meeting to highlight key activities; an electronic version will be accessible from your handheld device.

### Questions?

Please visit [www.nassannualmeeting.org](http://www.nassannualmeeting.org) for more information regarding the Annual Meeting. Contact the following departments via e-mail with any questions:

- Educational programming: [education@spine.org](mailto:education@spine.org)
- Registration: [registration@spine.org](mailto:registration@spine.org)
- Housing: [meetingservices@spine.org](mailto:meetingservices@spine.org)
- Exhibits: [exhibits@spine.org](mailto:exhibits@spine.org)

## MONDAY, OCTOBER 4

7:30 a.m.–5:00 p.m.	<b>Coding Update 2010</b> <i>Chairs: Christopher Kauffman, MD; David O'Brien Jr., MD</i>
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## TUESDAY, OCTOBER 5

6:30 a.m.–2:30 p.m.	<b>Premeeting Course Registration</b>
6:30 a.m.–7:00 p.m.	<b>Annual Meeting Registration</b>
7:30 a.m.–5:00 p.m.	<b>Coding Update 2010 (Continued)</b>
8:00 a.m.–12:00 p.m.	<b>Technique Workshop: Interbody Fusion Technologies</b> <i>Chair: William Mitchell, MD</i>
	<b>Premeeting Courses:</b> Section on Rehabilitation Interventional Medical Spine <i>Chair: Jerome Schofferman, MD</i>
	Minimal Access to the Lumbar Spine <i>Chair: John C. Liu, MD</i>
	Fundamentals of Evidence-Based Medicine Part I: Asking Answerable Questions, Searching the Literature and Rating the Evidence <i>Chair: William C. Watters III, MD</i>
8:00 a.m.–12:30 p.m.	<b>Premeeting Course: Trauma Evaluation, Classification Pathologic Origin and Stabilization Options</b> <i>Chair: John R. Dimar II, MD</i>
1:00–5:00 p.m.	<b>Technique Workshop: Cervical Spine Stabilization</b> <i>Chairs: Christopher M. Bono, MD; Mark Bilsky, MD</i>
	<b>Premeeting Courses:</b> Section on Spine Biologics and Research <i>Chair: Hyun Bae, MD</i>
	Fundamentals of Evidence-Based Medicine Part II: Critically Appraising the Literature <i>Chair: William C. Watters III, MD</i>
	Nursing and Spine Care <i>Chair: Donna M. Lahey, BSN, CNOR</i>
1:00–6:00 p.m.	<b>Premeeting Course: Section on Motion Technology</b> <i>Chair: Avinash Partwardhan, MD</i>
6:00–7:30 p.m.	<b>Welcome Reception: The Peabody Orlando</b>

## WEDNESDAY, OCTOBER 6

6:30 a.m.–5:00 p.m.	Registration
6:30–7:20 a.m.	Continental Breakfast
7:20–7:30 a.m.	Welcome Remarks
7:30–8:30 a.m.	General Session: Best Papers
8:30–9:00 a.m.	Introduction and Presidential Address <i>Gregory J. Przybylski, MD and Ray M. Baker, MD</i>
9:00–9:45 a.m.	Introduction and Presidential Guest Speaker <i>Ray M. Baker, MD and Dan Ariely, PhD</i>
9:00 a.m.–5:00 p.m.	Technical Exhibition Open/E-Posters Open for Viewing
9:45–10:15 a.m.	Networking Break
10:15–10:20 a.m.	NASS Working for You: Advocacy/Health Policy Update
10:20 a.m.–12:00 p.m.	Symposium: Image Guidance in Spine Surgery: Current State of the Art and Advanced Techniques <i>Moderator: Iain Kalfas, MD</i>
12:00–1:00 p.m.	Networking Lunch
1:00–2:00 p.m.	Concurrent Sessions: <ul style="list-style-type: none"> <li>• Scoliosis</li> <li>• Complications</li> </ul>
1:00–3:00 p.m.	Best Poster Presentations: <ul style="list-style-type: none"> <li style="width: 50%;">• Basic Science/Biologics</li> <li style="width: 50%;">• Epidemiology/Etiology</li> <li style="width: 50%;">• Spinal Deformity</li> <li style="width: 50%;">• Injections/Interventions</li> <li style="width: 50%;">• Biomechanics</li> <li style="width: 50%;">• Socio-Economic/Industrial/ Ergonomic</li> <li style="width: 50%;">• Diagnostics/Imaging</li> </ul>
1:00–5:05 p.m.	Allied Health Track Symposium
2:05–3:05 p.m.	Concurrent Sessions: <ul style="list-style-type: none"> <li>• Lumbar Motion</li> <li>• Patient Selection and Outcomes</li> </ul>
3:05–3:35 p.m.	Networking Break
	Members' Business Meeting
3:15–5:30 p.m.	NASS Advocacy Seminar: Representing Ourselves in Washington, DC
3:35–3:40 p.m.	NASS Working for You: Advocacy/Health Policy Update
3:40–5:10 p.m.	Symposium: The Evolution of the Pain Generator: Implications for Practice <i>Moderator: Christopher J. Standaert, MD</i>
5:15–6:15 p.m.	Focused Paper Presentations: <ul style="list-style-type: none"> <li>• Trauma</li> <li>• Tumor</li> <li>• Spondylolisthesis</li> <li>• Achieving Fusion</li> <li>• Interventional</li> </ul>
	Special Interest Group Discussions: <ul style="list-style-type: none"> <li>• Delivery of Physician Education: Fellowships and Other Educational Programs</li> <li>• Radiation Exposure to Surgeons: New Concerns in the Age of Minimally Invasive Spine Surgery</li> <li>• Electronic Health Records</li> <li>• Diagnosis and Treatment of Cervical Radiculopathy from Degenerative Disorders</li> </ul>
5:30–6:30 p.m.	Advocacy Reception

## THURSDAY, OCTOBER 7

6:30 a.m.–5:00 p.m.	Registration
6:30–7:20 a.m.	Continental Breakfast
7:20–7:25 a.m.	Announcements
7:25–8:25 a.m.	General Session: Best Papers
8:25–8:30 a.m.	NASS Working for You: Advocacy/Health Policy Update
8:30–10:00 a.m.	Symposium: Health Care Reform Update: What to Expect <i>Moderators: Sohail Mirza, MD; Christopher M. Bono, MD</i>
9:00 a.m.–5:00 p.m.	Technical Exhibition Open/E-Posters Open for Viewing
10:00–10:30 a.m.	Networking Break
10:30–11:00 a.m.	<i>The Spine Journal</i> Outstanding Paper Award Presentations, including Editor's Choice Award
11:00 a.m.–12:00 p.m.	Concurrent Sessions: <ul style="list-style-type: none"> <li>· Health Care Value in Economics</li> <li>· Biologics and Beyond</li> </ul>
12:00–1:00 p.m.	Networking Lunch
1:00–1:45 p.m.	Keynote Address <i>Regina Herzlinger, PhD</i>
1:45–1:50 p.m.	NASS Working for You: Advocacy/Health Policy Update
1:50–3:20 p.m.	Symposium: Controversial Topics in Spine Care <i>Moderator: Alexander R. Vaccaro, MD, PhD</i>
2:00–5:00 p.m.	Allied Health Track Breakout Sessions: <ul style="list-style-type: none"> <li>· PA/NP</li> <li>· RN</li> <li>· Rehab Professionals</li> </ul>
3:00–6:00 p.m.	Resident/Fellow Track
3:20–3:50 p.m.	Networking Break
3:50–4:50 p.m.	Concurrent Sessions: <ul style="list-style-type: none"> <li>· Cervical Total Disc</li> <li>· Lumbar</li> </ul>
4:00–5:00 p.m.	Best Poster Presentations: <ul style="list-style-type: none"> <li>· Surgery—Cervical</li> <li>· Complications</li> <li>· Motion Preservation</li> </ul>
5:00–6:00 p.m.	Focused Paper Presentations: <ul style="list-style-type: none"> <li>· ALIF and PLIF</li> <li>· Minimally Invasive Spine Surgery</li> <li>· Outcomes and Costs</li> <li>· Biomechanics</li> <li>· Scoliosis</li> </ul>
	Special Interest Group Discussions: <ul style="list-style-type: none"> <li>· Spinal Image Guidance</li> <li>· <i>TSJ</i> Editor's Choice Award Presentation</li> <li>· Transitioning from Fellow into Practicing Spine Surgeon</li> </ul>
6:30–8:00 p.m.	Resident, Fellow and Program Directors Reception

## FRIDAY, OCTOBER 8

6:30–7:20 a.m.	Continental Breakfast
7:00 a.m.–5:00 p.m.	Registration
7:20–7:25 a.m.	Announcements
7:25–8:25 a.m.	General Session: Best Papers
8:30–10:00 a.m.	Symposium: Value in Health Care <i>Moderators: Charles A. Mick, MD; Christopher J. Standaert, MD</i>
9:00 a.m.–1:00 p.m.	Technical Exhibition Open/E-Posters Open for Viewing
10:00–10:30 a.m.	Networking Break
10:30–11:00 a.m.	Research Award Presentations
11:00 a.m.–12:00 p.m.	Concurrent Sessions: • Interventional • Lumbar Fusion
	Best Poster Presentations: • Surgery—Thoracolumbar • Trauma
12:00–1:00 p.m.	Networking Lunch
1:00–1:05 p.m.	NASS Working for You: Advocacy/Health Policy Update
1:00–4:05 p.m.	Allied Health Track Breakout Sessions: • PA/NP • RN • Rehab Professionals
1:05–2:35 p.m.	Symposium: Minimally Invasive Spine Surgery: What are the Real Problems and Controversies? <i>Moderator: William Mitchell, MD</i>
2:35–3:05 p.m.	Networking Break
3:05–4:05 p.m.	Concurrent Sessions: • Degenerative Disc • Advances in Surgical Techniques
4:10–5:10 p.m.	Focused Paper Presentations: • Cervical Fusion and Laminoplasty • Motion Preservation • The Cutting Edge • Lumbar Total Disc Arthroplasty • Complications
	Special Interest Group Discussions: • Data Collection in Spine: Why and How • Minimally Invasive Spine Surgery: Facts and Hype • The Painful Sacroiliac Joint: Diagnosis and Treatment

## SATURDAY, OCTOBER 9

6:30–7:20 a.m.	Continental Breakfast
7:00–10:30 a.m.	Registration
7:20–7:25 a.m.	Announcements
7:25–8:25 a.m.	General Session: Best Papers
8:25–8:30 a.m.	NASS Working for You: Advocacy/Health Policy Update
8:30–10:00 a.m.	Symposium: Dealing with Disasters and Measuring Adverse Events in Spine Surgery <i>Moderator: Paul Anderson, MD</i>
10:00–10:30 a.m.	Networking Break
10:30–11:30 a.m.	Concurrent Sessions: <ul style="list-style-type: none"><li>• Scoliosis</li><li>• Tumor</li></ul>
11:30 a.m.–1:00 p.m.	Symposium: Sorting Out Neck, Shoulder and Scapular Pain <i>Moderator: William Sullivan, MD</i>
1:00 p.m.	Meeting Adjourns

## EDUCATION CREDITS

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### 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 with commendation by the ACCME to provide continuing medical education for physicians and takes responsibility for the content, quality and scientific integrity of this CME activity.

NASS designates this educational activity for a maximum of 27.25 *AMA PRA Category 1 Credits*<sup>™</sup>. Participants should only claim 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. may participate in this CME activity and are eligible for *AMA PRA Category 1 Credits*<sup>™</sup>.

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*<sup>™</sup> credit for the Physician's Recognition Award from organizations, such as NASS, accredited by the ACCME.

Because each state has different requirements for nurses, physical therapists and other nonphysician providers, please contact your credit granting organization for their requirements.

### CME/CEU Certificates

Meeting evaluations are submitted electronically and CME certificates can be printed for the sessions you have attended **once you have completed the evaluation**. Additional information will be available in the Final Program.

### Continuing Education (CE) Credit for Allied Health Professionals

NASS is proud to offer continuing education units (CEUs) to accommodate nonphysician attendees' certification requirements. The following indicates the status of CEU accreditation for nonphysician attendees:

- **Professional Coders:** Coding Update 2010: Essentials and Controversies of Operative and Nonoperative Spine Care Coding has prior approval of the American Academy of Professional Coders for 16 Continuing Education Units. Granting of this approval in no way constitutes endorsement by the Academy of the program, content or the program sponsor.
- **Nurses and Chiropractors:** Accreditation varies for every state certification agency. Please retain this brochure, the Final Program and a copy of your certificate when completing the recertification process.
- **Nurse Practitioners:** Application is pending for continuing education credentialing through the American Academy of Nurse Practitioners (AANP). Look for information on the NASS Web site ([www.nassannualmeeting.org](http://www.nassannualmeeting.org)) and in the Final Program to be distributed on site at the meeting.

## SPECIAL EVENTS

### Welcome Reception

Tuesday, October 5, 6:00–7:30 p.m., at The Peabody Orlando

The Welcome Reception marks the official start of the Annual Meeting. This is an opportunity to relax and reconnect with colleagues and network with other spine care professionals. This event is open to all attendees and exhibitors.

### Presidential Guest Speaker: Dan Ariely, PhD

Wednesday, October 6, 9:00–9:45 a.m.



Dan Ariely is the James B. Duke Professor of Behavioral Economics at Duke University and visiting Professor at the MIT Media Lab. Ariely, a behavioral economist, is an expert on how people actually act—and why they act—in all kinds of business and economic environments, and what this means for business innovation, strategy, marketing and pricing.

Ariely's forthcoming book *Living Irrationally* (June 2010) explores the financial and debt crisis, the post-crash economy, and how this impacts employers, marketers and public policy. His work has been featured in a variety of media including *The New York Times*, *Wall Street Journal*, *The Washington Post*, *The Boston Globe*, *Business 2.0*, *Scientific American*, *Science*, CNN, NPR, and he was interviewed for ABC's *20/20*.

Ariely received a PhD in marketing from Duke University, a PhD and MA in cognitive psychology from the University of North Carolina at Chapel Hill, and a BA in psychology from Tel Aviv University.

### Keynote Speaker: Regina Herzlinger, PhD

Thursday, October 7, 1:00–1:45 p.m.



Regina E. Herzlinger is the Nancy R. McPherson Professor of Business Administration at the Harvard Business School. She is widely recognized for her innovative research in health care, including her early predictions of the unraveling of managed care and the rise of consumer-driven health care and health care focused factories, two terms that she coined. *Money* has dubbed her the “Godmother” of consumer-driven health care.

Her newest book *Who Killed Health Care?* (NY: McGraw-Hill, 2007) was selected by the U.S. Chamber of Commerce as one of the ten books that changed the debate in 2008 and profiled in a full-page article in *The Economist*. Her prior book, *Consumer-Driven Health Care: Implications for Providers, Payers, and Policymakers* (San Francisco: Jossey-Bass, 2004) received the 2004 *American Journal of Nursing* Book of the Year award for History and Public Policy.

Herzlinger has won the Consumers' for Health Care Choices Pioneer in Health Economics award, the American College of Healthcare Executives' Hamilton Book of the Year award, and the Healthcare Financial Management Association's Board of Directors award. She was inducted as an honorary fellow by the American College of Physician Executives. *Modern Healthcare's* readers selected her as among the “100 Most Powerful People in Healthcare” and Managed Healthcare named her one of health care's top ten thinkers.

Herzlinger received her Bachelor's Degree from MIT and her Doctorate from the Harvard Business School.

**Resident, Fellow and Program Directors Meeting**

Wednesday, October 6, 12:00–1:00 p.m.

This lunch meeting is a forum to discuss the Spine Fellowship Match, now in its second year, in an effort to maintain enthusiasm and discuss any issues or concerns.

**Resident, Fellow and Program Directors Reception**

Thursday, October 7, 6:30–8:00 p.m.

NASS is proud to announce the eighth annual Resident, Fellow and Program Directors Reception at the 25th Annual Meeting. The reception provides an opportunity for residents, fellows or potential fellows to mingle with each other and the program directors as well as provide a casual setting to enjoy cocktails and hors d'oeuvres with colleagues.

**The Spine Journal and NASS Awards and Honors**

Honor your fellow colleagues as NASS presents the following awards:

- *The Spine Journal* Outstanding Paper Awards, including Editor's Choice Award, will be presented on Thursday, October 7, 10:30–11:00 a.m.
- Research Award Presentations for those who have made advancements in spine care and research will be presented on Friday, October 8, 10:30–11:00 a.m.

**NASS RESOURCE CENTER**

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Attendees looking for membership information, publications and NASS logo items will find them in the NASS Resource Center, located in the Exhibit Hall. NASS membership staff will answer questions about the application process and member benefits. As a service to members, dues payments and updates to contact information will be accepted on site. Pending members may check the status of their membership and potential members can apply for NASS membership. Reference materials and periodicals will be available for viewing and purchase, as well as NASS anniversary and logo apparel, kids' t-shirts, coffee mugs, ties and golf accessories.

**NASS Membership**

Not a NASS member? Join and save up to \$300 on your registration fee! For more information about becoming a member or to request a membership application, call the NASS office toll-free at (866) 960-6277. NASS membership is not a requirement for Annual Meeting attendance.

**NASS Job Connection**

Through the NASS Job Connection, NASS' online job recruitment service, job seekers can search by specialty or by geographic location free of charge. Employers can post positions for a nominal fee. Now with the Online Career Center conference tool, candidates and employers can flag that they will be attending the Annual Meeting, allowing for easy connection during the conference. Visit the NASS Job Connection located in the NASS Resource Center in the Exhibit Hall. NASS Job Connection staff will be on site to assist users and give live demos. For more information on either searching or posting a position, visit [www.spine.org](http://www.spine.org) or call (888) 884-8242.

**Internet Stations**

Several computers with internet access will be available at the NASS Resource Center so you can keep in touch with your home or office while at the conference.

**Advocacy/SpinePAC**

Stop by the NASS Advocacy/SpinePAC booth in the NASS Resource Center and get information on the key issues shaping the health policy debate and learn how you can make a difference.

## TOUR INFORMATION

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For information on city tours, local attractions and activities in and around Orlando, visit the Orlando CVB Guest Services kiosk in the lobby of the Orange County Convention Center West Building. You also can plan in advance by visiting the official Orlando CVB welcome Web site located on the NASS site. Or, go direct to <http://nass.orlandomeetinginfo.com>. NASS has not contracted with a destination management company to provide specific tours this year.

## HOUSING INFORMATION

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### Why You Should Stay in NASS-contracted Housing

- Knowledgeable staff: Dedicated staff will assist with hotel selection and city information.
- Preferred rate guarantee: NASS meets the prices of online hotel room providers. Go to [www.nassannualmeeting.org](http://www.nassannualmeeting.org) for details.
- Convenient deposit policy: Secure your individual hotel reservation or block rooms with a credit card guarantee with no automatic prepayments.
- Shuttles: Access shuttle bus transportation from most official NASS hotels.
- Overbooking protection: Booking through the NASS official room block provides added protection from relocation to another property.

### How to Reserve Your Accommodations

Meeting registration **MUST** be completed and processed within two weeks of reserving your hotel room. **If not, your hotel room will be cancelled without notice.** NASS will continuously monitor the housing reservations list to make sure that all individuals with reservations also are officially registered for the Annual Meeting. NASS reserves the right to cancel reservations that do not meet these criteria.

Attendees are required to make hotel reservations through the NASS Housing Bureau using any of the following options:

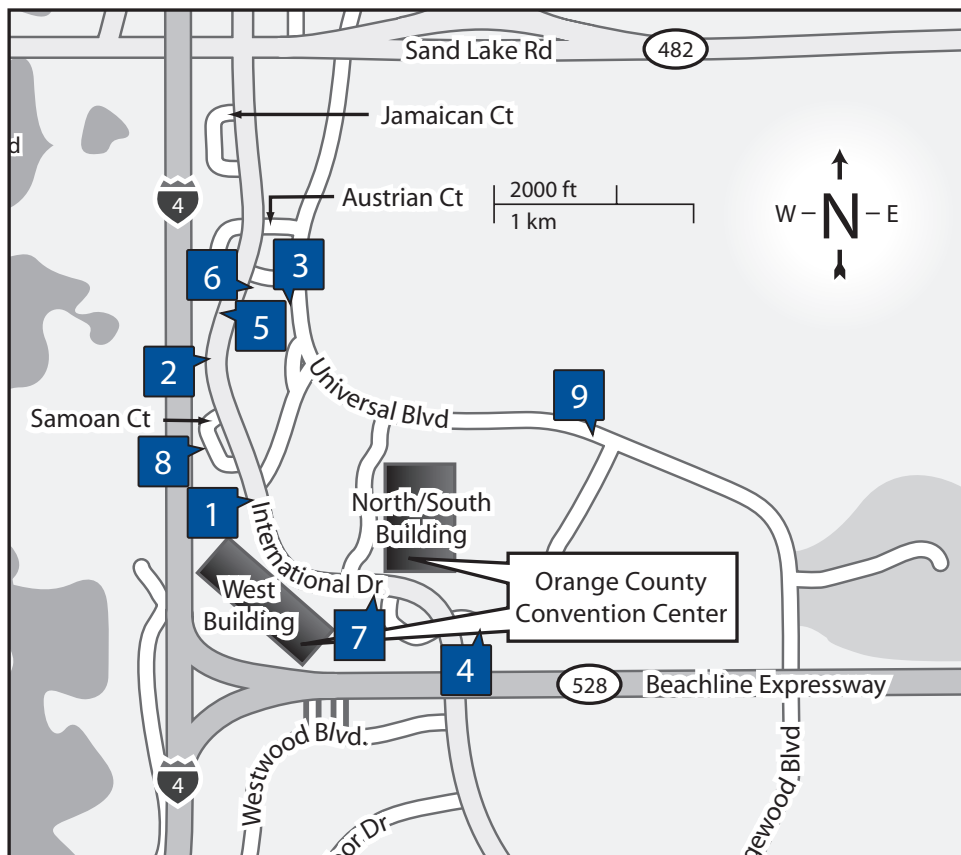
- **Online:** [www.nassannualmeeting.org](http://www.nassannualmeeting.org) (in conjunction with meeting registration)
- **Phone:** (800) 545-1773 (US/Canada) or (312) 527-7300 (Int'l), 9:00 a.m.–8:00 p.m. ET
- **Fax:** (888) 726-9290 (US/Canada) or (404) 393-3172 (International)

Hotels will not and cannot accept reservations directly. The only hotel rooms that can be reserved are the hotels that are in the NASS Housing Block list. **The cutoff date for reservations is September 10, 2010;** discounted rates may not apply after this date. Reservations are made on a first-come, first-served basis and are subject to room availability. If the room blocks sell out prior to the cutoff date, NASS will secure another hotel for attendees. This is not a guarantee as it is based on rates and availability within the city of Orlando over our meeting dates.

### Hotel Cancellation/Change Policy

Changes may be made to existing reservations online with the confirmation number and password listed on your confirmation; by e-mail to [nassannualmeeting@onpeakevents.com](mailto:nassannualmeeting@onpeakevents.com); or by calling (800) 545-1773 Monday through Friday, 9:00 a.m.–5:00 p.m. (ET). You must have the confirmation number of the reservation you wish to change in order to make any changes. Changes can be submitted up to Tuesday, September 28, 2010. After Tuesday, September 28, 2010, changes need to be communicated directly with the hotel. Cancellations to existing reservations must be made according to the individual hotel's cancellation policy, which is noted on your confirmation. Failure to cancel your reservation according to the hotel cancellation policy will result in a charge to your credit card.

HOTEL MAP



**1 The Peabody Orlando**

*Headquarters Hotel*  
 9801 International Drive  
 \$239 single/double  
 .2 miles from OCCC West

**2 Embassy Suites International Drive/ Convention Center**

8978 International Drive  
 \$199 single/double  
 .7 miles from OCCC West

**3 Hampton Inn Convention Center**

8900 Universal Boulevard  
 \$129 single/double  
 .6 miles from OCCC West

**4 Hilton Orlando**

6001 Destination Parkway  
 \$229 single/double  
 .8 miles from OCCC West

**5 Homewood Suites**

*International Drive*  
 8745 International Drive  
 \$139 single/double  
 .7 miles from OCCC West

**6 Hyatt Place Orlando**

8741 International Drive  
 \$149 single/double  
 .8 miles from OCCC West

**7 Rosen Centre Hotel**

9840 International Drive  
 \$219 single/double  
 .5 miles from OCCC West

**8 Rosen Plaza Hotel**

9700 International Drive  
 \$175 single/double  
 .3 miles from OCCC West

**9 The Westin Imagine Orlando**

9501 Universal Boulevard  
 \$199 single/double  
 \$219 one bedroom suite  
 1.1 miles from OCCC West

Shuttle service to and from Convention Center

## REGISTRATION INFORMATION

### Early Registration Deadline: July 19, 2010

Save \$200 with the early registration discount.

### Housing Deadline: September 10, 2010

Ensure that you will have accommodations in an official NASS hotel.

### Registration After September 10, 2010

After September 10, online and on-site registration fees increase by \$100. Please register early to avoid being charged the increased registration fee.

### General Registration Fees

Registration fees for the NASS 25th Annual Meeting are designated in US currency. Only US currency will be accepted; no cash is accepted on site. We accept Visa, MasterCard and American Express. Fees include all education sessions from Oct. 6–9; Welcome Reception, Tuesday, Oct. 5; and Continental breakfasts (Wed.–Sat.) and lunches (Wed.–Fri.).

**Member Discount:** Save up to \$300 on your registration fee by joining NASS. Please e-mail [membership@spine.org](mailto:membership@spine.org) for information on how to become a member, or call Susan Balluff at (630) 230-3652.

**Note: One-day and Exhibit Hall Only registrations are not available.**

NASS Member	By 7/19	7/20–9/10
MD, DO, PhD (Active/Associate/Corresponding)	\$675	\$875
DC, PA, NP, RN, PT (Affiliate)	\$375	\$575
Retired (Emeritus Member)	\$225	\$425
Resident/Fellow (In-training) <i>(You must provide a letter from your training program director or you will be charged the member physician rate.)</i>	\$150	\$250
Nonmember	By 7/19	7/20–9/10
MD, DO, PhD	\$975	\$1175
Affiliate Health (DC, PA, NP, RN, PT, Medical Assistant, Practice Manager, Technician, Office Staff)	\$525	\$725
Resident/Fellow <i>(You must provide a letter from your training program director or you will be charged the nonmember physician rate.)</i>	\$200	\$300
Commercial Business Interest/Nonmember Nonphysician <i>(This category is for nonclinical professionals wishing to attend the meeting. NO guest passes allowed! Financial Researcher, Venture Capitalist, Investment Banker, Insurance Professional, Attorney, Nonexhibiting Company Representative, etc.)</i>	\$995	\$1195
<b>Guest</b> (Over 13 years of age): \$250 <i>(Limit 1 guest. Includes participation in all lunches and the Welcome Reception. Nonmember Nonphysician and Commercial Business Interest registrants are not permitted to purchase guest registrations. Guest refers to a spouse or significant other, not a business associate, staff colleague or student who will attend scientific sessions.)</i>		

### Coding Course Registration Fees

Coding Update 2010 is Monday–Tuesday, October 4–5.

Member	Nonmember
Physician: \$700	Physician: \$800
Allied Health Professional: \$550	Allied Health Professional: \$600
In-Training Resident/Fellow: \$350*	In-Training Resident/Fellow: \$400*

\* You must provide a letter from your training program director or you will be charged the member physician rate.

### Premeeting Course Registration Fees

Premeeting courses are Tuesday, October 5.

Member		Nonmember	
By 7/19: \$150	7/20–9/10: \$250	By 7/19: \$250	7/20–9/10: \$350
<b>Morning Courses (8:00 a.m.–12:00 p.m. unless noted)</b>			
Section on Rehabilitation Interventional Medicine Spine			
Minimal Access to the Lumbar Spine			
Fundamentals of Evidence-Based Medicine: Part I: Asking Answerable Questions, Searching the Literature and Rating the Evidence			
Trauma Evaluation, Classification, Pathologic Origin and Stabilization Options (8:00 a.m.–12:30 p.m.)			
<b>Afternoon Courses (1:00–5:00 p.m. unless noted)</b>			
Section on Spine Biologics and Research			
Fundamentals of Evidence-Based Medicine Part II: Critically Appraising the Literature			
Nursing and Spine Care			
Section on Motion Technology (1:00–6:00 p.m.)			

### Technique Workshop Registration Fees

Physicians only. Technique workshops are Tuesday, October 5.

Member		Nonmember	
By 7/19: \$475	7/20–9/10: \$675	By 7/19: \$675	7/20–9/10: \$875
Interbody Fusion Technologies (8:00 a.m.–12:00 p.m.)			
Cervical Spine Stabilization (1:00–5:00 p.m.)			

#### Important Registration Information

Register quickly and easily at [www.nassannualmeeting.org](http://www.nassannualmeeting.org). Open 24 hours a day, 7 days a week, it is a convenient way to register and reserve a hotel room. We accept Visa, MasterCard and American Express.

**Registration is only available online and a NASS ID number is required.** Please read the following registration policies and instructions before registering.

## REGISTRATION INSTRUCTIONS

If you have attended a NASS Meeting or purchased a product you will have a username and password. **Your username is your e-mail address and password is either your NASS member ID number or an assigned ID number.** Here are ways to locate your ID number:

- You may have received an Annual Meeting promotional e-mail that contained your username and password; or, your ID number (password) is listed on the mailing panel of this preliminary program.
- Depending on the information in our database, you may be able to request your password online at [www.nassannualmeeting.org](http://www.nassannualmeeting.org): register and “forgot password” is located below username and password login.
- If you cannot locate your ID number (password) and you have an established NASS login, send a request to [registration@spine.org](mailto:registration@spine.org).
- Call NASS at (866) 960-6277 or (630) 230-3600.

*Please note: If you are a NASS member, your membership dues must be paid to receive the member registration rate.*

**If you are a first-time NASS meeting attendee**, you will be registered automatically at the nonmember nonphysician rate of \$995 (early) or \$1195 (regular). If you should be registered under a different category (listed on page 15), e-mail your request including your name, title, credentials, company, mailing address, job description, registration category, and phone number to [registration@spine.org](mailto:registration@spine.org). If you are a nonmember resident/fellow, see page 18 for instructions. If you do not have a username and password, please select “Register Online” and “Sign Up as a New Contact” located below the username and password login.

### How do I register?

1. Please read and review all instructions before registering.
2. Select “Register Online”.
  - If you have your username (e-mail address) and password (ID number), please enter that information and select “Login.”
  - If you do not have a username and password, select “Sign Up as a New Contact” located below username and password.
    - a. Enter your information and select “Create Contact.”
    - b. Select “OK.” A username and password will be e-mailed to you.
    - c. If username and password do not work right away, try again in 5 minutes.
3. If you also would like to have another person receive a confirmation invoice, please enter his or her e-mail address under “E-mail CC.” A confirmation letter will automatically be sent to the e-mail address we have in our database.
4. After you register, select “Submit Payment”; you will automatically be e-mailed a confirmation letter. Your registration will be cancelled if you don’t select “Submit Payment.”
5. After clicking “Submit Payment”, a link will be displayed towards the bottom of the page in red to reserve your hotel room. If you decide to reserve your room at a later date, your link to register for housing will be on your confirmation letter.
6. Please add [registration@spine.org](mailto:registration@spine.org) to your safe list to receive your confirmation letter and future e-mails.

## REGISTRATION POLICIES

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**Cancellation Policy:** Cancellation of registration must be submitted in writing via mail or e-mail and must be postmarked or dated on or before September 10 to receive a refund less cancellation processing fee. Cancellation processing fees: General Registration \$125 USD; Premeeting Technique Workshops \$75 USD (each); Premeeting Workshops \$25 USD (each); and Guests \$50 USD. There will be no refunds after September 10, 2010 regardless of cause.  
E-mail: [registration@spine.org](mailto:registration@spine.org) Mail: NASS, 7075 Veterans Blvd., Burr Ridge, IL 60527

**Change/Transfer Policy:** E-mail [registration@spine.org](mailto:registration@spine.org) to modify your registration, e.g., eliminate a premeeting course, or edit spelling of name. This function cannot be processed online. **Note:** Registrations are not transferable to another party.

**Commercial Business Interest and Nonmember Nonphysician:** These registration categories are not permitted to purchase guest registrations. Guest registrations under these categories will be cancelled and your credit card will be credited \$250.

**Disclaimer:** NASS reserves the right to allocate up to \$300 of all Annual Meeting registration fees to assist in funding the further development of the Spine Education & Research Center in order to advance spine education.

**Media Registration:** Credentialed members of the media may register to attend the conference and are required to provide NASS staff with a copy of their press credentials and letters of assignment. Two registrations are allowed per media outlet. Qualified media outlets must be represented by editorial staff, not advertising or marketing staff. Publishers will not be considered part of the editorial staff. Lunches are not provided for Media registrants. Media interested in attending should contact the Public Affairs Department at (630) 230-3650 or [llaw@spine.org](mailto:llaw@spine.org) for instructions on registering.

**Guest Registration:** Limit one guest per attendee—includes participation at all lunches and the Welcome Reception. MAY NOT be used as registration for associates who will be attending scientific sessions. Guest refers to a spouse or significant other, not a business associate, staff colleague or student. Nonmember Nonphysician and Commercial Business Interest registrants are not permitted to purchase guest registrations.

**Premeeting Course Only Registration:** If you are registered for a Premeeting Course only, guest registrations are not allowed. If a guest is registered under this category, your guest will be cancelled and your credit card will be credited \$250.

**Resident/Fellow:** In order to receive the nonmember resident rate, please fax a letter from your program director stating that you are a resident/fellow in good standing with the dates of your residency/fellowship on letterhead to (630) 230-3709. If you are not in our database, create a new contact. After you create a new contact, e-mail [registration@spine.org](mailto:registration@spine.org) and inform the registration manager that you faxed a letter from your program director. When the letter is received, you will receive an e-mail to register online. A valid Student ID is required for on-site badge pickup.

**Technique Workshops:** These workshops are for **physicians only**. If you register for a technique workshop and you are not a physician, your workshop registration will be cancelled and your credit card will be credited the payment amount.

## DISCLAIMER

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The material presented at the 25th Annual Meeting is made available by the North American Spine Society for educational purposes only. The material is not intended to represent the only, nor necessarily the best, method or procedure appropriate for the medical situations discussed; rather, it is intended to present an approach, view, statement or opinion of the faculty which 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, slight changes in program content or faculty may occur after the Preliminary Program has been distributed. 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

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### 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 have been required to provide complete disclosure of all conflicts of interest.

### Commercial Support Disclosure

As a sponsor accredited with commendation 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 are expected to disclose to the activity 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 made 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 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 25th Annual Meeting may have FDA clearance for use for specific purposes only, or in restricted research settings. The FDA has stated 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.

## 2009-2010 BOARD OF DIRECTORS

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NASS would like to thank the following Board members for their leadership and guidance throughout the year:

Ray M. Baker, MD: President  
 Gregory J. Przybylski, MD: 1st Vice President  
 Michael H. Heggeness, MD, PhD: 2nd Vice President  
 Heidi Prather, DO: Secretary  
 Charles A. Mick, MD: Treasurer  
 Charles L. Branch Jr., MD: Past President  
 Venu Akuthota, MD: Education Council Director  
 Charles A. Reitman, MD: Evidence Compilation & Analysis Chair  
 Marjorie Eskay-Auerbach, MD, JD: Ethics Committee Chair  
 Alexander J. Ghanayem, MD: Administration & Development Council Director  
 William Mitchell, MD: Health Policy Council Director  
 Christopher M. Bono, MD: Professional, Economic & Regulatory Chair  
 Raj D. Rao, MD: Advocacy Chair  
 Daniel K. Resnick, MD: Clinical Research Development Chair  
 David J. Rothman, PhD: Ethicist  
 Jerome Schofferman, MD: Section Development Chair  
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 Jeffrey C. Wang, MD: Continuing Medical Education Chair  
 William C. Watters III, MD: Research Council Director  
 F. Todd Wetzell, MD: Governance Committee Chair  
 Eric J. Muehlbauer, MJ, CAE: Executive Director

## 2010 SCIENTIFIC PROGRAM COMMITTEE

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NASS would like to thank the following members for their valued time, effort and dedication in planning the educational content for this year's Annual Meeting:

Ray M. Baker, MD  
*President*

Christopher P. Kauffman, MD  
 William J. Sullivan, MD  
*2011 Program Co-chairs*

Christopher J. Standaert, MD  
 Alexander R. Vaccaro, MD, PhD  
*2010 Program Co-chairs*

Venu Akuthota, MD  
*Education Council Director*

Steven D. Glassman, MD  
 David R. O'Brien Jr., MD  
*2009 Program Co-chairs*

Jeffrey C. Wang, MD  
*Continuing Medical Education Chair*

## BOARD OF DIRECTORS/PROGRAM COMMITTEE DISCLOSURES

### Conflict of Interest Disclosure Index

All participants provide estimated dollar amounts per the NASS Disclosure Policy through the NASS online disclosure module. NASS staff then translates that information into dollar ranges for purposes of the index. These ranges are as follows:

<b>None:</b> Existing relationship but no remuneration in prior calendar year	<b>Level E:</b> \$50,001 to \$100,000
<b>Level A:</b> \$100 to \$1,000	<b>Level F:</b> \$100,001 to \$500,000
<b>Level B:</b> \$1,001 to \$10,000	<b>Level G:</b> \$500,001 to \$1M
<b>Level C:</b> \$10,001 to \$25,000	<b>Level H:</b> \$1,000,001 to \$2.5M
<b>Level D:</b> \$25,001 to \$50,000	<b>Level I:</b> Greater than \$2.5M

### Board of Directors and Program Committee Disclosures (As of April 14, 2010)

- Akuthota, Venu:** Other Office: AAPMR Musculoskeletal Council Chair (Meeting expenses), Emerging Technologies in Spine Course (Honorarium amount TBD); Grants: Bob Doctor Grant (B, paid to institution), American Physical Therapy Association (D, paid to institution); Other: PM&R Journal Senior Editor (B).
- Baker, Ray M.:** Stock Ownership: Relievant MedSystems (100,000 warrants, 0.137%, B); Private Investments: Nocimed (190,706 shares, 2.45%), Laurimed (30,000 shares, 0.5%, C); Board of Directors: ISIS (None, Vice-President).
- Bono, Christopher M.:** Royalties: Wolters Kluwer (Lippincott Williams and Wilkins) (B), Informa (B); Board of Directors: North American Spine Society (Travel expenses), Journal of the American Academy of Orthopaedic Suggestions (B), The Spine Journal (None); Other Office: Applied Spine (B), AO (None); Fellowship Support: OREF (E, paid to institution).
- Branch, Charles L.:** Royalties: Medtronic (G); Board of Directors: American Board of Neurological Surgery (B), Board of Regents of Pepperdine University (None), Board of the Childress Institute for Pediatric Trauma (None), Board of Directors of Eastern European Missions (None).
- Eskey-Auerbach, Marjorie:** Consulting: Stryker Spine (B), DePuy Spine (D).
- Ghanayem, Alexander J.:** Research Support (Staff/Materials): Synthes Spine (E); Grants: Department of Veterans Affairs (F).
- Glassman, Steven D.:** Royalties: Medtronic, Inc. (H); Consulting: Medtronic, Inc. (F), DePuy (B); Trips/Travel: Medtronic, Inc. (Travel reimbursement); Research Support: Staff and/or materials: Medtronic, Inc. (E), Norton Healthcare (F); Fellowship Support: Norton Healthcare (F).
- Heggenes, Michael H.:** Royalties: Relievant Medsystems (C); Stock Ownership: Relievant Medsystems (45,000 shares, 1.6%); Consulting: Relievant Medsystems (D); Research Support (Investigator Salary): Department of Defense (E); Grants: Department of Defense (I, paid to institution).
- Kauffman, Christopher P.:** Speaking and/or teaching arrangements: NASS (Travel/lodging reimbursed); Other: Nashville Intraoperative Monitoring (5% ownership; relationship dissolved Sept 30, 2009, currently no ownership).
- Mick, Charles A.:** Relationships Outside the One Year Requirement: DePuy (A), Synthes (A), St Francis Medical (A), 2005-2006, support to attend required surgical training for cervical TDA, lumbar TDA and Interspinous distraction device.
- Mitchell, William:** Speaking and/or teaching arrangements: DePuy Spine (B); Trips/Travel: NASS (B); Board of Directors: NASS (meeting expenses); Other: Fellowship Spine Surgery Center (3 shares), Cooper CyberKnife Center (1 share); Relationships Outside the One Year Requirement: DePuy Spine (C, 2003-2007, Teaching hands-on cadaver courses), Aesculap (C, 2003-2007, Teaching hands-on cadaver courses and teaching new representatives for the company how to interpret images and about surgical procedures).
- Muehlbauer, Eric J.:** Consulting: International Spinal Injection Society (B); Trips/Travel: International Spinal Injection Society (B); Other: NASS Exhibitors (I, paid to institution), Abbott Spine (E, paid to institution), Alphatec Spine, Inc. (E, paid to institution), DePuy Spine A Johnson & Johnson Company (F, paid to institution), Globus Medical Inc. (E, paid to institution), Medtronic Spinal and Biologics (F, paid to institution), NuVasive, Inc. (F, paid to institution), Orthofix, Inc. (E, paid to institution), Osteotech, Inc. (E, paid to institution), Stryker (F, paid to institution), Synthes Spine (E, paid to institution), Zimmer Spine (F, paid to institution), k2m (D, paid to institution), Alphatec Spine (C, paid to institution), DePuy Spine (D, paid to institution); Relationships Outside the One Year Requirement: Exhibitors (I, past 15 years, Exhibitors and sponsors, paid to institution).
- O'Brien, David R.:** Speaking and/or teaching arrangements: NASS (B), International Spinal Intervention Society (B); Board of Directors: International Spine Intervention Society (Speaking and/or teaching arrangements disclosed).
- Prather, Heidi:** Nothing to Disclose.

- Przybylski, Gregory J.:** Stock Ownership: United Healthcare (300 shares); Private Investments: South Jersey CK Leasing (1 share); Speaking and/or teaching arrangements: DePuy Spine (B), NASS Coding Courses (B), Eli Research (B); Trips/Travel: Practicing Physicians Advisory Council to CMS (A, dissolved in 2009), Relative-value Update Committee of AMA (B); Board of Directors: NASS (meeting expenses); Scientific Advisory Board: United Health Group (B), Humana (C), DePuy Spine (B); Other Office: Eli Research Advisory Editor (B), Council of State Neurosurgical Societies (B).
- Rao, Raj D.:** Board of Directors: North American Spine Society (Meeting expenses); Scientific Advisory Board: US Food and Drug Administration Scientific Advisory Panel on Orthopaedic and Rehabilitation Devices (B); Other Office: American Academy of Orthopaedic Surgeons—Board of Specialty Societies (Meeting expenses); Grants: United States Department of Defense—Navy (G, paid to institution); Other: *The Spine Journal* (None), Seminars in Spine Surgery (A).
- Reitman, Charles A:** Nothing to Disclose.
- Resnick, Daniel K:** Grants: NIH (D).
- Rothman, David:** Nothing to Disclose.
- Schofferman, Jerome:** Board of Directors: American Academy of Pain Medicine (None); Fellowship Support: NuVasive (D), Medtronic (E, dissolved 12/31/09).
- Standaert, Christopher J.:** Consulting: Washington State Health Care Authority Health Technology Clinical Committee (B); Trips/Travel: Practicing Physicians Advisory Council for Dept. of HHS/CMS (Travel reimbursement).
- Sullivan, William J.:** Trips/travel: Emerging Technologies (B), AAPM&R RUC Representative (B); Other Office: AAPM&R (Trips/travel disclosed).
- Truumees, Eric:** Royalties: Stryker Spine (D); Stock Ownership: Doctor's Research Group (amount unknown); Private Investments: IP Evolutions (1 share, 33%); Board of Directors: Cervical Spine Research Society (None); Scientific Advisory Board: Doctors Research Group (Travel, stocks).
- Wang, Jeffrey C.:** Royalties: Medtronic (D), Stryker (E), Seaspine (E), Osprey (B), Aesculap (B), Biomet (F), DePuy (B), Amedica (B), Zimmer (C), Alphatech (F); Stock Ownership: Fziomed (2500 shares, less than 1%); Private Investments: Promethean Spine (less than 1%), Paradigm spine (less than 1%), Benevenue (less than 1%), NexGen (less than 1%), K2 medical (less than 1%), Pioneer (less than 1%), Amedica (less than 1%), Vertiflex (less than 1%), Electrocore (less than 1%), Surgitech (less than 1%), Invuity (less than 1%), Axiomed (less than 1%); Board of Directors: North American Spine Society (meeting expenses), Cervical Spine Research Society (meeting expenses); Scientific Advisory Board: VG Innovations (options valued at less than 1% of company), Corespine (options valued at less than 1% of company), Expanding Orthopaedics (options valued at less than 1% of company), Syndicom (shares valued at less than 1% of company), Osprey (options, less than 1% of company), Amedica (options, less than 1% of company), Bone Biologics (shares, less than 1% of company), Curative Biosciences (options, less than 1% of company), Facet Solutions (options, less than 1% of company), PearlDiver (options, less than 1% of company), Pioneer (options, less than 1% of company), Seaspine (options, less than 1% of company), Axis (None).
- Watters, William C.:** Stock Ownership: Intrinsic Therapeutics (10,000 share options); Consulting: Stryker (B); Board of Directors: North American Spine Society (None), American College of Spine Surgeons (None); Scientific Advisory Board: Intrinsic Therapeutics (Stock Options); *The Spine Journal* (None), *Spine Arthroplasty Journal* (None), *Spine* (None), MedCenter Surgical Center (1/22nd minority interest ownership).
- Wetzel, F. Todd:** Stock Ownership: Releivent Medical (45,000 shares); Private Investments: Neurospine Ventures LLC (1 shares); Board of Directors: McKenzie Institute International (None).
- Vaccaro, Alexander R.:** Royalties: DePuy Spine (F), Biomet Spine (F), Globus (F), Medtronic, Inc. (F), K2M (C), Aesculap (B); Stock Ownership: K2M (50,000 shares), Cytonics (Unknown), Disc Motion Technology (Unknown), Zygoloc (Unknown), Progressive Spinal Technology (Unknown), Computational Biodynamics (Unknown), Stout Medical (D), Bonovo Orthopaedics (100,000 shares), Electrocore (Unknown), Vertiflex (30,000 shares), Flagship Surgical (Unknown), In Vivo (Unknown), PearlDiver (Unknown), Small Bone Innovations (30,000 shares), Neucore (22,000 shares), Crosscurrent (125,000 shares), Vertilink (1,535 shares), Orthovita (10,000 shares), Syndicom (2,750 shares), Biomerix (25,000 shares), Spinemark (82,000 shares), Paradigm Spine (146,875 shares), Spinology (28,750 shares), Vertebron (184,984 shares), Replication Medica (15,250 shares), Breakaway Imaging (100,000 shares), Crosstree Medical (41,667 shares), Globus (60,000 shares); Consulting: DePuy Spine (D), Osteotech (None), Orthofix (B), Vertiflex (A), Vertebron (B), Stryker Biotech (C), Stryker Spine (F), K2M (B), Medtronic, Inc. (D), AOSpine (B); Other Office: North American Spine Society Annual Meeting Program Committee (None); Research Support: Staff and/or materials: AOSpine (D), Medtronic, Inc. (E).





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