Society for Technology in Anesthesia

Syllabus

2013 Annual Meeting
January 9-12, 2013
Phoenix, Arizona

Royal Palms Resort & Spa
5200 East Camelback Road, Phoenix, Arizona 85018
Dear STA Annual Meeting Attendee,

On behalf of the Society for Technology in Anesthesia (STA) Board of Directors, we would like to welcome you to this year’s STA Annual Meeting.

The STA Annual Meeting affords an opportunity for clinicians, technicians, engineers and industry specialists at all levels to meet and exchange ideas on the future of anesthesia and healthcare related technologies. We hope that you take advantage of this unique venue and take time to meet with your fellow attendees during the meeting.

Again this year, we are very excited to be partnering with the Foundation for Anesthesia Education and Research (FAER) to present a special session on, “Regulate or Innovate: Can We Do Both?”

We would like to thank Dr. Jesse M. Ehrenfeld, 2013 Meeting Chair, for organizing the meeting and securing the outstanding faculty, and all of those whom have generously given their time to prepare and present their lectures and demonstrations.

With the increasing fiscal and political challenges that face healthcare and industry, STA will continue to support innovation in the quest to create sustainable health systems that meet the needs of our patients. We hope you find the meeting topics and discussions timely and informative.

Thank you for joining us. We look forward to a successful meeting.

George Blike, MD,
President
Society for Technology in Anesthesia

Mission Statement

The Society’s mission is to improve the quality of patient care by improving technology and its application. The Society promotes education and research, collaborates with local, national, and international organizations, sponsors meetings and exhibitions, awards grants, and recognizes achievement.

Save the Date!

2014 Annual Meeting
January 15-18, 2014
Orlando, Florida USA
Activity Overview:
The STA 2013 Annual Meeting will address the use and implementation in consideration of bringing re-
search to market, technology and safety, closed loop anesthesia management, non-invasive hemodynamic
monitoring and Anesthesia Information Management Systems (AIMS).

Target Audience:
This program is designed for a national and international audience of physicians, engineers and/or other
practitioners in the field of anesthesia seeking an update on the current state of anesthesia technology.

Practice Gap:
The program is designed to address gaps in knowledge and techniques by exposing physicians to challeng-
es and complications when using and implementing various technologies into ones practice.

Educational Objectives:
As a result of participation in this CME activity, learners should be able to:
1. Recognize problems and potential solutions in the anesthesia work space with a special emphasis on
   exploring new developments in drug delivery, information management, and patient monitoring;
2. Recognize key factors required for effective translational medical research, including management of con-
   flict of interest issues and implementation of successful strategies to develop technologies;
3. Recognize barriers and potential solutions in order to bring new and safe technologies to the clinical
   practice with a special emphasis on patient monitoring, information management, and patient safety;
4. Discuss opportunities to advance and enhance environmentally responsible practices within anesthesia
   care; and
5. Discuss opportunities to advance automated anesthesia systems with the goal of improving patient
   safety.

Accreditation Statement:
This activity has been planned and produced in accordance with the Accreditation Council for Continuing
Medical Education (ACCME) Essentials and Standards relating to continuing medical education. This activity
is jointly sponsored through the International Anesthesia Research Society (IARS) and the Society for Tech-
ology in Anesthesia (STA). The IARS is accredited by the ACCME to provide continuing medical education
for physicians.

Continuing Medical Education Credit
The IARS designates this Live Activity for a maximum of 16 AMA PRA Category 1 Credits™. Physicians should
claim only the credit commensurate with the extent of their participation in the activity.

Disclosure
The IARS complies with ACCME Essential Areas, Standards and Policies regarding industry support of CME
Activities. The IARS has implemented policies and practices with respect to the planning, implementation
and presentation of this activity to identify and resolve potential conflicts of interest for all persons in a posi-
tion to control content.
Planning Committee & Faculty

Planning Committee

George Blike, MD  
Dartmouth-Hitchcock Medical Center  
• No Disclosures

Maxime Cannesson, MD, PhD  
University of California Irvine  
• Consultant for Edwards Lifesciences, Masio Corp., Covidien, Philips Medical System, Draeger  
• Speaker’s Bureau for Edwards Lifesciences, Masimo  
• Grant/Research Support from Edwards Lifesciences, Masimo  
• Shareholder for Sironis  
• Intends to discuss investigational products: Closed loop systems for fluid management and anesthesia management

John Doyle, MD, PhD  
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• No Disclosures

Jesse Ehrenfeld, MD, MPH  
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• No Disclosures

Stephanie Moffett  
Society for Technology in Anesthesia  
Account Coordinator  
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Jane Svinicki, CAE  
Society for Technology in Anesthesia  
Executive Director  
• No Disclosures

Faculty (with disclosures)

Aymen Alian, MD  
Yale University School of Medicine  
• No Disclosures

John Mark Ansermino, MBBCh  
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• Consultant for GE Healthcare  
• Shareholder for LionsGate Technologies

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Maxime Cannesson, MD, PhD  
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• Consultant for Edwards Lifesciences, Masio Corp., Covidien, Philips Medical System, Draeger  
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Christina DeMur, MS  
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• No Disclosures

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• No Disclosures

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• Shareholder for Medvis  
• Intends to discuss investigational products
Jesse Ehrenfeld, MD, MPH  
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• No Disclosures

David Feinstein, MD  
Beth Israel Deaconess Medical Center  
• No Disclosures

Jeffrey Feldman, MD, MSE  
Children’s Hospital of Philadelphia  
• Consultant for Covidien

Julian Goldman, MD  
Massachusetts General Hospital  
• No Disclosures

Thomas Hemmerling, MD  
McGill Montreal General Hospital  
• No Disclosures

Heike Hofmann, PhD  
Iowa State University  
• No Disclosures

Kenneth Holroyd, MD  
Vanderbilt University  
• No Disclosures

Sachin Kheterpal, MD, MBA  
University of Michigan  
• No Disclosures

Kai Kück, PhD  
Draeger  
• Employed by Draeger

Jeff E. Mandel, MD, MS  
University of Pennsylvania  
• Speakers Bureau for Integrity CE  
• Grant/Research Support from Masimo

Susan McGrath, PhD  
Dartmouth-Hitchcock Medical Center  
• No Disclosures

Michael O’Reilly, MD  
Masimo and University of California Irvine  
• Shareholder for Masimo  
• Royalties/employee for GE Healthcare  
• Intends to discuss investigational products

Michael Pinsky, MD  
University of Pittsburgh  
• Grants/Research Support from NIH R01  
• Intends to discuss investigational products

Mohamed Rehman, MD  
Children’s Hospital of Philadelphia  
• No Disclosures

David Reich, MD  
Mount Sinai Medical Center  
• Grants/Research Support from Covidien

Joseph Rinehart, MD  
University of California Irvine  
• Shareholder for Sironis  
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Brian Rothman, MD  
Vanderbilt University Medical Center  
• No Disclosures

Kirk Shelley, MD, PhD  
Yale University School of Medicine  
• Intends to discuss investigational products

Greg Spratt, RRT, CPFT  
Covidien/Oridion Capnography  
• Employee of Covidien – Oridion

William Stead, MD  
Vanderbilt University Medical Center  
• Shareholder for Healthstream  
• Receives Royalties for McKesson and ICA

Andreas Taenzer, MS, MD, FAAP  
Dartmouth Hitchcock Medical Center  
• No Disclosures

Patrick Tighe, MD, MS  
University of Florida  
• No Disclosures

Jonathan Wanderer, MD  
Vanderbilt University  
• No Disclosures

Matthew Weinger, MD  
Vanderbilt University Medical Center  
• No Disclosures
Schedule of Events

Wednesday, January 9, 2013

0700 – 0800  Challenges and Opportunities
Registration & Continental Breakfast
Room: Estrella West

0800 – 1200  Challenges and Opportunities in
Developing Anesthesia Products
(for industry)
Room: Estrella West
Jeffrey Feldman, MD, MSE
David Feinstein, MD

0800 – 1700  Exhibitor Registration & Set-up

1200 – 1315  Challenges and Opportunities &
STA Board of Directors Lunch
Room: Estrella West

1315 – 1700  A.I.M.S. Workshop
(additional registration required)
David L. Reich, MD

1800 – 1930  Registration & Opening Reception
Room: Palmera Lounge & Patio

Thursday, January 10, 2013

0700 – 0800  Registration & Continental Breakfast
Estrella Patio & Palmera

0800 – 0815  Welcome Address
George Blike, MD
Jesse Ehrenfeld, MD, PhD
Room: Estrella

0815 – 0930  Using IT to Control Variability in
Medical Practice & Improve Medical Outcomes
Bill Stead, MD
Room: Estrella

0930 – 1000  Break with Exhibitors & Posters

Session 2: Patient Safety in the
Post-Operative General Care Setting
Moderator: George Blike, MD
Room: Estrella

1000 – 1030  Automated Remote Triage, Military
and Civilian Models & Potential Impact on “Failure to Rescue” Events
Susan McGrath, PhD

1030 – 1100  Sensor Technologies that might Support Early Detection Today & Tomorrow
Patrick Tighe, MD, MS

1100 – 1130  From Respiratory Depression to Circulatory Failure, What Can We Do Now?
Andreas Taenzer, MS, MD, FAAP

1130 – 1145  Panel Discussion

1145 – 1230  Personalized Medicine Technology Trends: Impact on Anesthesiology
Kenneth Holroyd, MD

1230 – 1330  Luncheon
Room: Vernadero Lawn

Session 3: JOINT SESSION
Regulate or Innovate:
Can We Do Both?
Moderator: Jeffrey Feldman, MD, MSE
Room: Estrella

1330 – 1400  The View From the FDA
Talmage Egan, MD

1400 – 1430  Medical Devices & the World Market
Kai Kück, PhD

1430 – 1500  International Regulatory Approaches: More Innovative or Less Safe?
Julian Goldman, MD
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<td>1530 – 1545</td>
<td>Break with Exhibits &amp; Posters</td>
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**Session 4: Research Awards & Presentations**

*Moderator: Thomas Hemmerling, MD*

*Room: Estrella*

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<td>1545 – 1700</td>
<td>Research Awards &amp; Presentations</td>
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<td>Registration &amp; Continental Breakfast</td>
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<td><em>Estrella Patio &amp; Palmera</em></td>
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**Session 5: Visualizing Complex Data**

*Moderator: Matt B. Weinger, MD*

*Room: Estrella*

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<tr>
<td>0815 – 0845</td>
<td>Perils &amp; Pitfalls of Anesthesiology Displays</td>
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<td><em>Matt B. Weinger, MD</em></td>
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<td>0845 – 0915</td>
<td>Touch Your Patient - A Tactile Display of Information</td>
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<td></td>
<td><em>Mark Ansermino, MBBCh, MMED, MSc (Informatics), FFA (SA), FRCPC</em></td>
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<tr>
<td>0915 – 0945</td>
<td>Visualizing Complex Data</td>
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<td><em>Heike Hofmann, PhD</em></td>
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<tr>
<td>0945 – 1000</td>
<td>Panel Discussion</td>
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<td>1000 – 1030</td>
<td>Break with Exhibitors &amp; Posters</td>
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**Session 6: Monitoring Technology Advances**

*Moderator: Maxime Cannesson, MD, PhD*

*Room: Estrella*

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<td>1030 – 1100</td>
<td>Early Warning Scores &amp; Predicting Patient Deterioration</td>
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<td><em>Michael O’Reilly, MD</em></td>
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<td>1100 – 1130</td>
<td>From Identification to Prediction Health &amp; Safety</td>
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<tr>
<td></td>
<td><em>Andreas Taenzer, MS, MD, FAAP</em></td>
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**Session 7: Concurrent Workshops**

1330 – 1530

1) Closed Loop Controllers

*Room: Estrella West*

*Maxime Cannesson, MD, PhD*

*Joseph Rinehart, MD*

2) Mobile Applications

*Room: Cervantes*

*Brian Rothman, MD*

**Session 8: Concurrent Workshops**

1530 – 1700

1) Industry/Engineering Session

*Room: Estrella West*

*Christina DeMur*

*Greg Spratt, BS, RRT, CPFT*

2) Engineering Contest

*Room: Vernadero*

*Jeff Mandel, MD*

3) MPOG

*Room: Cervantes*

*Sachin Kheterpal, MD*

1800 – 2130

**Dinner Event**

*(included in attendee registration fee)*

*Palmera Patio, Reflecting Pool & Estrella*
Saturday, January 12, 2013

0730 – 0830  
Registration & Continental Breakfast  
Estrella Patio & Palmera

Session 9: Decision Support: Today & Tomorrow
Moderator: Mohamed Rehman, MD
Room: Estrella

0830 – 0900  
What Can be Done Today?  
Jonathan Wanderer, MD

0900 – 0930  
What Does the Future Have for Us?  
Mark Ansermino, MBBCh, MMED, MSc (Informatics), FFA (SA), FRCPC

0930 – 1000  
Enterprise Level Data Driven Decision Support  
Bimal Desai, MD, MBI, FAAP

1000 – 1030  
Break

Session 10: Cutting Edge Technologies
Moderators: John Doyle, MD, PhD & Kirk Shelley, MD  
Room: Estrella

1030 – 1100  
Nanotechnology and the Future of Anesthesia  
John Doyle, MD, PhD

1100 – 1130  
Non-invasive Venous/Arterial Compliance Ratio Determination  
Kirk Shelley, MD

1130 – 1200  
Using the Pulse Oximeter & Peripheral Venous Pressure Waveforms to Guide IV Fluid Replacement  
Aymen Alian, MBBCh, MD, MSc

1200 – 1215  
Panel Discussion

1215  
Adjourn
Supporters & Exhibitors

Commercial Supporter

FAER
Commercial Supporter

Exhibitors

Osypka Cardiotronic – Medical
Exhibitor
Codonics
Exhibitor
Covidien
Exhibitor
CRISI Medical Systems
Exhibitor
Draeger
Exhibitor
Gauss Surgical
Exhibitor
GE Healthcare
Exhibitor
iMDsoft
Exhibitor
Masimo
Exhibitor
Medasense Biometrics Ltd.
Exhibitor
Med-Botics
Exhibitor
Mindray
Exhibitor
Philips
Exhibitor
ReFleX Wireless
Exhibitor

Exhibitor Levels

Platinum Plus
Masimo............................................ www.masimo.com

Platinum
Covidien........................................... www.covidien.com
Mindray............................................ www.mindray.com

Silver
Dräger............................................. www.draeger.com
GE Healthcare ............................. www.gehealthcare.com
iMDsoft.......................................... www.imd-soft.com
Philips ............................................ www.philips.com

Entrepreneur Gold
Codonics........................................... www.codonics.com
CRISI Medical Systems ................. www.crisimed.com
Osypka Medical – Cardiotronic...... www.osypkamed.com
ReFleX Wireless............................. www.reflexwireless.com

Entrepreneur Silver
Gauss Surgical............................... www.gauesssurgical.com
Medasense Biometrics Ltd............. www.medasense.com
Med-Botics...................................... www.med-botics.com
Codonics
Headquartered in Middleburg Heights, Ohio, Codonics designs, manufactures, sells and supports medical imaging and information management devices. A global leader in image documentation solutions, Codonics products are widely used in hospitals, imaging centers, mobile applications, and government facilities with tens of thousands of installations worldwide. Today, Codonics global sales and service support network for our full product line extends to over 110 countries.

Covidien
Covidien is a $12 billion global healthcare products leader dedicated to innovation and long-term growth. Covidien creates innovative medical solutions for better patient outcomes and delivers value through clinical leadership and excellence. At Covidien, we're passionate about making doctors, nurses, pharmacists and other medical professionals as effective as they can be. Through ongoing collaboration with these medical professionals and healthcare organizations, we identify clinical needs and translate them into proven products and procedures.

CRISI Medical Systems
CRISI Medical Systems (“CRISI”) is an innovator of technologies for improving the safety, accuracy and cost-effectiveness of IV injectable drug delivery. By bringing the patient safety and information management capabilities found in “smart” infusion pumps and bar code medication administration (BCMA) systems to the world of manually injected drugs, CRISI is helping to reduce medication errors, simplify clinical workflow, and automate and improve the accuracy of medication administration documentation. CRISI's first system offering, which will be focused on improving perioperative care, is expected to receive FDA 510(k) clearance in early 2014.
Dräger
Dräger is a leading international company in the fields of medical and safety technology. Dräger products protect, support and save lives. Founded in 1889 and located in Lübeck, Germany, the company generated revenues of around EUR 2.18 billion in 2010. Dräger is present in 190 countries with 11,000 employees worldwide.

FAER
The Foundation for Anesthesia Education and Research (FAER) is a 501(c)3 non-profit that aims to advance medicine through research and education in anesthesiology. Since its founding in 1986, FAER has provided research grants and educational opportunities to anesthesiologists to prepare them for careers in academic anesthesiology and to become independent investigators. FAER is one of the foundations supported in part by the American Society of Anesthesiologists. Learn more about FAER online at FAER.org.

Gauss Surgical
Gauss Surgical, located in Silicon Valley, California has developed a mobile platform for real-time monitoring of fluids and blood during surgery. This system leverages artificial intelligence, machine learning and cloud computing to provide and manage information to better assist the clinician in blood transfusions and aid in intraoperative fluid management.

GE Healthcare
GE is making a new commitment to health. Healthyimagination will change the way we approach healthcare, with more than 100 innovations all focused on addressing three critical needs: lowering costs, touching more lives, and improving quality. For more information visit www.gehealthcare.com
iMDsoft

iMDsoft has created a new iPad app for advanced case documentation which creates accurate and compliant anesthesia records. As a cloud-based solution, it enables anesthesiologists to easily store, manage, and automatically share patient information with relevant parties such as billers, hospitals and anesthesia groups, resulting in improved communications and billing efficiency.

Masimo

Masimo is a global medical technology company that develops and manufactures innovative noninvasive patient monitoring technologies, including medical devices and a wide array of sensors. A key medical technology innovator, Masimo is responsible for the invention of award-winning noninvasive technologies that are revolutionizing patient monitoring.

Medasense Biometrics Ltd.

Medasense Biometrics is a clinical stage medical device company, developing a new objective analgesia monitoring device. Medasense technology is based on measuring multiple pain-related physiological parameters, and combining them using innovative biomedical signal processing, and pattern recognition techniques which reveal the unique “Signature of nociceptive response”. Medasense aims to provide anesthesiologists with the ability to measure objective nociception level during any procedure and at any time. This information can prevent unnecessary pain, avoid overdose, accelerate recovery and decrease hospitalization time and costs while answering the critical need to supervise patients’ pain level.

Med-Botics

Med-Botics will soon begin laboratory and clinical trials of its closed-loop safety device intended to eliminate morbidity from opioid analgesia.

GOALS: Absolutely zero morbidity from opioid therapy, decreased IHCA (In-Hospital Cardiac Arrests), much improved pain control, decreased alarm fatigue and nursing burdens, and essentially “cruise-control” PCA analgesia by regulated and automatic delivery of narcotic antagonists.
Mindray
Mindray was founded in 1991 with the goal of delivering high-quality, competitively priced medical devices to make healthcare more accessible and affordable around the world. In 2006, Mindray listed on the New York Stock Exchange and is now a leading developer, manufacturer and marketer of medical devices worldwide.

The company has three well-established business segments: Patient Monitoring and Life Support Products, In-Vitro Diagnostic Products and Medical Imaging Systems. Health care facilities equipped with Mindray's products can be found in over 190 countries and regions.

Osypka Medical – Cardiotronics
Cardiotronic – Osypka Medical, Inc. specializes in completely non-invasive hemodynamic monitoring for adult, pediatrics and neonates. These Electrical Cardiometry (EC) Monitors provide continuous estimations of flow, contractility, resistance, and fluid as well as other hemodynamic parameters through the use of only four sensors applied on the skin. It has been shown that implementation of Cardiotronic - Osypka Medical's EC Monitors results in economical and operational benefits including reduction in costs, procedural risks, and medical staff time. Cardiotronic – Osypka Medical, Inc. is also a leader in manufacturing and distribution of temporary external pacemakers. For more information, please visit: www.cardiotronic.net

Philips
Philips Healthcare is a worldwide provider of Diagnostic Imaging Products, Cardiac and Physiological Monitoring Systems and Information Management applications. Philips provides clinical informatics and patient care solutions that simplify clinician workflow, improve financial outcomes, and help improve and save lives. With focused technologies that acquire, integrate, and present information as it’s required throughout the perioperative process, Philips is delivering on a commitment to address the clinical, business and technical requirements of anesthesia care teams.
ReFleX Wireless

ReFleX Wireless specializes in providing wireless sensors for Tele-Health applications. Originally inspired by the STA Engineering Challenge 2011, ReFleX created wireless sensors for detecting Syncope, Pulse Oximetry and Body Temperature for hospital ward. Since February 2011, ReFleX’s ability of applying ICT technology in the Healthcare domain has been recognized by numerous competitions hosted by North American Academic and Government Institutions. Most notably ReFleX won the international competition – NYC Next Idea Competition (2010-11), where ReFleX was awarded a cash prize, a short meeting with Mayor Bloomberg and six months of free office space in New York City to launch its business. Currently ReFleX Wireless Inc. is a B.C. incorporated company and is jointly supported by the BC Innovation Council, University of British Columbia and Wavefront Accelerator.
<table>
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<tr>
<th>Abstract #</th>
<th>Full Abstract Title</th>
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<td>Alian</td>
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<td>Tony</td>
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<td>Jesse</td>
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<td>Jorge</td>
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<td>An Improved User Interface for a Respiratory Profile Monitor Improves the Detection of Inadequate Tidal Volumes</td>
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<td>Thomas</td>
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<td>Sang-Hyun</td>
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<td>David</td>
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