

OR



35th Anniversary

OUTCOMES RESEARCH Consortium

2025 Annual Report



- 35th Anniversary -

About ORC

The **OUTCOMES RESEARCH Consortium** was formed in 1990 at the University of California in San Francisco. The Consortium has nearly 250 investigators in 25 countries including Austria, Canada, China, Germany, Ireland, Israel, Japan, Poland, Romania, Spain, Switzerland, Turkey, and the United States. The Consortium is non-profit; its only goal is thus participation in high-quality research.

The Consortium's administrative center moved from San Francisco to the University of Louisville in March of 2000 where it was hosted in the **OUTCOMES RESEARCH Institute**. In 2005, the Consortium moved to the Cleveland Clinic and was hosted in the Department of **OUTCOMES RESEARCH**. And as of 2024, the Consortium has been headquartered in the Center for **OUTCOMES RESEARCH** at UTHealth in Houston.

2300 & 125

The Consortium has published more than 2,300 full papers and more than 125 editorials. The collaboration publishes a full paper or editorial every other day.



The Consortium is currently involved in about 150 clinical studies, including many large multi-center outcome trials. Funding for the Consortium's funding is from various peer-reviewed granting agencies, and we also collaborate with companies that make innovative devices and drugs, often conducting major trials that lead to regulatory certification. The Consortium facilitates scientific exchange and collaboration necessary for technically complex outcomes studies involving thousands of patients. Additional information is available at www.OR.org.

Aspirations

Outcomes research seeks to understand the end results of specific health care practices and interventions. End results include effects that people experience and care about, such as change in the ability to function. For individuals with chronic conditions—where cure is not always possible—end results include quality of life as well as mortality. By linking the care people get to the outcomes they experience, outcomes research has become the key to developing better ways to monitor and improve the quality of care.

The general goal of the **OUTCOMES RESEARCH** Consortium is to evaluate inexpensive, low-risk interventions that are easy to implement yet likely to markedly improve outcome. For example, we have shown that simply maintaining intraoperative normothermia markedly reduces the risk of complications — and does so at trivial cost. A consequence of our work is that active intraoperative warming has become routine, whereas it was previously rare. Current focus areas include cardiovascular complications, postoperative delirium, and management of acute surgical pain.

Mission

Be the world's leading clinical anesthesia research organization.



Behaviours

1. Publish more high-impact, peer-reviewed clinical research papers (quantified as number times impact) than any other perioperative organization.
2. Recruit more extra-mural clinical research funding than any other anesthesia organization, with “clinical research” being defined as research conducted with human subjects or their data.
3. Train clinical investigators at all levels.

Personnel

Director and Vice-director



Director
Daniel I. Sessler MD.
Houston



Vice-director
Alparslan Turan MD.
Houston

Site Directors

Donal Buggy	<i>Dublin</i>	Ireland
Barak Cohen	<i>Tel Aviv</i>	Israel
Peter Szmuk	<i>Dallas</i>	USA
Dong-Xin Wang	<i>Beijing</i>	China
Thomas Volk	<i>Homburg</i>	Germany
Colin Royse	<i>Melbourne</i>	Australia
Brian Ilfeld	<i>San Diego</i>	USA
PJ Devereaux	<i>Hamilton</i>	Canada
Bernd Saugel	<i>Hamburg</i>	Germany
Ashish Khanna	<i>Wake Forest</i>	USA

Members

A

Aram Abbas, MD	<i>Youngstown</i>	USA
Alaa A. Abd-Elseyed, M.D.	<i>Madison</i>	USA
Basem B. Abdelmalak, M.D.	<i>Cleveland</i>	USA
Janet Adegboye, M.D.	<i>Baltimore</i>	USA
Sanchit Ahuja, M.D.	<i>Cleveland</i>	USA
Ahmad Al Jarkas, MD	<i>Burlington</i>	USA
Ali Al-Malalla, MD	<i>Cleveland</i>	USA
Ayman Alhammadi, MD, MBBS	<i>Cleveland</i>	USA
Wael Ali Sakr Esa, M.D.	<i>Cleveland</i>	USA
Loay M. Allafy, MD	<i>Houston</i>	USA
Victor Fogagnoli Araujo de. Almeida, MD	<i>Cleveland</i>	USA
Roya Alp, MD	<i>Cleveland</i>	USA
Valerie L. Anderson, BS	<i>Houston</i>	USA
Jorge Andres Araujo Duran, M.D.	<i>Cleveland</i>	USA
Harendra Arora, MD, MBA, FASA	<i>Jackson</i>	USA
Moises Auron, MD	<i>Cleveland</i>	USA
Sabry Ayad, M.D.	<i>Cleveland</i>	USA

B

Rovnat Babazade, M.D.	<i>Galveston</i>	USA
Ömer Bakal, M.D.	<i>San Antonio</i>	USA
Peter F.. Bakht, BS	<i>Houston</i>	USA
Boglárka Balla, MD	<i>Debrecen</i>	Hungary
Inhyuk Bang, PhD	<i>Houston</i>	USA
Adriana Baranov, MD	<i>Houston</i>	USA
Karsten Bartels, MD, PhD, MBA	<i>Ann Arbor</i>	USA
Sergio D. Bergese, M.D.	<i>Stony Brook</i>	USA
Frederic T. Billings IV, MD, MSc	<i>Nashville</i>	USA
Joshua A. Bloomstone, M.D., M.Sc	<i>Phoenix</i>	USA
Andrea J. Bowyer, FANZCA, PhD, MCLINUS	<i>Parkville</i>	Australia
Mauro Bravo, M.D.	<i>Cleveland</i>	USA
Donal J. Buggy, M.D., FRCPI, FRCACSI, FRCA	<i>Dublin</i>	Ireland

C

Juan Cata, M.D.	<i>Houston</i>	USA
Busra Tok Cekmecelioglu, M.D.	<i>Cleveland</i>	USA
Praveen Chahar, M.D., F.C.A.R.C.S.I.	<i>Cleveland</i>	USA
Athanasios F. Chalkias, MD, MSc, PhD, FESC, FAcadTM, FCP, FESAIC	<i>Athens</i>	Greece

Rita Chamoun, MD	<i>Houston</i>	USA
Surendrasingh S. Chhabada, M.D.	<i>Cleveland</i>	USA
Anne Cipriani	<i>Cleveland</i>	USA
Sean E.S.. Coeckelenbergh, MD	<i>Irvine</i>	USA
Barak Cohen, M.D.	<i>Tel Aviv</i>	Israel
Allen Collins	<i>Cleveland</i>	USA
David Conen, MD, MPH	<i>Hamilton</i>	Canada
Jacek B. Cywinski, M.D.	<i>Cleveland</i>	USA

D

Albert Dahan, MD	<i>Leiden</i>	Netherlands
Jagan Devarajan, MD	<i>Cleveland</i>	USA
Philip J. Devereaux, M.D., Ph.D.	<i>Hamilton</i>	Canada
Bhuvrit R. Dhakal, MBBS	<i>Houston</i>	USA
Yara Dias, MD	<i>Cleveland</i>	USA
Ting Ding, MD	<i>Beijing</i>	China
José Luis Diz Ferre, MD	<i>Cleveland</i>	USA
Fang Du, MD	<i>Shanghai</i>	China
Lei Du, M.D.	<i>Chengdu</i>	China
Emmanuelle Duceppe, MD., Ph.D.	<i>Montreal</i>	Canada
Andra E. Duncan, M.D.	<i>Cleveland</i>	USA
Sandra A. Durbin, CLPN, CCRP	<i>Cleveland</i>	USA
Catalina Dussan, MD	<i>Cleveland</i>	USA

E

Proshad N. Efune, M.D.	<i>Dallas</i>	USA
Michael Eichlseder, MD	<i>Graz</i>	Austria
Elyad Ekrami, MD	<i>Cleveland</i>	USA
Hesham Elsharkawy, M.D.	<i>Cleveland</i>	USA
Holger K. Eltzschig, MD, PhD	<i>Houston</i>	USA
Hani Essber, M.D.	<i>Graz</i>	Austria

F

Miryousefiata Faegheh, MD	<i>Cleveland</i>	USA
Yinghui Fan, MD	<i>Shanghai</i>	China
Xiangming Fang, MD	<i>Hangzhou</i>	China
Ehab S.A. Farag, M.D., F.R.C.A.	<i>Cleveland</i>	USA
Tobias Fink, M.D.	<i>Koblentz</i>	Germany
John J. Finneran IV, M.D.	<i>San Diego</i>	USA

Edith Fleischmann, M.D.	<i>Vienna</i>	Austria
Béla Fülesdi, M.D., Ph.D.	<i>Debrecen</i>	Hungary

G

Marcelo Gama de Abreu, M.D., M.Sc., Ph.D., D.E.S.A	<i>Cleveland</i>	USA
Susana González-Suárez, MD, PhD	<i>Barcelona</i>	Spain
Alper Gulluoglu, MD	<i>Boston</i>	USA
Howard B. Gutstein, MD	<i>Farmington</i>	USA

H

Hassan Hamadnalla, M.D.	<i>Detroit</i>	USA
Yanyan Han, MS	<i>Cleveland</i>	USA
Manal Hassan, M.D.	<i>Mayfield Hts</i>	USA
Won Ho Kim, MD	<i>Seoul</i>	Korea
Huan Hsu, MD	<i>Taichung</i>	Taiwan
Yuguang Huang, M.D.	<i>Beijing</i>	China
Tobias Hüppe, M.D., Ph.D., D.E.S.A., E.D.I.C.	<i>Homburg (Saar)</i>	Germany

I

Takehiko Ikeda, M.D.	<i>Yamanashi</i>	Japan
Jibran Ikram, MD	<i>Cleveland</i>	USA
Brian M. Ilfeld, M.D., M.S.	<i>San Diego</i>	USA
Ilker Ince, MD	<i>Erzurum</i>	Turkey
Steven R. Insler, D.O.	<i>Cleveland</i>	USA
Daniela C. Ionescu, Ph.D., D.E.A.A.	<i>Cluj-Napoca</i>	Romania

J

Jens-Ulrik S. Jensen, M.D., Ph.D.	<i>Copenhagen</i>	Denmark
Yuan Jia, MD	<i>Beijing</i>	China
Qiliang Jiang, M.D., Ph.D.	<i>Shanghai</i>	China
Jae-Woo Ju, MD	<i>Seoul</i>	South Korea

K

Barbara Kabon, M.D.	<i>Vienna</i>	Austria
Deeven Karki, MD	<i>Akron</i>	USA
Roop Kaw, M.D.	<i>Cleveland</i>	USA

Flavia Kessler Borges, MD, PhD	<i>Hamilton</i>	Canada
Marta Kevala, MD	<i>Cleveland</i>	USA
Ashish K. Khanna, M.D., F.C.C.P., F.C.C.M.	<i>Wake Forest</i>	USA
Sandeep Khanna, M.D.	<i>Cleveland</i>	USA
Mohammad Khudirat, MD	<i>Houston</i>	USA
Oliver Kimberger, M.D.	<i>Vienna</i>	Austria
Ryu Komatsu, M.D.	<i>Cleveland</i>	USA
Orkun Kopac, MD	<i>Houston</i>	USA
Karim Kouz, MD	<i>Hamburg</i>	Germany
Sascha Kreuer, M.D.	<i>Homburg</i>	Germany
Christine Kubulus, MD	<i>Homburg/Saar</i>	Germany
Priya A. Kumar, M.D.	<i>Jackson</i>	USA
Andrea M. Kurz, M.D.	<i>Graz</i>	Austria
Esra Kutlu Yalcin, M.D.	<i>Cleveland</i>	USA

L

Ammar M. Lakda, M.D.	<i>Cleveland</i>	USA
Giovanni Landoni, M.D.	<i>Milan</i>	Italy
Kai Li, M.D., Ph.D.	<i>Changchun</i>	China
Peiying Li, MD, PhD	<i>Shanghai</i>	China
Qian Li, M.D.	<i>Chengdu</i>	China
Shu Li, PhD, MD	<i>Fengtai District</i>	China
Shuyi Li, M.S.	<i>Cleveland</i>	USA
Xu Li, M.D.	<i>Beijing</i>	China
Ya-Wei Li, MD	<i>Beijing</i>	China
Yufei Li, MS, PhD	<i>Houston</i>	USA
Yafen Liang, MD	<i>Houston</i>	USA
Jing Lin, M.D.	<i>Chengdu</i>	China
Dandan Ling, MD	<i>Shanghai</i>	China
Philipp Lirk, MD, PhD	<i>Houston</i>	USA
Ke-Xuan Liu, MD, PhD	<i>Guangzhou</i>	China
Liu Liu, M.A.	<i>Cleveland</i>	USA
Xiaodan Liu, MS	<i>Cleveland</i>	USA
Xuesheng Liu, MD, PhD	<i>Hefei</i>	China
Vladimir V. Lomivorotov, M.D., Ph.D.	<i>Novosibirsk</i>	Russia
Cong Luo, MD, PhD	<i>Houston</i>	USA
Yutian Luo, MS	<i>Houston</i>	USA
Xin Lv, MD	<i>Shanghai</i>	China

M

Syed Uzair Mahmood, MD	<i>Houston</i>	USA
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Maura Marcucci, MD, MSc	<i>Hamilton</i>	Canada
Leonardo Marquez Roa, MD	<i>Cleveland</i>	USA
Edward J. Mascha, Ph.D.	<i>Cleveland</i>	USA
Takashi Matsukawa, M.D.	<i>Chuo</i>	Japan
Felix Maurer, M.Sc.	<i>Homburg</i>	Germany
Sara Medellin, MD	<i>Iowa</i>	USA
Lingzhong Meng, MD	<i>Indianapolis</i>	USA
Junhui Mi, M.S.	<i>Cleveland</i>	USA
Scott A. Miller, M.D.	<i>Winston Salem</i>	USA
Steven C. Minear, MD	<i>Weston</i>	USA
Faegheh Miryousefiata, MD	<i>Cleveland</i>	USA
Dong-Liang Mu, M.D.	<i>Beijing</i>	China
Francesca Mulazzani, MD	<i>Milano</i>	Italy
Carolin Müller, M.D.	<i>Erlangen</i>	Germany
Lukas M. Müller-Wirtz, M.D.	<i>Erlangen</i>	Germany

N

Alexander Nagrebetsky, MD, MSc	<i>Boston</i>	USA
Yasufumi Nakajima, M.D., Ph.D.	<i>Sayama-City</i>	Japan
Karam Nam, MD, PhD	<i>Seoul</i>	South Korea

O

Ben O'Brien, M.D., Ph.D., M.H.B.A., F.R.C.A., F.F.I.C.M.	<i>Berlin</i>	Germany
Sandra N. Ofori, MBBS, FWACP, MSc	<i>Hamilton</i>	Canada
Lucas Oliveira Nacif, MD	<i>Houston</i>	USA
Özkan Onal, M.D.	<i>Konya</i>	Turkey
Sascha Ott, MD	<i>Berlin</i>	Germany

P

Matt A. Pappas, M.D., M.P.H.	<i>Cleveland</i>	USA
Marie-Odile Parat, Pharm.D., Ph.D.	<i>Woolloongabba</i>	Australia
Lijian Pei, M.D.	<i>Beijing</i>	China
Yuming Peng, PhD, MD	<i>Beijing</i>	China
Silvia E. Perez-Protto, MD, MS, MBA	<i>Cleveland</i>	USA
Alexander Pichler, MD	<i>Graz</i>	Austria
Olga M. Plattner, M.D.	<i>Vienna</i>	Austria
Attila Podolyak, M.D.	<i>Cleveland</i>	USA
Xuan Pu, M.S.	<i>Cleveland</i>	USA

Q

Yuwei Qiu, M.D.	<i>Shanghai</i>	China
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R

Shobana Rajan, M.D.	<i>Cleveland</i>	USA
Christian Reiterer, MD	<i>Vienna</i>	Austria
Aline Reuter Pimenta, MD	<i>Cleveland</i>	USA
David A. Rincón-Valenzuela, M.D., M.Sc.	<i>Bogotá</i>	Colombia
Joeseeph B. Rinehart, MD	<i>Orange</i>	USA
Eva Rivas Ferreira, M.D.	<i>Barcelona</i>	Spain
Efrain Riveros-Perez, M.D.	<i>Augusta</i>	USA
Fabio A. Rodriguez-Patarroyo, M.D.	<i>Portland</i>	USA
Pavel Roshanov, MD, MSc	<i>London</i>	Canada
Julian V. Rössler, M.D.	<i>Zurich</i>	Switzerland
Colin Royse, M.D.	<i>Melbourne</i>	Australia
Kurt Ruetzler, M.D., Ph.D., F.A.H.A.	<i>Linz</i>	Austria

S

Remie Saab, M.D.	<i>Cleveland</i>	USA
Leif Saager, M.D.	<i>Goettingen</i>	Germany
Wael Saasouh, M.D.	<i>Detroit</i>	USA
Sruthi Sagiraju, B.S.	<i>Cleveland</i>	USA
Amit K. Saha, PhD, MS	<i>Winston Salem</i>	USA
Ethan L. Sanford, M.D.	<i>Dallas</i>	USA
Sinem Sari, MD	<i>Aydin</i>	Turkey
Sepideh Saroukhani, MD, PhD	<i>Houston</i>	USA
Bernd Saugel, MD, EDIC	<i>Hamburg</i>	Germany
Rita Saynhalath, M.D.	<i>Dallas</i>	USA
Marc Schmidt, M.D.	<i>Zurich</i>	Switzerland
Gokhan Sertcakacilar, MD	<i>Istanbul</i>	Turkey
Daniel I. Sessler, M.D.	<i>Houston</i>	USA
Karan Shaw, M.S.	<i>Cleveland</i>	USA
Tetsuya Shimada, M.D.	<i>Tokyo</i>	Japan
Nathaniel Smilowitz, MD, MS, FACC, FSCAI	<i>NYC</i>	USA
Carolina Soledad Romero Garcia, MD, PhD, MStat	<i>Valencia</i>	Spain
Aubrey Somost-Williams, MD, MS	<i>Houston</i>	USA
Aairya Srinivasan, MBBS	<i>Cleveland</i>	USA
Christian Stoppe, MD	<i>Würzburg</i>	Germany
Diansan Su, MD, PhD	<i>Hangzhou</i>	China
Wojciech Szczeklik, M.D., Ph.D.	<i>Krakow</i>	Poland
Peter Szmuk, M.D.	<i>Dallas</i>	USA

T

Kyosuke Takahashi, MD, MPH, PhD	<i>Tokyo</i>	Japan
Victoria Tang, MD, MAS	<i>Houston</i>	USA
Biyas Thapa, MD	<i>Akron</i>	USA
Vaishakh Tharavath, MD, DNB, MBBS	<i>Houston</i>	USA
Kristen K. Thomsen, MD	<i>Hamburg</i>	Germany
Yasin Tire, MD	<i>Konya</i>	Turkey
Josephine C. Tolan, MD	<i>Houston</i>	USA
Luis E. Tollinche, MD, FASA	<i>Cleveland</i>	USA
David Torres, M.D.	<i>Santiago</i>	Chile
Alparslan Turan, M.D.	<i>Houston</i>	USA

U

Panu Ilja Johannes. Uusalo, MD, PhD	<i>Turku</i>	Finland
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V

Tamás Végh, M.D., Ph.D.	<i>Debrecen</i>	Hungary
Thomas Volk, M.D.	<i>Homburg</i>	Germany

W

Anupama Wadhwa, M.D.	<i>Dallas</i>	USA
Michael Walters	<i>Cleveland</i>	USA
Baona Wang, MD	<i>Beijing</i>	China
Catherine I. Wang, M.D.	<i>Beijing</i>	China
Danyang Wang, MS	<i>Shanghai</i>	China
Dong-Xin Wang, M.D., Ph.D.	<i>Beijing</i>	China
Elise Wang, PhD, MD	<i>Changsha</i>	China
Jiayi Wang, MD, PhD	<i>Shanghai</i>	China
Lu Wang, MS	<i>Cleveland</i>	USA
Chase J. Wehrle, MD	<i>Cleveland</i>	USA
Shiyu Wei, MD, MS	<i>Shanghai</i>	China
David West, MD	<i>Graz</i>	Austria
Marita Windpassinger, MD	<i>Vienna</i>	Austria
Jason Wu, M.D.	<i>Shanghai</i>	China

X

Zhongcong Xie, MD, PhD	<i>Houston</i>	USA
Jianguo Xu, MD, MSc	<i>Hamilton</i>	Canada
Tao Xu, MD, PhD	<i>Shanghai</i>	China

Ying Xu, PhD, MD	<i>Chongqing</i>	China
Zhen-Zhen Xu, MD	<i>Beijing</i>	China

Y

Dongsheng Yang, M.S.	<i>Cleveland</i>	USA
Liqun Yang, MD, PhD	<i>Shanghai</i>	China
Yun-Tai Yao, MD, PHD	<i>Beijing</i>	China
Mehmet Yazar, MD	<i>Konya</i>	Turkey
Oguz Yilmaz, M.D.	<i>Izmir</i>	Turkey
Hai Yu, M.D.	<i>Chengdu</i>	China

Z

Luai Zakaria, MD	<i>Cleveland</i>	USA
Alexander Zarbock, MD	<i>Muenster</i>	Germany
Kan Zhang, M.D.	<i>Cleveland</i>	USA
Xiaobao Zhang, M.D.	<i>Lianyungang</i>	China
Bing-Cheng Zhao, MD	<i>Guangzhou</i>	China
Wangyuan Zou, MD, PhD.	<i>Changsha</i>	China







Research Fellows



Chief Fellow
Mohammed Khudirat, M.D.
UTHHealth



Chief Fellow
Catalina Dussan, M.D.
Cleveland Clinic

<u>Name</u>	<u>Origin</u>	<u>Dates</u>	<u>Subsequent Position</u>
Aline Reuter, M.D.	<i>Brazil</i>	2023-25	<i>Anesthesia residency, Univ. Connecticut</i>
Ayman Alhammadi, M.D.	<i>Saudi Arabia</i>	2023-	
Catalina Dussan, M.D.	<i>Colombia</i>	2023-	
Yara Dias, M.D.	<i>Brazil</i>	2024-	
Aairya Srinivasan, M.D.	<i>India</i>	2024-	
Ammar Lakda, M.D.	<i>United Kingdom</i>	2024-	
Roya Alp, M.D.	<i>Turkey</i>	2024-	
Mohammad Khudirat, M.D.	<i>Jordan</i>	2023-	
Mert Tore, M.D.	<i>Turkey</i>	2024-25	<i>Medicine Residency, Inspira Health</i>
Bhuvrit Dhakal, M.D.	<i>Nepal</i>	2024-	
Loay Allafy, M.D.	<i>Egypt</i>	2025-	<i>OB Anesth Fellow, Jennie Sealy Hospital</i>
Adriana Baranov, M.D.	<i>Moldova</i>	2025-	
Lucas Oliveira Nacif, M.D.	<i>Brazil</i>	2025-	
Rita Chamoun, M.D.	<i>Syria</i>	2025-	
Vaishakh Tharavath, M.D.	<i>India</i>	2025-26	
Yun-Tai Yao, M.D., PhD.	<i>China</i>	2025-	<i>Fuwai Hospital, Beijing, China</i>
Josephine Tolan, M.D.	<i>USA</i>	2025-	
Muhammad Omar Naeem, M.D.	<i>Pakistan</i>	2025-	

Graduate and Medical Students (full year)

<u>Name</u>	<u>Origin</u>	<u>Dates</u>	<u>Subsequent Position</u>
Willy Lin	USA	2025-	McGovern Medical School
Peter Bakht	USA	2025-	McGovern Medical School

Honors and Awards

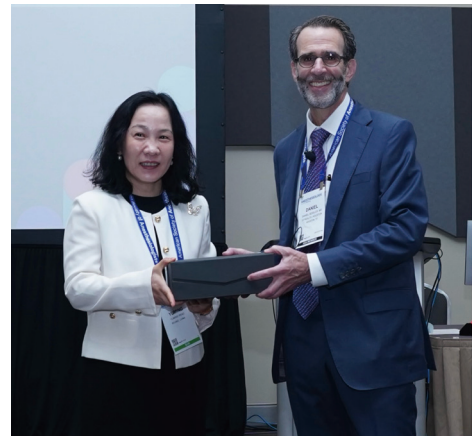
<u>Name</u>	<u>Honor</u>	<u>Organization</u>
Alparslan Turan	STAR award (\$225,000)	University of Texas
Lukas M. Müller-Wirtz	August-Bier-Price Award	German Anesthesia Society
Leonardo Marquez Roa	Intern of the year	Department of Anesthesiology, Cleveland Clinic
Kurt Ruetzler	Appointed chair	Hospital Deaconess Linz
Tobias Fink	Appointed head of Department	Katholisches Klinikum Koblenz
Moises Auron	Fellow	Royal College of Physicians, London
Jibrán Ikram	Elected member	Sigma Xi, a scientific research honor society
Támas Vegh	Appointed chair	EACTAIC Thoracic Committee



Consortium Research Awards

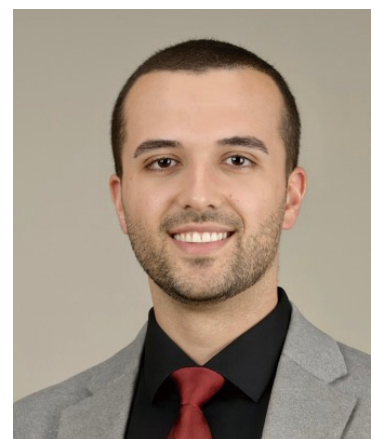
The Gladys Sessler Prize

The **Gladys Sessler Prize** is an endowed award that is given yearly. All members of the **OUTCOMES RESEARCH** Consortium are eligible. This year's award was to **Yuming Peng**.



Best Fellow Award

The **Best Fellow Award** is given to the Department of **OUTCOMES RESEARCH** fellow who is voted by the faculty to have performed at the very highest level. This year's award was given to **Mohammad Khudirat**.





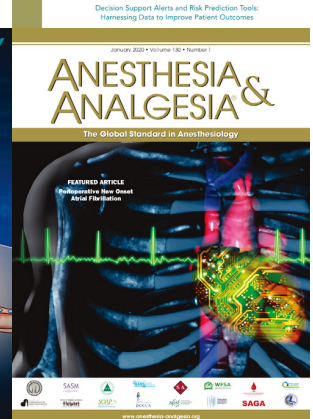
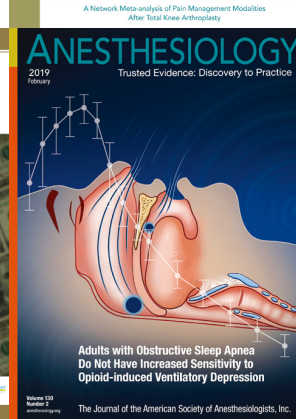
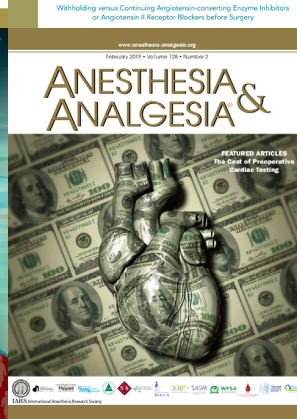
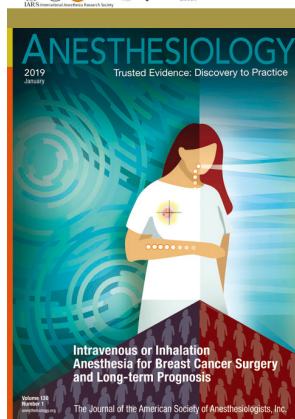
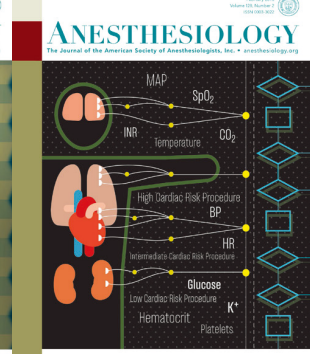
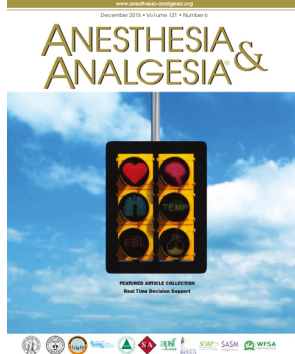
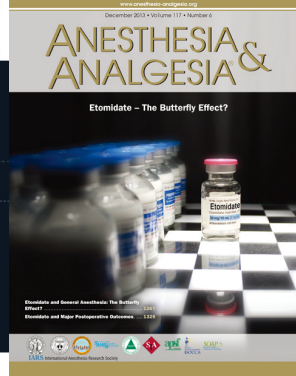
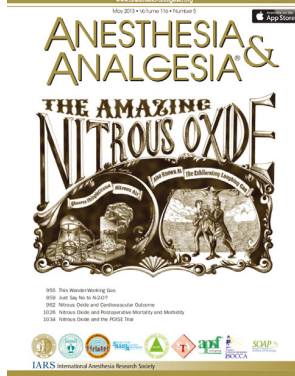
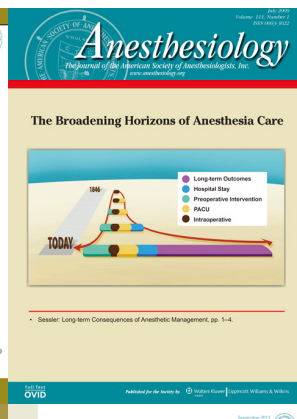
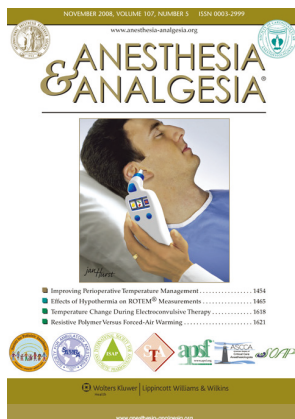
Publications

Contribution to the World's Literature

The **OUTCOMES RESEARCH Consortium** publishes about 5% of the clinical research in high-profile general anesthesia journals, along with many papers in non-anesthesia specialty journals ranging from pain to critical care to neuroscience, along with many in major multi-specialty journals. Overall, the Consortium publishes a full paper every other day. **Since inception, the Consortium has published more than 2,300 full papers and more than 125 editorials.**

Featured on Journal Covers This Year







This Year's Featured Paper #1

Saugel B, Meidert AS, Brunkhorst FM, Bischoff R, Esser J, Mattis M, Naue P, Vogel K, Bergholz A, Flick M, Kroker A, Muller DX, Thomsen KK, Vokuhl C, Wegge M, Bratke S, Graessner M, Jungwirth B, Schmid S, Grundmann CD, Wischermann JM, Kellner P, Steinhaus M, Grusser L, Coldewey SM, Zacharowski K, Meybohm P, Habicher M, Zarbock A, Zitzmann A, Letz S, Neumann C, Larmann J, Renne T, Krause L, Vettorazzi E, Zapf A, Carlstedt A, Sessler DI, Kouz K, IMPROVE-multi Trial Group: Individualized Perioperative Blood Pressure Management in Patients Undergoing Major Abdominal Surgery: The IMPROVE-multi Randomized Clinical Trial. **JAMA** 2025; 334: 1893–1904.

BACKGROUND: Intraoperative hypotension is associated with organ injury. However, it remains unknown if targeted blood pressure management during surgery can improve clinical outcomes.

OBJECTIVE: To evaluate whether individualized vs routine perioperative blood pressure management during major abdominal surgery improves clinical outcomes in patients considered at high risk of postoperative complications.

DESIGN, SETTING, AND PARTICIPANTS: This randomized single-blind clinical trial enrolled patients 45 years or older undergoing elective major abdominal surgery with general anesthesia expected to last 90 minutes or longer who had at least 1 additional high-risk criterion between February 26, 2023, and April 25, 2024, at 15 German university hospitals. The date of last follow-up was July 25, 2024.

INTERVENTION: Patients were randomized in a 1:1 ratio to individualized perioperative blood pressure management (with mean arterial pressure [MAP] targets based on preoperative mean nighttime MAP assessed using automated blood pressure monitoring) or routine blood pressure management with a MAP target of 65 mm Hg or higher.

MAIN OUTCOMES AND MEASURES: The primary outcome was the incidence of a composite outcome of acute kidney injury, acute myocardial injury, nonfatal cardiac arrest, or death within the first 7 postoperative days. There were 22 secondary outcomes, including infectious complications within the first 7 postoperative days and a composite outcome of need for kidney replacement therapy, myocardial infarction, nonfatal cardiac arrest, or death within 90 days after surgery.

RESULTS: Of the 1272 patients enrolled, 1142 were randomized (571 patients to each group), and 1134 were included in the primary analysis (median age, 66 years [IQR, 59–73 years]; 34.1% female). The primary outcome occurred in 190 of 567 patients (33.5%) assigned to individualized blood pressure management and 173 of 567 patients (30.5%) assigned to routine blood pressure management (relative risk, 1.10 [95% CI, 0.93–1.30]; $P = .31$). None of the 22 secondary outcomes were significantly different, including infectious complications within the first 7 postoperative days (90/567 [15.9%] vs 97/567 [17.1%]; $P = .63$) and a composite outcome of need for kidney replacement therapy, myocardial infarction, nonfatal cardiac arrest, or death within 90 days after surgery (32/566 [5.7%] vs 20/567 [3.5%]; $P = .12$).

CONCLUSIONS AND RELEVANCE: Among patients at high risk of postoperative complications undergoing major abdominal surgery, individualized perioperative blood pressure management with MAP targets based on preoperative mean nighttime MAP did not decrease the composite outcome of acute kidney injury, acute

myocardial injury, nonfatal cardiac arrest, or death within the first 7 postoperative days compared with routine blood pressure management with a MAP target of 65 mm Hg or higher.

IMPORTANCE: The incidence of serious postoperative complications was comparable with tight intraoperative blood pressure control versus routine care with mean arterial pressure >65 mmHg.

This Year's Featured Paper #2

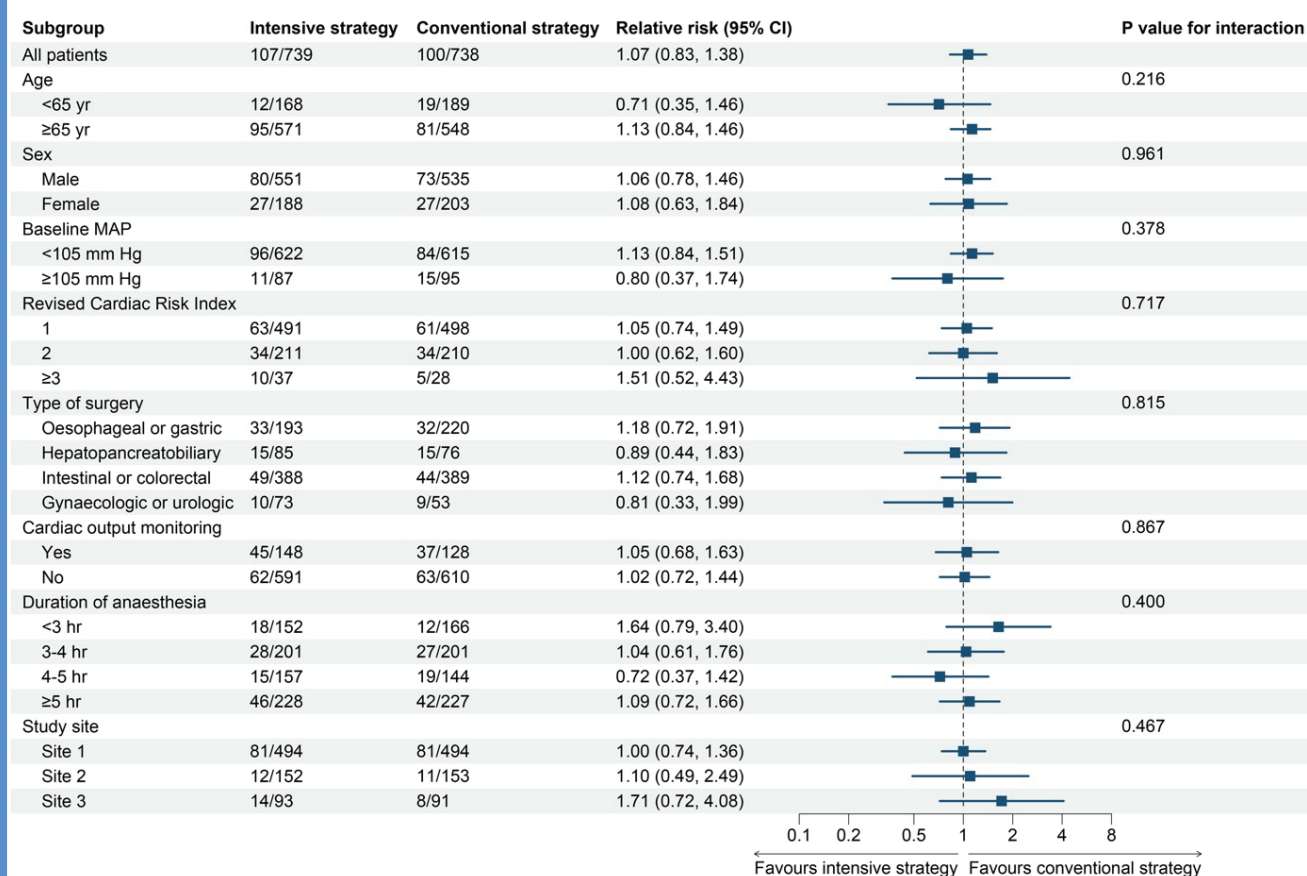
Zhou L, Ding L, Yang H, Li C, Yu Z, Ma W, Chen Q, Zhang Y, Li Y, Mao Q, Cheng M, Gong G, Wang E, Liu C, Hao W, Li H, Chen C, Fan Y, Su Z, Cai X, Zhang X, Li Z, Zhang B, Li Y, Jiang C, Yin Q, Jiao J, Sessler DI, Li Q, Liu J: Bispectral Index-guided anesthesia for older patients having noncardiac surgery: A randomized multicenter trial. **Anesthesiology** 2025; 144: 353–64.

BACKGROUND: Older surgical patients are at risk because of age-related physiologic decline and comorbidities. Some guidelines recommend Bispectral Index (BIS; Medtronic, USA) monitoring to optimize anesthetic depth, but robust evidence supporting improved outcomes is lacking.

METHODS: A randomized, multicenter, double-blind trial was conducted across 21 tertiary-care hospitals in China (March 17, 2015, to February 5, 2022). Patients aged 65 yr or older scheduled for elective noncardiac surgery (American Society of Anesthesiologists [ASA] Physical Status I to IV) were randomized 1:1 to BIS-guided or routine anesthetic management. In patients assigned to BIS guidance, hypnotic depth was adjusted to maintain BIS between 40 and 60. Hypnotic depth in patients assigned to routine care per clinical judgment with masked BIS monitors. The primary outcome was 1-yr all-cause mortality. Secondary outcomes included moderate-to-severe complications within 30 days, functional independence, quality of life, the duration of postoperative critical care, the duration of postoperative hospitalization, unplanned intensive care unit admission, and hospital cost.

RESULTS: Among 6,982 patients (mean $\pm$ SD age, 71 $\pm$ 5 yr), BIS values averaged 47 (BIS-guided) versus 46 (routine). One-year mortality was similar in BIS-guided patients (10.2% [356 of 3,485]) and routinely managed patients (10.0% [351 of 3,497]; hazard ratio, 1.02; 95% CI, 0.88 to 1.17; $P = 0.812$). The incidence of complications within 30 days after surgery were also comparable in each group: 10.4% versus 10.6% (relative risk, 0.99; 95% CI, 0.85 to 1.16; $P = 0.938$). No significant differences were observed in functional independence or quality of life.

CONCLUSIONS: Hypnotic depth, as assessed by BIS, was similar in patients with or without BIS-guided anesthetic titration. Anesthesiologists thus apparently titrate hypnotic depth appropriately even without BIS guidance. Unsurprisingly, outcomes including postoperative 1-yr mortality and 30-day complications were similar in each group.



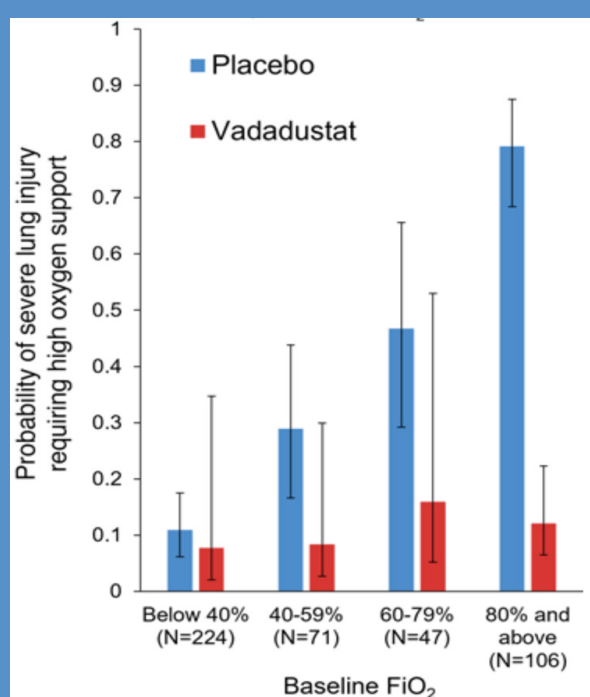
IMPORTANCE: BIS values were similar in patients randomized to BIS-guided anesthesia and routine care. Unsurprisingly, outcomes were similar in each group.

This Year's Featured Paper #3

Bobrow B, Luber SD, Potnuru P, Figarella K, Kim J, Wang Y, Bang IH, Robinson D, Sergot PB, Burke SK, Mills T, de Dios C, Suchting R, Williams GW, Ginde AA, Liang Y, Liu H, Green C, Doursout MF, Turan A, Sessler DI, Yuan X, Eltzschig HK: Identification of HIF1A as a therapeutic target during SARS-CoV-2-associated lung injury. **JCI Insight** 2025; 10:e191463.

Hypoxia-inducible factors (HIFs) promote lung protection and pathogen eradication during acute lung injury. We, therefore, tested the theory that pharmacologic stabilization of HIFs dampens lung injury during SARS-

CoV-2 pneumonia. Initial studies in murine SARS-CoV-2 models showed improved outcomes after treatment with the FDA-approved HIF stabilizer vadadustat. Subsequent studies in genetic models implicated alveolus-expressed Hif1a in mediating lung protection. Therefore, we performed a randomized, double-blinded, multicenter phase II trial in patients admitted for SARS-CoV-2 infection and concomitant hypoxia ($\text{SpO}_2 \leq 94\%$). Patients ($n = 448$) were randomized to oral vadadustat (900 mg/day) or placebo for up to 14 days. Safety events were similar between the 2 groups. Vadadustat treatment induced surrogate HIF target genes. The primary outcome of severe lung injury requiring high oxygen support on day 14 occurred in 43 patients in the vadadustat group and 53 patients in the placebo group (estimated probability, 13.3% vs. 16.9%). Among patients with baseline fraction of inspired oxygen of 80% or higher ($n = 106$), the estimated probability of the primary outcome was 12.1% (vadadustat) versus 79.1% (placebo), indicating an even greater benefit in patients with more severe baseline hypoxia. HIF1A is a likely therapeutic target during SARS-CoV-2-associated lung injury. Robust clinical trials of HIF stabilizers during pathogen-associated lung injury are warranted.



Severe lung injury in patients randomized to vadadustat (a stabilizer of hypoxia inducible factors) as a function of baseline inspired oxygen percentage. The drug was most effective in the sickest patients.

IMPORTANCE: Vadadustat, an FDA-approved drug, appears to ameliorate Covid-induced lung injury, and may well work for other pathogen-associate ARDS. This trial was the basis for an \$8.2 million dollar grant to Holger Eltzschig for a major trial of vadadustat.

This Year's Featured Paper #4

Cui Q, Zhao W, Chen H, Ren Y, Yin X, Zheng M, Li M, Wang J, Wang J, Zeng M, Li S, Zhang K, Wu X, Zhou L, Jiao Y, Sessler DI, Mi W, Peng Y: Covert perioperative strokes in older patients having noncardiac surgery (PRECISION): A prospective cohort analysis. *Anesthesiology* 2025; 142: 443–453.

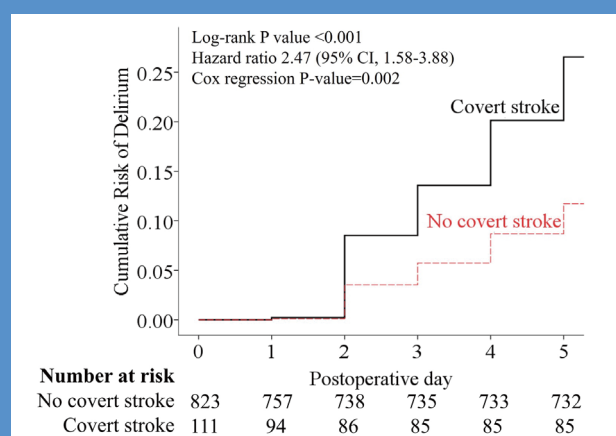
BACKGROUND: Perioperative strokes may promote postoperative neurocognitive dysfunction. This study thus evaluated the incidence of postoperative strokes and the association between strokes and postoperative neurocognitive outcomes in older patients recovering from noncardiac surgery.

METHODS: The Postoperative Covert Stroke and Cognitive Dysfunction among Elderly Patients Undergoing Noncardiac Surgery study (PRECISION) was a two-center prospective cohort study evaluating patients aged 60 yr or older who had elective, noncardiac inpatient surgery at two Chinese academic centers. Postoperative strokes were evaluated by scheduled magnetic resonance brain imaging within 7 days. The primary outcome was the cumulative incidence of postoperative stroke. Secondary outcomes included postoperative delirium within the first 5 days after surgery, neurocognitive decline at 12 months, and the association between stroke and neurocognitive dysfunction.

RESULTS: Among 934 patients (mean age, 67 yr; 45% male) included in the analyses, two thirds had neurosurgical craniotomies. There were 111 (11.9%; 95% CI, 9.8 to 14.0%) covert strokes within 7 days after surgery and no overt strokes. Postoperative delirium was observed in 117 patients (12.5%; 95% CI, 10.4 to 14.7%) within 5 days, and neurocognitive decline was observed in 147 patients (18.8%; 95% CI, 16.0 to 21.5%) at 1 yr after surgery. Postoperative covert strokes were significantly associated with delirium (adjusted odds ratio, 2.18; 95% CI, 1.31 to 3.62; $P = 0.003$) and 1-yr neurocognitive decline (adjusted odds ratio, 2.33; 95% CI, 1.31 to 4.13; $P = 0.004$) in overall participants.

CONCLUSIONS: Among patients aged 60 yr and older who had major noncardiac surgery, mainly intracranial, one in nine patients experienced a perioperative covert stroke. Covert strokes more than doubled the risk of postoperative delirium and long-term neurocognitive decline. Covert perioperative strokes are common and clinically meaningful.

Cumulative risk of delirium by patients with covert stroke and without covert stroke. CI = confidence interval.



IMPORTANCE: This study follows a similar study, NeuroVISION with 1,100 patients which reported similar amounts of covert stroke, and a similar doubling of delirium risk. Increasing evidence thus suggests that substantial amounts of delirium may result from structural brain injury. The fact that the delirium incidence is nearly identical with spinal and general anesthesia strongly suggests that anesthetic drugs are not a major cause of delirium.

Published Full Papers and Editorials

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- 4** Archontakis-Barakakis P, Mavridis T, Chlorogiannis DD, Barakakis G, Laou E, Sessler DI, Gkiokas G, Chalkias A: Intestinal oxygen utilisation and cellular adaptation during intestinal ischaemia-reperfusion injury. *Clin Transl Med* 2025; 15: e70136
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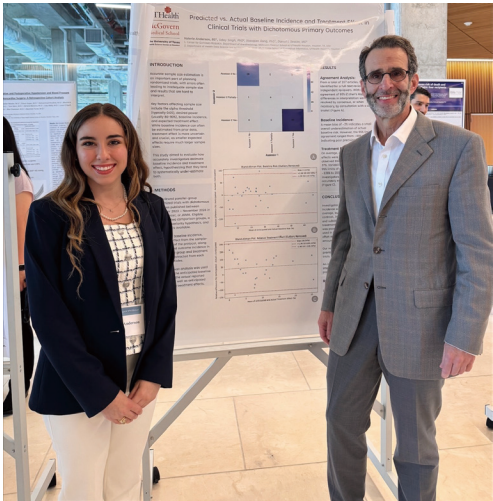
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