

Stanford



Ellen Wang

Clinical Associate Professor, Anesthesiology, Perioperative and Pain Medicine

CLINICAL OFFICES

- **Anesthesia Department**

300 Pasteur Dr Rm H3580

MC 5640

Stanford, CA 94305

Tel (650) 723-5728

Fax (650) 736-9918

Bio

BIO

Ellen Wang, MD is a Clinical Associate Professor of Pediatric Anesthesiology and Medical Director of Clinical Informatics for Perioperative Services at Lucile Packard Children's Hospital Stanford. She is board-certified in Pediatric Anesthesiology and Clinical Informatics, with particular emphasis on EHR enhancement and optimization projects that support surgical, nursing, and pediatric and obstetric anesthesia workflows. She is also Chief of Operations of the Stanford Chariot Program, combining her interest in clinical care, process improvement, data analytics and research with virtual/augmented reality technologies to advance and evolve standards in patient care.

CLINICAL FOCUS

- Anesthesia
- Pediatric Anesthesiology
- Regional Anesthesia
- Pre-Anesthesia Clinic
- Clinical Informatics
- Immersive Technologies

ACADEMIC APPOINTMENTS

- Clinical Associate Professor, Anesthesiology, Perioperative and Pain Medicine

ADMINISTRATIVE APPOINTMENTS

- Medical Director of Clinical Informatics, Perioperative Services, Information Services, Stanford Children's Health, (2012- present)

PROFESSIONAL EDUCATION

- Internship: Alameda Health System Highland Hospital (2004) CA
- Board Certification: Clinical Informatics, American Board of Preventive Medicine (2017)
- Fellowship: Stanford University Anesthesiology Residency (2012) CA

- Board Certification, Clinical Informatics , American Board of Preventative Medicine (2017)
- Board Certification: Pediatric Anesthesia, American Board of Anesthesiology (2013)
- Residency: UCLA (2007) CA
- Medical Education: University of California San Francisco (2003) CA
- Board Certification: Anesthesia, American Board of Anesthesiology (2008)
- Fellowship: Children's Hospital Boston (2008) MA

LINKS

- Stanford Chariot Program: <http://chariot.stanford.edu/>
- SUPRA Stanford University Pediatric Regional Anesthesia: <http://suppra.stanford.edu/>
- Pediatric Anesthesia Division: <http://med.stanford.edu/pedsanesthesia.html>

Research & Scholarship

CLINICAL TRIALS

- Transnasal Humidified Rapid-Insufflation Ventilatory Exchange (THRIVE) Use in Pediatric Procedures, Not Recruiting

Publications

PUBLICATIONS

- **Keeping an Open Mind About Open Notes: Sharing Anesthesia Records With Patients.** *Anesthesia and analgesia*
Ramaswamy, P., Xie, J., Marsiglio, A. M., Burgart, A. M., Schmiesing, C. A., Cohen, N. H., Robinowitz, D. L., Wang, E.
2022; 135 (4): 697-703
- **Enhanced Recovery After Cleft Palate Repair: A Quality Improvement Project.** *Paediatric anaesthesia*
Esfahanian, M., Marcott, S. C., Hopkins, E., Burkart, B., Khosla, R., Lorenz, H. P., Wang, E., De Souza, E., Algaze-Yojay, C., Caruso, T. J.
2022
- **Communication Skills Training Using Remote Augmented Reality Medical Simulation: a Feasibility and Acceptability Qualitative Study.** *Medical science educator*
Hess, O., Qian, J., Bruce, J., Wang, E., Rodriguez, S., Haber, N., Caruso, T. J.
2022: 1-10
- **Assessing Pediatric Life Support Skills Using Augmented Reality Medical Simulation With Eye Tracking: A Pilot Study.** *The journal of education in perioperative medicine : JEPM*
Qian, J., Rama, A., Wang, E., Wang, T., Hess, O., Khoury, M., Jackson, C., Caruso, T. J.
2022; 24 (3): E691
- **Association of Race and Ethnicity with Pediatric Postoperative Pain Outcomes.** *Journal of racial and ethnic health disparities*
Rosenbloom, J. M., De Souza, E., Perez, F. D., Xie, J., Suarez-Nieto, M. V., Wang, E., Anderson, T. A.
2022
- **Quantifying virtual reality pain modulation in healthy volunteers: A randomized, crossover study.** *Journal of clinical anesthesia*
Neiman, N. R., Falkson, S. R., Rodriguez, S. T., Wang, E. Y., Hemphill, S. F., Khoury, M. E., Kist, M. N., Jackson, C. D., Caruso, T. J.
2022; 80: 110876
- **Novel Utilization of Strand-Specific Reverse Transcription Polymerase Chain Reaction in Perioperative Clinical Decision Making for SARS-CoV-2 Polymerase Chain Reaction Positive Patients.** *Paediatric anaesthesia*
Jette, C. G., Wang, T., Wang, E., Man, J. Y., Mireles, S., Maass, B., Mathew, R., Pinsky, B. A., Claire, R., D'Souza, G.
2022
- **A Pilot Quality Improvement Project to Reduce Intraoperative MRI Hypothermia in Neurosurgical Patients.** *Pediatric quality & safety*
Wong, B. J., Rama, A., Caruso, T. J., Lee, C. K., Wang, E., Chen, M.
2022; 7 (2): e531

- **Visualizing Opioid-Use Variation in a Pediatric Perioperative Dashboard.** *Applied clinical informatics*
Safraneck, C. W., Feitzinger, L., Joyner, A. K., Woo, N., Smith, V., Souza, E. D., Vasilakis, C., Anderson, T. A., Fehr, J., Shin, A. Y., Scheinker, D., Wang, E., Xie, et al
2022; 13 (2): 370-379
- **Real-time reorientation and cognitive load adjustment allow for broad application of virtual reality in a pediatric hospital.** *Journal of clinical and translational research*
Caruso, T. J., Fonseca, A., Barreau, A., Khoury, M., Menendez, M., Wang, E., Lawrence, K., Jackson, C., Rodriguez, S.
1800; 7 (6): 750-753
- **Development and assessment of an efficient pediatric affect and cooperation scale.** *Journal of clinical anesthesia*
Kennedy, K., Wang, E., Rodriguez, S. T., Qian, J., Khoury, M., Kist, M. N., Jackson, C., Yun, R., Caruso, T. J.
2021; 76: 110569
- **Pre-operative fasting times for clear liquids at a tertiary children's hospital; what can be improved?** *Anesthesia and pain medicine*
Schmidt, A. R., Fehr, J., Man, J., D'Souza, G., Wang, E., Claire, R., Mendoza, J.
2021
- **Integrated eye tracking on Magic Leap One during augmented reality medical simulation: a technical report** *BMJ SIMULATION & TECHNOLOGY ENHANCED LEARNING*
Caruso, T. J., Hess, O., Roy, K., Wang, E., Rodriguez, S., Palivathukal, C., Haber, N.
2021; 7 (5): 431-434
- **Association between regional anesthesia and analgesic outcomes: a single-center retrospective study of 2,761 pediatric regional anesthetics**
Xie, J. J., De Souza, B., Perez, F. D., Suarez-Nieto, M. V., Wang, E., Anderson, T. A.
LIPPINCOTT WILLIAMS & WILKINS.2021: 934-936
- **Development and Validation of an Efficient Pediatric Affect Scale**
Kennedy, K. M., Khoury, M., Kist, M., Wang, E., Rodriguez, S., Jackson, C., Yuan, J. C., Caruso, T.
LIPPINCOTT WILLIAMS & WILKINS.2021: 751-752
- **Transnasal Humidified Rapid-Insufflation Ventilatory Exchange (THRIVE) Use During Microdirect Laryngoscopy and Bronchoscopy: Initial Data from a Randomized, Prospective, Multi-Collaborative Trial**
Swanger, A., Yun, R., Olbrecht, V., Winograd, V., Evans, M. A., Stein, M., Ravula, N., Menendez, M., Wang, E., Sidell, D., Caruso, T.
LIPPINCOTT WILLIAMS & WILKINS.2021: 784-785
- **Modeling Intraoperative Opioid Administration Variation: A Single-Center Retrospective Cohort Study of Children**
Safraneck, C., Poole, S., De Souza, B., Hong, T., Wang, E., Scheinker, D., Anderson, T. A.
LIPPINCOTT WILLIAMS & WILKINS.2021: 795-797
- **Integrated eye tracking on Magic Leap One during augmented reality medical simulation: a technical report.** *BMJ simulation & technology enhanced learning*
Caruso, T. J., Hess, O., Roy, K., Wang, E., Rodriguez, S., Palivathukal, C., Haber, N.
2021; 7 (5): 431-434
- **Leveraging VR/AR to combat chronic pain in youth: Position paper from the Interdisciplinary Network on Virtual and Augmented (AR/VR) Technologies for Pain (INOVATE-Pain) Management.** *Journal of medical Internet research*
Logan, D. E., Simons, L. E., Caruso, T. n., Gold, J. I., Greenleaf, W. n., Griffin, A. n., King, C. n., Menendez, M. n., Olbrecht, V. n., Rodriguez, S. n., Silvia, M. n., Stinson, J. n., Wang, et al
2021
- **Virtual reality for pediatric periprocedural care.** *Current opinion in anaesthesiology*
Wang, E. n., Thomas, J. J., Rodriguez, S. T., Kennedy, K. M., Caruso, T. J.
2021; 34 (3): 284-91
- **Virtual Reality Augments Movement during Physical Therapy: A Pragmatic Randomized Trial.** *American journal of physical medicine & rehabilitation*
Hemphill, S. n., Rodriguez, S. n., Wang, E. n., Koeppen, K. n., Aitken-Young, B. n., Jackson, C. n., Simons, L. n., Caruso, T. J.
2021
- **Virtual Reality Facilitates Engagement in Physical Therapy in the Pediatric CVICU.** *Pediatric physical therapy : the official publication of the Section on Pediatrics of the American Physical Therapy Association*

- Hemphill, S. n., Nguyen, A. n., Kwong, J. n., Rodriguez, S. T., Wang, E. n., Caruso, T. J.
2021; 33 (1): E7–E9
- **Incidence of and Factors Associated With Prolonged and Persistent Postoperative Opioid Use in Children 0-18 Years of Age.** *Anesthesia and analgesia*
Ward, A., De Souza, E., Miller, D., Wang, E., Sun, E. C., Bambos, N., Anderson, T. A.
2020; 131 (4): 1237-1248
 - **Association Between Race and Ethnicity with Intraoperative Analgesic Administration and Initial Recovery Room Pain Scores in Pediatric Patients: a Single-Center Study of 21,229 Surgeries.** *Journal of racial and ethnic health disparities*
Jette, C. G., Rosenbloom, J. M., Wang, E., De Souza, E., Anderson, T. A.
2020
 - **A Retrospective Cohort Study of Predictors and Interventions that Influence Cooperation with Mask Induction in Children.** *Paediatric anaesthesia*
Marquez, J. L., Wang, E., Rodriguez, S. T., O'Connell, C., Munshey, F., Darling, C., Tsui, B., Caruso, J., Caruso, T. J.
2020
 - **A Quality Improvement Project to Reduce Combination Acetaminophen-opioid Prescriptions to Pediatric Orthopedic Patients.** *Pediatric quality & safety*
Caruso, T. J., Trivedi, S., Chadwick, W., Gaskari, S., Wang, E., Marquez, J., Lagasse, S., Bailey, M., Shea, K.
2020; 5 (3): e291
 - **Association Of Race and Ethnicity with Postoperative Analgesic Administration and Pain Scores in Pediatric Patients: A Single-Center Study of 29,614 Surgical Cases**
Perez, F. D., De Souza, B., Wang, E., Rosenbloom, J. M., Anderson, T. A.
LIPPINCOTT WILLIAMS & WILKINS.2020: 680–81
 - **Quantifying Virtual Reality Pain Modulation in Healthy Volunteers through Ice Immersion**
Neiman, N., Hemphill, S., Lawrence, K., Khoury, M., Kist, M., Menendez, M., Rodriguez, S., Wang, E., Caruso, T.
LIPPINCOTT WILLIAMS & WILKINS.2020: 585–86
 - **Reducing Anxiety, Fear, and Pain with Virtual Reality in Pediatric Outpatient Orthopedic Clinic**
Kist, M., Neiman, N., Khoury, M., Hastings, K., Menendez, M., Wang, E., Caruso, T., Rodriguez, S.
LIPPINCOTT WILLIAMS & WILKINS.2020: 707
 - **Association between regional anesthesia and analgesic outcomes: a single-center retrospective study of 2038 pediatric regional anesthetics**
Xie, J. J., De Souza, B., Wang, E., Anderson, T. A.
LIPPINCOTT WILLIAMS & WILKINS.2020: 862–63
 - **Retrospective Review of the Safety and Efficacy of Virtual Reality in a Pediatric Hospital.** *Pediatric quality & safety*
Caruso, T. J., O'Connell, C., Qian, J. J., Kung, T., Wang, E., Kinnebrew, S., Pearson, M., Kist, M., Menendez, M., Rodriguez, S. T.
2020; 5 (2): e293
 - **Mobilization and calibration of the HTC VIVE for virtual reality physical therapy.** *Digital health*
Hemphill, S., Nguyen, A., Rodriguez, S. T., Menendez, M., Wang, E., Lawrence, K., Caruso, T. J.
2020; 6: 2055207620950929
 - **State of the art in clinical decision support applications in pediatric perioperative medicine.** *Current opinion in anaesthesiology*
Wang, E. n., Brenn, B. R., Matava, C. T.
2020
 - **Introduction of the EMR-integrated I-PASS ICU Handoff Tool.** *Pediatric quality & safety*
Caruso, T. J., Su, F. n., Wang, E. n.
2020; 5 (4): e334
 - **Using Augmented Reality to Reduce Fear and Promote Cooperation During Pediatric Otolaryngologic Procedures.** *The Laryngoscope*
Caruso, T. J., Madill, M. n., Sidell, D. n., Meister, K. n., Wang, E. n., Menendez, M. n., Kist, M. N., Rodriguez, S. n.
2020
 - **A Pilot Quality Improvement Project to Reduce Preoperative Fasting Duration in Pediatric Inpatients.** *Pediatric quality & safety*
Nye, A., Conner, E., Wang, E., Chadwick, W., Marquez, J., Caruso, T. J.
2019; 4 (6): e246

- **A multifaceted quality improvement project improves intraoperative redosing of surgical antimicrobial prophylaxis during pediatric surgery** *PEDIATRIC ANESTHESIA*
Colletti, A. A., Wang, E., Marquez, J. L., Schwenk, H. T., Yeverino, C., Sharek, P. J., Caruso, T. J.
2019; 29 (7): 705–11
- **Differential Lung Ventilation Using a Bronchial Blocker in a Pediatric Patient on Extracorporeal Membrane Oxygenation: A Case Report.** *A&A practice*
Bhargava, V. n., Arastu, A. n., Darling, C. n., Wang, E. n., Kache, S. n.
2019
- **Association Between Race and Ethnicity in the Delivery of Regional Anesthesia for Pediatric Patients: A Single-Center Study of 3189 Regional Anesthetics in 25,664 Surgeries.** *Anesthesia and analgesia*
King, M. R., De Souza, E. n., Rosenbloom, J. M., Wang, E. n., Anderson, T. A.
2019
- **Anesthesiologist Surgery Assignments Using Policy Learning**
Ward, A., Zhou, Z., Bambos, N., Scheinker, D., Wang, E., IEEE
IEEE.2019
- **Programmed Intermittent Bolus Regimen for Erector Spinae Plane Blocks in Children: A Retrospective Review of a Single-Institution Experience.** *Anesthesia and analgesia*
Munshey, F., Caruso, T. J., Wang, E. Y., Tsui, B. C.
2018
- **A Retrospective Review of a Bed-mounted Projection System for Managing Pediatric Preoperative Anxiety.** *Pediatric quality & safety*
Caruso, T. J., Tsui, J. H., Wang, E., Scheinker, D., Sharek, P. J., Cunningham, C., Rodriguez, S. T.
2018; 3 (4): e087
- **A RETROSPECTIVE COHORT STUDY OF PREDICTORS AND INTERVENTIONS THAT INFLUENCE COOPERATION WITH PEDIATRIC ANESTHESIA MASK INDUCTION**
Caruso, T., O'Connell, C., Wang, E., Rodriguez, S., Darling, C., Caruso, J., Tsui, B.
LIPPINCOTT WILLIAMS & WILKINS.2018: 502–3
- **THE INCIDENCE OF DESATURATION DURING MICROLARYNGOSCOPY AND BRONCHOSCOPY: A QUALITY CONTROL REVIEW**
Caruso, T., Tsui, B., Wang, E., Darling, C., Sidell, D.
LIPPINCOTT WILLIAMS & WILKINS.2018: 572
- **Intraoperative antibiotic redosing compliance and the extended postoperative recovery period: often overlooked areas that may reduce surgical site infections.** *Paediatric anaesthesia*
Caruso, T. J., Wang, E. n., Colletti, A. A., Sharek, P. J.
2018
- **Enhancing pediatric airway safety using the electronic medical record.** *The Laryngoscope*
Rameau, A. n., Wang, E. n., Saraswathula, A. n., Pageler, N. n., Perales, S. n., Sidell, D. R.
2018
- **A Postoperative Care Bundle Reduces Surgical Site Infections in Pediatric Patients Undergoing Cardiac Surgeries.** *Joint Commission journal on quality and patient safety*
Caruso, T. J., Wang, E. Y., Schwenk, H. n., Marquez, J. L., Cahn, J. n., Loh, L. n., Schaffer, J. n., Chen, K. n., Wood, M. n., Sharek, P. J.
2018
- **A quality improvement initiative to optimize dosing of surgical antimicrobial prophylaxis.** *Paediatric anaesthesia*
Caruso, T. J., Wang, E., Schwenk, H. T., Scheinker, D., Yeverino, C., Tweedy, M., Maheru, M., Sharek, P. J.
2017; 27 (7): 702-710
- **A Novel Bed-Mounted Projection System is as Effective as Pharmacologic Modalities to Treat Pediatric Preoperative Anxiety**
Caruso, T. J., Rodriguez, S., Wang, E., Terajewicz, A., Brockington, D., Cunningham, C., Sharek, P. J., Marquez, J.
LIPPINCOTT WILLIAMS & WILKINS.2017: 23–25