Stanford

Maria Elizabeth Currie, MD, PhD

Clinical Assistant Professor, Cardiothoracic Surgery

CLINICAL OFFICE (PRIMARY)

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ACADEMIC CONTACT INFORMATION

- **Administrative Contact**
  Brenda Andrews - Administrative Associate
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Bio

BIO

Dr. Maria Currie is a board-certified, fellowship-trained cardiothoracic surgeon and a clinical assistant professor at Stanford University School of Medicine. With subspecialty training in heart failure, she provides expert care for a broad spectrum of cardiovascular conditions, including cardiomyopathy, ischemic heart disease, and valvular heart disease. As part of a multidisciplinary team, she performs heart, lung, and combined heart-lung transplants. She is particularly skilled in valve surgery and the implantation of mechanical circulatory support devices.

Committed to proactive, patient-centered care, Dr. Currie encourages early referrals from cardiologists and primary care physicians at the first sign of cardiovascular disease. She recognizes that early intervention can significantly improve outcomes and welcomes collaboration around screening, diagnostics, and treatment planning.

Her approach combines advanced surgical techniques with a strong emphasis on clear communication and compassionate care. Dr. Currie prioritizes patient education, ensuring that individuals understand what to expect before, during, and after surgery. Her goal is to achieve the best possible outcomes using state-of-the-art, minimally invasive cardiac technologies.

A passionate advocate for improving surgical safety, Dr. Currie leads translational research focused on enhancing intraoperative visualization—particularly during minimally invasive procedures. Her work includes a published study on the use of augmented reality (AR) guided by transesophageal echocardiography to improve mitral valve repair. Her research has appeared in leading journals such as The Journal of Thoracic and Cardiovascular Surgery, The Annals of Thoracic Surgery, The International Journal of Medical Robotics and Computer Assisted Surgery, and Transplant Immunology.

Her interest in emerging surgical technologies is deeply rooted in her background in biomedical engineering, having earned a PhD in the field. She regularly presents on the use of AR systems, 3D visualization, and robotics-assisted procedures at national and international conferences, including the American Association for Thoracic Surgery and the International Society for Minimally Invasive Cardiothoracic Surgery.

Dr. Currie has received numerous awards in recognition of her research and academic excellence. She is a Fellow of the Royal College of Surgeons of Canada and an active member of professional organizations including The Society of Thoracic Surgeons, the International Society for Heart and Lung Transplantation, Women in Thoracic Surgery, and the Association of Women Surgeons. She is proud to be part of Stanford Health Care, where she contributes to its long-standing legacy of leadership in cardiac surgery and benefits from cross-disciplinary collaboration with experts in engineering, statistics, and other fields. This environment supports both her research and her mission to provide patients with access to the most advanced, evidence-based care available.

CLINICAL FOCUS

- Cardiothoracic Surgery

ACADEMIC APPOINTMENTS

- Clinical Assistant Professor, Cardiothoracic Surgery
- Member, Cardiovascular Institute
- Member, Wu Tsai Human Performance Alliance

PROFESSIONAL EDUCATION

- Fellowship: Stanford University Heart-Lung Transplantation Fellowship (2018) CA
- Board Certification, Royal College of Physicians and Surgeons of Canada , Cardiac Surgery
- Surgery Residency, Western University , Cardiac Surgery
- PhD, Western University , Biomedical Engineering
- MD, Dalhousie University

LINKS

- Stanford Adult Cardiac Services: http://med.stanford.edu/ctsurgery/clinical-care/adult-cardiac-surgery-services.html
- Laboratory Website: https://mariacurrielab.stanford.edu/

Teaching

COURSES

2025-26

- MicroRobotics for Biomedical Applications: BIOS 443 (Spr)

STANFORD ADVISEES

Med Scholar Project Advisor

Kelly Hyles, Olivia Okoli

GRADUATE AND FELLOWSHIP PROGRAM AFFILIATIONS

- Biochemistry (Phd Program)
- Bioengineering (Phd Program)
- Biology (School of Humanities and Sciences) (Phd Program)
- Biomedical Data Science (Phd Program)
- Biomedical Data Science (Masters Program)
- Biophysics (Phd Program)
- Cardiothoracic Surgery (Fellowship Program)

- Community Health and Prevention Research (Masters Program)
- Epidemiology (Phd Program)
- Epidemiology (Masters Program)
- Immunology (Phd Program)
- Medicine (Masters Program)
- Microbiology and Immunology (Phd Program)
- Molecular and Cellular Physiology (Phd Program)

Publications

PUBLICATIONS

- **Induction therapy confers survival advantage in mechanically supported patients regardless of peak CPRA in heart transplantation.** *JHLT open*
  Bahatyrevich, N., Dale, R., Leipzig, M., Pines, K. C., Jimenez, S., Currie, M.
  2025; 8: 100246
- **Don't Let the Perfect Get in the Way of the Good: Optimal Time-Dependent Decision Curves for Donor Acceptance**
  Dale, R., Leipzig, M., Ramesh, S., Cheng, M., Brown, A., Currie, M.
  ELSEVIER SCIENCE INC.2025
- **2025 Heart Disease and Stroke Statistics: A Report of US and Global Data From the American Heart Association** *CIRCULATION*
  Martin, S. S., Aday, A. W., Allen, N. B., Almarzooq, Z. I., Anderson, C. A. M., Arora, P., Avery, C. L., Baker-Smith, C. M., Bansal, N., Beaton, A. Z., Commodore-Mensah, Y., Currie, M. E., Elkind, et al
  2025; 151 (8): e41-e660
- **Nonlinear effect of body mass index on postoperative survival following isolated heart transplantation.** *JHLT open*
  Dale, R., Bahatyrevich, N., Leipzig, M., Currie, M. E.
  2025; 7: 100172
- **Sex-mismatching in isolated heart transplantation confers no postoperative risk.** *JHLT open*
  Dale, R., Leipzig, M., Bahatyrevich, N., Pines, K., Chen, Q., Teuteberg, J., Joseph Woo, Y., Currie, M.
  2024; 6: 100158
- **Inconsistent values and algorithmic fairness: a review of organ allocation priority systems in the United States.** *BMC medical ethics*
  Dale, R., Cheng, M., Pines, K. C., Currie, M. E.
  2024; 25 (1): 115
- **Survival, Function, and Immune Profiling after Beating Heart Transplantation.** *The Journal of thoracic and cardiovascular surgery*
  Krishnan, A., Elde, S., Ruaengsri, C., Guenthart, B. A., Zhu, Y., Fawad, M., Lee, A., Currie, M., Ma, M. R., Hiesinger, W., Shudo, Y., MacArthur, J. W., Woo, et al
  2024
- **Donor-Recipient Sex-Mismatching in Isolated Heart Transplant Confers No Postoperative Risk as Established by Equivalence Testing and Causal Estimation**
  Dale, R., Leipzig, M., Bahatyrevich, N., Pines, K., Chen, Q., Teuteberg, J., Woo, J., Currie, M.
  ELSEVIER SCIENCE INC.2024: S574-S575
- **Induction Therapy Confers Survival Advantage in Mechanically Supported Patients Regardless of Peak CPRA in Heart Transplantation**
  Bahatyrevich, N., Dale, R., Leipzig, M., Pines, K., Jimenez, S., Currie, M.
  ELSEVIER SCIENCE INC.2024: S148
- **Nonlinear Effect of Body Mass Index on Postoperative Survival Following Isolated Heart Transplant**
  Dale, R., Bahatyrevich, N., Leipzig, M., Currie, M.
  ELSEVIER SCIENCE INC.2024: S74
- **Misalignment of Ethics and Statistical Risk Models in Organ Allocation**

Dale, R., Cheng, M., Pines, K., Currie, M.
ELSEVIER SCIENCE INC.2024: S260

- **Utilizing Machine Learning Clustering Trees to Risk Stratify Exception patients in Heart Transplantation**
  Dale, R., Anyetei-Anum, G., Bahatyrevich, N., Pines, K., Leipzig, M., Currie, M.
  ELSEVIER SCIENCE INC.2024: S78

- **Causal Nonlinear Dose Response Analysis of Predicted Heart Mass Mismatching**
  Dale, R., Leipzig, M., Bahatyrevich, N., Currie, M.
  ELSEVIER SCIENCE INC.2024: S574

- **2024 Heart Disease and Stroke Statistics: A Report of US and Global Data From the American Heart Association** *CIRCULATION*
  Martin, S. S., Aday, A. W., Almarzooq, Z. I., Anderson, C. A. M., Arora, P., Avery, C. L., Baker-Smith, C. M., Gibbs, B., Beaton, A. Z., Boehme, A. K., Commodore-Mensah, Y., Currie, M. E., Elkind, et al
  2024; 149 (8): E347-E913

- **Trends in the Use of Exception Status since Implementation of 2018 United Network for Organ Sharing Single-Organ Adult Heart Transplant and Its Relation to Postoperative Survival Outcomes**
  Dale, R., Leipzig, M., Pines, K., Chen, Q., Currie, M. E.
  LIPPINCOTT WILLIAMS & WILKINS.2023: S65-S66

- **Outcomes of Patients Undergoing Combined Heart-Kidney Transplantation With or Without Prior Ventricular Assist Device.** *Transplantation proceedings*
  Currie, M., Leipzig, M., Kaghazchi, A., Zhu, Y., Shudo, Y., Woo, Y. J.
  2023

- **World's first en bloc heart-lung transplantation using the paragonix lungguard donor preservation system.** *Journal of cardiothoracic surgery*
  Neto, D., Guenthart, B., Shudo, Y., Currie, M. E.
  2023; 18 (1): 131

- **Successful Heart Transplantation Using a Portable Normothermic Ex-Vivo Donor Heart Preservation System for Extended Criteria Donor after Circulatory Death: A Case Series with Extended Perfusion Times**
  Ruaengsri, C., Shudo, Y., Malki, A., Neto, D., Chen, R., Bethencourt, D., Hiesinger, W., MacArthur, J., Currie, M., Boyd, J., Guenthart, B., Lee, A., Woo, et al
  ELSEVIER SCIENCE INC.2023: S467-S468

- **Outcomes of Patients Undergoing Combined Heart-Kidney Transplantation with or without Prior Ventricular Assist Device**
  Currie, M. E., Leipzig, M., Kaghazchi, A., Shudo, Y., Woo, Y. J.
  ELSEVIER SCIENCE INC.2022: S85-S86

- **Predicting Survival in Combined Heart-Liver Transplantation Compared to Heart Transplantation Alone**
  Currie, M. E., Rinewalt, D. E., Leipzig, M., Shudo, Y., Kaghazchi, A., Zhu, Y., Woo, Y. J.
  ELSEVIER SCIENCE INC.2022: S84-S85

- **Post-Transplant Extracorporeal Membrane Oxygenation for Severe Primary Graft Dysfunction to Support the Use of Marginal Donor Hearts.** *Transplant international : official journal of the European Society for Organ Transplantation*
  Shudo, Y., Alassar, A., Wang, H., Lingala, B., He, H., Zhu, Y., Hiesinger, W., MacArthur, J. W., Boyd, J. H., Lee, A. M., Currie, M., Woo, Y. J.
  2022; 35: 10176

- **Expanding the armamentarium for reoperative coronary artery bypass grafting** *JOURNAL OF CARDIAC SURGERY*
  Currie, M.
  2021

- **Relation of Length of Survival After Orthotopic Heart Transplantation to Age of the Donor.** *The American journal of cardiology*
  Shudo, Y., Guenther, S. P., Lingala, B., He, H., Hiesinger, W., MacArthur, J. W., Currie, M. E., Lee, A. M., Boyd, J. H., Woo, Y. J.
  2020

- **Malignancy Following Heart Transplant: Few and Far Between**
  Chang, E., Moayedi, Y., Hoppenfeld, M., Lafreniere-Roula, M., Fan, S., Henricksen, E. J., Feng, K., Morales, D. P., Purewal, S., Duclos, S., Lee, R., Lyapin, A., Currie, et al
  ELSEVIER SCIENCE INC.2020: S282–S283

- **Impact of Surgical Approach in Double Lung Transplantation: Median Sternotomy vs Clamshell Thoracotomy.** *Transplantation proceedings*
  Shudo, Y. n., Rinewalt, D. n., Lingala, B. n., Kim, F. Y., He, H. n., Boyd, J. H., Lee, A. M., Hiesinger, W. n., Currie, M. E., MacArthur, J. W., Woo, Y. J.
  2020

- **Impact of Surgical Approach in Double Lung Transplantation: Median Sternotomy Decreases Operative and Cardiopulmonary Bypass Time Compared to Clamshell Thoracotomy**
  Shudo, Y., Rinewalt, D., Lingala, B., Kim, F. Y., He, H., Boyd, J. H., Lee, A. M., Hiesinger, W., Currie, M. E., MacArthur, J. W., Woo, J.
  ELSEVIER SCIENCE INC.2019: S414

- **Comparison of Patients Undergoing Multiorgan Transplantation with or without Prior Ventricular Assist Device**
  Currie, M. E., Banerjee, D., Shudo, Y., Lingala, B., Zhu, Y., Haddad, F., Woo, J.
  ELSEVIER SCIENCE INC.2019: S216–S217

- **Successful Heart-Lung Transplant for a Patient on Continuous-Flow Left Ventricular Assist Device Support Complicated With Amiodarone-Induced Pulmonary Fibrosis** *TRANSPLANTATION PROCEEDINGS*
  Currie, M. E., Shudo, Y., Mooney, J., Woo, Y. J.
  2019; 51 (2): 593–94

- **Successful Heart-Lung Transplant for a Patient on Continuous-Flow Left Ventricular Assist Device Support Complicated With Amiodarone-Induced Pulmonary Fibrosis.** *Transplantation proceedings*
  Currie, M. E., Shudo, Y., Mooney, J., Woo, Y. J.
  2019; 51 (2): 593–94

- **Evaluation of Risk Factors for Heart-Lung Transplant Recipient Outcome: An Analysis of the United Network for Organ Sharing Database.** *Circulation*
  Shudo, Y. n., Wang, H. n., Lingala, B. n., He, H. n., Kim, F. Y., Hiesinger, W. n., Lee, A. M., Boyd, J. H., Currie, M. n., Woo, Y. J.
  2019; 140 (15): 1261–72

- **Successful Outcome Following Orthotopic Heart Transplantation With a Donor Half Way Across The Country.** *Transplantation proceedings*
  Currie, M. E., Shudo, Y., Woo, Y. J.
  2018; 50 (10): 4062–63

- **Successful Outcome Following Orthotopic Heart Transplantation With a Donor Half Way Across The Country** *TRANSPLANTATION PROCEEDINGS*
  Currie, M. E., Shudo, Y., Woo, Y. J.
  2018; 50 (10): 4062–63

- **The role of visual and direct force feedback in robotics-assisted mitral valve annuloplasty** *INTERNATIONAL JOURNAL OF MEDICAL ROBOTICS AND COMPUTER ASSISTED SURGERY*
  Currie, M. E., Talasaz, A., Rayman, R., Chu, M. W. A., Kiaii, B., Peters, T., Trejos, A., Patel, R.
  2017; 13 (3)

- **Phantom study of an ultrasound guidance system for transcatheter aortic valve implantation** *COMPUTERIZED MEDICAL IMAGING AND GRAPHICS*
  McLeod, A., Currie, M. E., Moore, J. T., Bainbridge, D., Kiaii, B. B., Chu, M. W. A., Peters, T. M.
  2016; 50: 24–30

- **Augmented Reality System for Ultrasound Guidance of Transcatheter Aortic Valve Implantation** *INNOVATIONS-TECHNOLOGY AND TECHNIQUES IN CARDIOTHORACIC AND VASCULAR SURGERY*
  Currie, M. E., McLeod, A., Moore, J. T., Chu, M. W. A., Patel, R., Kiaii, B., Peters, T. M.
  2016; 11 (1): 31–39

- **Dual antiplatelet therapy use by Canadian cardiac surgeons** *JOURNAL OF THORACIC AND CARDIOVASCULAR SURGERY*
  Yanagawa, B., Ruel, M., Bonneau, C., Lee, M. M., Chung, J., Al Shouli, S., Fagan, A., Al Khalifa, A., White, C. W., Yamashita, M. H., Currie, M. E., Teoh, H., Mewhort, et al
  2015; 150 (6): 1548–U260

- **Recalcitrant Prosthetic Valve Endocarditis Requiring Repeated Reconstruction: Running Out of Options** *CANADIAN JOURNAL OF CARDIOLOGY*
  Pepe, D. L., Anantha, R. V., Currie, M. E., McCormick, J. K., Mele, T., Chu, M. W. A.
  2014; 30 (12): 1732.e5–8

- **Myocardium at Risk Is Associated With Adverse Clinical Events in Women but Not in Men, After Coronary Artery Bypass Grafting** *CANADIAN JOURNAL OF CARDIOLOGY*
  Ouzounian, M., Currie, M. E., Buth, K. J., Yip, A. M., Hassan, A., Hirsch, G. M.
  2014; 30 (7): 808–13

- **Knowledge, attitudes, and practice patterns in surgical management of bicuspid aortopathy: A survey of 100 cardiac surgeons** *JOURNAL OF THORACIC AND CARDIOVASCULAR SURGERY*
  Verma, S., Yanagawa, B., Kalra, S., Ruel, M., Peterson, M. D., Yamashita, M. H., Fagan, A., Currie, M. E., White, C. W., Sang, S., Rosu, C., Singh, S., Mewhort, et al
  2013; 146 (5): 1033–40

- **Evaluating the Effect of Three-Dimensional Visualization on Force Application and Performance Time During Robotics-Assisted Mitral Valve Repair** *INNOVATIONS-TECHNOLOGY AND TECHNIQUES IN CARDIOTHORACIC AND VASCULAR SURGERY*
  Currie, M. E., Trejos, A., Rayman, R., Chu, M. W. A., Patel, R., Peters, T., Kiaii, B. B.
  2013; 8 (3): 199–205

- **A Navigation Platform for Guidance of Beating Heart Transapical Mitral Valve Repair** *IEEE TRANSACTIONS ON BIOMEDICAL ENGINEERING*
  Moore, J. T., Chu, M. W. A., Kiaii, B., Bainbridge, D., Guiraudon, G., Wedlake, C., Currie, M., Rajchl, M., Patel, R. V., Peters, T. M.
  2013; 60 (4): 1034–40

- **Can internal thoracic arteries be used for both coronary artery bypass and breast reconstruction?** *INTERACTIVE CARDIOVASCULAR AND THORACIC SURGERY*
  Currie, M. E., Fox, S. A., Greer-Bayramoglu, R. J., Fortin, A. J., Chu, M. W. A.
  2012; 15 (5): 811–15

- **Augmented Reality Image Guidance Improves Navigation for Beating Heart Mitral Valve Repair** *INNOVATIONS-TECHNOLOGY AND TECHNIQUES IN CARDIOTHORACIC AND VASCULAR SURGERY*
  Chu, M. W. A., Moore, J., Peters, T., Bainbridge, D., McCarty, D., Guiraudon, G. M., Wedlake, C., Lang, P., Rajchl, M., Currie, M. E., Daly, R. C., Kiaii, B.
  2012; 7 (4): 274–81

- **Long-Term Angiographic Follow-Up of Robotic-Assisted Coronary Artery Revascularization** *ANNALS OF THORACIC SURGERY*
  Currie, M. E., Romsa, J., Fox, S. A., Vezina, W. C., Akincioglu, C., Warrington, J. C., McClure, R., Stitt, L. W., Menkis, A. H., Boyd, W., Kiaii, B.
  2012; 93 (5): 1426–31

- **The role of three-dimensional visualization in robotics-assisted cardiac surgery**
  Currie, M., Trejos, A., Rayman, R., Chu, M. W. A., Patel, R., Peters, T., Kiaii, B.
  edited by Holmes, D. R., Wong, K. H.
  SPIE-INT SOC OPTICAL ENGINEERING.2012

- **Immunologic targets in the etiology of allograft vasculopathy: Endothelium versus media** *TRANSPLANT IMMUNOLOGY*
  Currie, M., Zaki, A. M., Nejat, S., Hirsch, G. M., Lee, T. D. G.
  2008; 19 (2): 120–26