Stanford

Maria Elizabeth Currie, MD, PhD

Clinical Assistant Professor, Cardiothoracic Surgery

CLINICAL OFFICE (PRIMARY)

- **Stanford Healthcare - TriValley**

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Bio

BIO

Dr. Currie is a board-certified, fellowship-trained cardiothoracic surgeon. She is also a clinical assistant professor at Stanford University School of Medicine. With subspecialty training in heart failure, Dr. Currie treats all forms of cardiomyopathy, ischemic heart disease, and valvular heart disease. She performs heart transplant, lung transplant, and combined heart-lung transplant procedures as part of a multidisciplinary team. She excels at valve surgery and the implantation of mechanical circulatory support systems.

Dr. Currie welcomes referrals from cardiologists and primary care physicians as early as possible when cardiovascular disease is suspected. Understanding that early intervention can prevent later complications, she invites communication about screening, diagnostics, and treatment strategies.

For each patient, Dr. Currie’s goal is to achieve the best possible outcome using the most advanced minimally invasive cardiac care techniques and technology available. Combined with technical expertise and a focus on excellent clinical outcomes, Dr. Currie delivers empathetic, thoughtful patient care. She ensures that patients are well informed about what they can expect both before and after their surgical procedure.

Dr. Currie is passionate about improving the safety of cardiac surgery. Her research includes translational studies on new ways to visualize anatomic structures that are difficult to see during minimally invasive surgery. One published study investigated the use of augmented reality (AR) guided by transesophageal echocardiography in minimally invasive mitral valve repair. Her work has appeared in The Journal of Thoracic and Cardiovascular Surgery, The Annals of Thoracic Surgery, The International Journal of Medical Robotics and Computer Assisted Surgery, Transplant Immunology, and other peer reviewed publications.

Dr. Currie’s interest in technological advances is rooted in her commitment to the evolution of technology and technique in the fast-changing, relatively young field of cardiac surgery. Also driving her interest is her PhD background in biomedical engineering. She has made presentations on the use of AR systems, 3D visualization technology, and robotics-assisted surgical procedures at the American Association for Thoracic Surgery Annual Meeting, International Society for Minimally Invasive Surgery Annual Scientific Meeting, and other conferences.

Dr. Currie has won numerous awards for her research achievements and scholarship. She is a Fellow of the Royal College of Surgeons of Canada. She is also a member of The Society of Thoracic Surgeons, the International Society for Heart and Lung Transplantation, the International Society for Minimally Invasive Cardiothoracic Surgery, Women in Thoracic Surgery, and the Association of Women Surgeons. With its long legacy of leadership in cardiac surgery and research, Dr. Currie feels Stanford Health Care enables her to pursue her research interests and offers her patients access to the latest innovations, along with expertise across specialties including engineering and statistics.

CLINICAL FOCUS

- Cardiothoracic Surgery

ACADEMIC APPOINTMENTS

- Clinical Assistant Professor, Cardiothoracic Surgery
- Member, Cardiovascular Institute

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

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 Informatics (Phd Program)
- Biomedical Informatics (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

- **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. 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. 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. 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. 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. 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. 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. 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. 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. A., Patel, R., Peters, T., Kiaii, B., 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. G.
  2008; 19 (2): 120–26