



## Andrew Young Shin

Clinical Associate Professor, Pediatrics - Cardiology

### CLINICAL OFFICES

- **Pediatric Cardiology CVICU**

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### Bio

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### CLINICAL FOCUS

- Cardiology (Heart), Pediatric
- Pediatric Cardiology

### ACADEMIC APPOINTMENTS

- Clinical Associate Professor, Pediatrics - Cardiology
- Member, Maternal & Child Health Research Institute (MCHRI)

### ADMINISTRATIVE APPOINTMENTS

- Associate Chief Quality Officer, Lucile Packard Children's Hospital Stanford, (2019- present)
- Associate Medical Director, Pediatric Cardiovascular Intensive Care, (2014- present)
- Medical Director, Systems Design and Utilization Research at Stanford, (2015- present)
- Medical Director, Quality Assurance and Performance Improvement (QAPI) for the Heart Center, (2015- present)

### HONORS AND AWARDS

- HIMSS Nicholas E. Davies Award of Excellence for Clinical Effectiveness, Healthcare Information and Management Systems Society (2018)

### BOARDS, ADVISORY COMMITTEES, PROFESSIONAL ORGANIZATIONS

- Medical Advisory Board, Pediatric Congenital Heart Association (2019 - present)
- Member, Board of Directors, Quality Safety and Service Committee, Lucile Packard Children's Hospital (2018 - present)
- Member, Pediatric Cardiac Critical Care Consortium (2017 - present)
- Member, Pediatric Cardiac Intensive Care Society (2015 - present)
- Member, American College of Cardiology (2016 - present)
- Member, American Heart Association (2016 - present)

## PROFESSIONAL EDUCATION

- Medical Education: University of California San Francisco Registrar Office (1999) CA
- Board Certification: Pediatric Critical Care Medicine, American Board of Pediatrics (2008)
- Board Certification: Pediatric Cardiology, American Board of Pediatrics (2006)
- Fellowship: Boston Children's Hospital (2008) MA
- Fellowship: Boston Children's Hospital (2006) MA
- Board Certification, Boston Children's Hospital , Pediatric Critical Care (2008)
- Residency: Boston Children's Hospital (2003) MA

## Research & Scholarship

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### CURRENT RESEARCH AND SCHOLARLY INTERESTS

#### SURF PROGRAM

The SURF program is an innovative collaboration between LPCH, Stanford University Hospital and the Stanford School of Engineering. The program has focused on improving quality and safety of patient care, improving hospital operations and promoting clinical effectiveness utilizing contemporary technologies such as machine learning, mathematical optimization, simulation and a variety of statistical, probabilistic and computational tools. The program has 2 independent funding mechanism to primarily improve patient care/hospital operations and improve academics for faculty within the department of Pediatrics at LPCH.

<https://surf.stanford.edu/>

#### CLINICAL EFFECTIVENESS

The Clinical Effectiveness (CE) Program is a funded program that aims to understand and improve unnecessary variation in healthcare delivery in order to optimize quality of care and reduce wasteful expenditures. The CE program has developed innovative programs such as Target Based Care, an award-winning intervention to reduce variation in hospital length of stay and currently a multi-center trial involving more than 20 hospitals in North America. In 2016, the CE program included the first CE fellowship program in a pediatric training program with 3 cycles of graduates. The CE program is supported by LPCH and a philanthropic gift by Susan Choe and Thomas Tobiason.

## Publications

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### PUBLICATIONS

- **Differences in Central Line-Associated Bloodstream Infection Rates Based on the Criteria Used to Count Central Line Days.** *JAMA*  
Scheinker, D., Ward, A., Shin, A. Y., Lee, G. M., Mathew, R., Donnelly, L. F.  
2020; 323 (2): 183–85
- **LEVERAGING AGGREGATE DATA AT THE POINT OF CARE REDUCES VARIATION FOR PEDIATRIC NEUROSURGERY PATIENTS**  
Steffen, K., Su, F., Algaze, C., Duethman, L., Jacobs, K., Casazza, M., Chantra, J., Loh, L., Shin, A., Grant, G.  
LIPPINCOTT WILLIAMS & WILKINS.2019
- **Cost-effectiveness of Humanitarian Pediatric Cardiac Surgery Programs in Low- and Middle-Income Countries.** *JAMA network open*  
Cardarelli, M., Vaikunth, S., Mills, K., DiSessa, T., Molloy, F., Sauter, E., Bowtell, K., Rivera, R., Shin, A. Y., Novick, W.  
2018; 1 (7): e184707
- **Changes in Efficiency and Safety Culture After Integration of an I-PASS-Supported Handoff Process.** *Pediatrics*  
Sheth, S., McCarthy, E., Kipps, A. K., Wood, M., Roth, S. J., Sharek, P. J., Shin, A. Y.  
2016; 137 (2): 1-9

- **Use of a Checklist and Clinical Decision Support Tool Reduces Laboratory Use and Improves Cost.** *Pediatrics*  
Algaze, C. A., Wood, M., Pageler, N. M., Sharek, P. J., Longhurst, C. A., Shin, A. Y.  
2016; 137 (1): 1-8
- **Exploring Value in Congenital Heart Disease: An Evaluation of Inpatient Admissions.** *Congenital heart disease*  
Shin, A. Y., Hu, Z., Jin, B., Lal, S., Rosenthal, D. N., Efron, B., Sharek, P. J., Sutherland, S. M., Cohen, H. J., McElhinney, D. B., Roth, S. J., Ling, X. B.  
2015; 10 (6): E278-87
- **Hyponatremia among runners in the Boston Marathon** *NEW ENGLAND JOURNAL OF MEDICINE*  
Almond, C. S., Shin, A. Y., Fortescue, E. B., Mannix, R. C., Wypij, D., Binstadt, B. A., Duncan, C. N., Olson, D. P., Salerno, A. E., Newburger, J. W., Greenes, D. S.  
2005; 352 (15): 1550-1556
- **"Echo pause" for postoperative transthoracic echocardiographic surveillance.** *Echocardiography (Mount Kisco, N.Y.)*  
Cox, K., Arunamata, A., Krawczeski, C. D., Reddy, C., Kipps, A. K., Long, J., Roth, S. J., Axelrod, D. M., Hanley, F., Shin, A., Selamet Tierney, E. S.  
2019
- **A Quality Bundle to Support High-Risk Pediatric Ventricular Assist Device Implantation.** *Pediatric cardiology*  
Knoll, C., Chen, S., Murray, J. M., Dykes, J. C., Yarlagadda, V. V., Rosenthal, D. N., Almond, C. S., Maeda, K., Shin, A. Y.  
2019
- **The authors reply.** *Critical care medicine*  
Smith, A. H., Anand, V., Banerjee, M., Bates, K. E., Brunetti, M. A., Cooper, D. S., Lehrich, J., Mistry, K. P., Pasquali, S. K., Shin, A. Y., Tabbutt, S., Gaies, M.  
2019; 47 (3): e268–e269
- **Younger age remains a risk factor for prolonged length of stay after bidirectional cavopulmonary anastomosis.** *Cardiology in the young*  
Koth, A. M., Algaze, C. A., Sakarovitch, C., Long, J., Kamra, K., Wright, G. E., Alexander-Banys, B., Maeda, K., Shin, A. Y.  
2019: 1–6
- **Creating a Defined Process to Improve the Timeliness of Serious Safety Event Determination and Root Cause Analysis.** *Pediatric quality & safety*  
Donnelly, L. F., Palangyo, T., Bargmann-Losche, J., Rogers, K., Wood, M., Shin, A. Y.  
2019; 4 (5): e200
- **Sacrificing the Future for the Sake of the Present.** *Annals of surgery*  
Collins, R. T., Shin, A. Y., Hanley, F. L.  
2019
- **Birth Location of Infants with Critical Congenital Heart Disease in California.** *Pediatric cardiology*  
Purkey, N. J., Axelrod, D. M., McElhinney, D. B., Rigdon, J., Qin, F., Desai, M., Shin, A. Y., Chock, V. Y., Lee, H. C.  
2018
- **Applying Lessons from an Inaugural Clinical Pathway to Establish a Clinical Effectiveness Program.** *Pediatric quality & safety*  
Algaze, C. A., Shin, A. Y., Nather, C., Elgin, K. H., Ramamoorthy, C., Kamra, K., Kipps, A. K., Yarlagadda, V. V., Mafla, M. M., Vashist, T., Krawczeski, C. D., Sharek, P. J.  
2018; 3 (6): e115
- **Variation in Adjusted Mortality for Medical Admissions to Pediatric Cardiac ICUs.** *Pediatric critical care medicine : a journal of the Society of Critical Care Medicine and the World Federation of Pediatric Intensive and Critical Care Societies*  
Gaies, M., Ghanayem, N. S., Alten, J. A., Costello, J. M., Lasa, J. J., Chanani, N. K., Shin, A. Y., Retzlaff, L., Zhang, W., Pasquali, S. K., Banerjee, M., Tabbutt, S.  
2018
- **Variation in Case-Mix Adjusted Unplanned Pediatric Cardiac ICU Readmission Rates.** *Critical care medicine*  
Smith, A. H., Anand, V., Banerjee, M., Bates, K. E., Brunetti, M. A., Cooper, D. S., Lehrich, J., Mistry, K. P., Pasquali, S. K., Shin, A. Y., Tabbutt, S., Gaies, M.  
2018
- **Diagnostic errors in paediatric cardiac intensive care** *CARDIOLOGY IN THE YOUNG*  
Bhat, P. N., Costello, J. M., Aiyagari, R., Sharek, P. J., Algaze, C. A., Mazwi, M. L., Roth, S. J., Shin, A. Y.  
2018; 28 (5): 675–82
- **Cost-effectiveness of Humanitarian Pediatric Cardiac Surgery Programs in Low- and Middle-Income Countries** *JAMA Network Open*

- Cardarelli, M., Vaikunth, S., Mills, K., DiSessa, T., Molloy, F., Sauter, E., Bowtell, K., Rivera, R., Shin, A., Novick, W.  
2018
- **The Epidemiology of Health-Care Associated Infections in Pediatric Cardiac Intensive Care Units.** *The Pediatric infectious disease journal*  
Alten, J. A., Rahman, A. F., Zaccagni, H. J., Shin, A., Cooper, D. S., Blinder, J. J., Retzlaff, L., Aban, I. B., Graham, E. M., Zampi, J., Domnina, Y., Gaies, M. G.  
2017
  - **Programmatic Approach to Management of Tetralogy of Fallot With Major Aortopulmonary Collateral Arteries A 15-Year Experience With 458 Patients** *CIRCULATION-CARDIOVASCULAR INTERVENTIONS*  
Bauser-Heaton, H., Borquez, A., Han, B., Ladd, M., Asija, R., Downey, L., Koth, A., Algaze, C. A., Wise-Faberowski, L., Perry, S. B., Shin, A., Peng, L. F., Hanley, et al  
2017; 10 (4)
  - **Practice Patterns in Postoperative Echocardiographic Surveillance after Congenital Heart Surgery in Children: A Single Center Experience** *JOURNAL OF PEDIATRICS*  
Arunamata, A., Axelrod, D. M., Kipps, A. K., McElhinney, D. B., Shin, A. Y., Hanley, F. L., Olson, I. L., Roth, S. J., Tierney, E. S.  
2017; 180: 87-?
  - **Haemodynamic profiles of children with end-stage heart failure.** *European heart journal*  
Chen, S., Dykes, J. C., McElhinney, D. B., Gajarski, R. J., Shin, A. Y., Hollander, S. A., Everitt, M. E., Price, J. F., Thiagarajan, R. R., Kindel, S. J., Rossano, J. W., Kaufman, B. D., May, et al  
2017; 38 (38): 2900–2909
  - **Fluid overload independent of acute kidney injury predicts poor outcomes in neonates following congenital heart surgery.** *Pediatric nephrology (Berlin, Germany)*  
Mah, K. E., Hao, S., Sutherland, S. M., Kwiatkowski, D. M., Axelrod, D. M., Almond, C. S., Krawczeski, C. D., Shin, A. Y.  
2017
  - **Temporary Circulatory Support in U.S. Children Awaiting Heart Transplantation.** *Journal of the American College of Cardiology*  
Yarlagadda, V. V., Maeda, K., Zhang, Y., Chen, S., Dykes, J. C., Gowen, M. A., Shuttleworth, P., Murray, J. M., Shin, A. Y., Reinhartz, O., Rosenthal, D. N., McElhinney, D. B., Almond, et al  
2017; 70 (18): 2250–60
  - **Unique Molecular Patterns Uncovered in Kawasaki Disease Patients with Elevated Serum Gamma Glutamyl Transferase Levels: Implications for Intravenous Immunoglobulin Responsiveness** *PLOS ONE*  
Wang, Y., Li, Z., Hu, G., Hao, S., Deng, X., Huang, M., Ren, M., Jiang, X., Kanegaye, J. T., Ha, K., Lee, J., Li, X., Jiang, et al  
2016; 11 (12)
  - **Web-based Real-Time Case Finding for the Population Health Management of Patients With Diabetes Mellitus: A Prospective Validation of the Natural Language Processing-Based Algorithm With Statewide Electronic Medical Records.** *JMIR medical informatics*  
Zheng, L., Wang, Y., Hao, S., Shin, A. Y., Jin, B., Ngo, A. D., Jackson-Browne, M. S., Feller, D. J., Fu, T., Zhang, K., Zhou, X., Zhu, C., Dai, et al  
2016; 4 (4)
  - **Exploring the Role of Polycythemia in Patients With Cyanosis After Palliative Congenital Heart Surgery.** *Pediatric critical care medicine*  
Siehr, S. L., Shi, S., Hao, S., Hu, Z., Jin, B., Hanley, F., Reddy, V. M., McElhinney, D. B., Ling, X. B., Shin, A. Y.  
2016; 17 (3): 216-222
  - **Prospective stratification of patients at risk for emergency department revisit: resource utilization and population management strategy implications.** *BMC emergency medicine*  
Jin, B., Zhao, Y., Hao, S., Shin, A. Y., Wang, Y., Zhu, C., Hu, Z., Fu, C., Ji, J., Wang, Y., Zhao, Y., Jiang, Y., Dai, et al  
2016; 16 (1): 10-?
  - **NLP based congestive heart failure case finding: A prospective analysis on statewide electronic medical records.** *International journal of medical informatics*  
Wang, Y., Luo, J., Hao, S., Xu, H., Shin, A. Y., Jin, B., Liu, R., Deng, X., Wang, L., Zheng, L., Zhao, Y., Zhu, C., Hu, et al  
2015; 84 (12): 1039-1047
  - **Development, Validation and Deployment of a Real Time 30 Day Hospital Readmission Risk Assessment Tool in the Maine Healthcare Information Exchange** *PLOS ONE*  
Hao, S., Wang, Y., Jin, B., Shin, A. Y., Zhu, C., Huang, M., Zheng, L., Luo, J., Hu, Z., Fu, C., Dai, D., Wang, Y., Culver, et al  
2015; 10 (10)

- **Innovation in Pediatric Cardiac Intensive Care: An Exponential Convergence Toward Transformation of Care.** *World journal for pediatric & congenital heart surgery*  
Maher, K. O., Chang, A. C., Shin, A., Hunt, J., Wong, H. R.  
2015; 6 (4): 588-596
- **Online Prediction of Health Care Utilization in the Next Six Months Based on Electronic Health Record Information: A Cohort and Validation Study** *JOURNAL OF MEDICAL INTERNET RESEARCH*  
Hu, Z., Hao, S., Jin, B., Shin, A. Y., Zhu, C., Huang, M., Wang, Y., Zheng, L., Dai, D., Culver, D. S., Alfreds, S. T., Rogow, T., Stearns, et al  
2015; 17 (9)
- **Utility of Clinical Biomarkers to Predict Central Line-associated Bloodstream Infections After Congenital Heart Surgery.** *Pediatric infectious disease journal*  
Shin, A. Y., Jin, B., Hao, S., Hu, Z., Sutherland, S., McCammond, A., Axelrod, D., Sharek, P., Roth, S. J., Ling, X. B.  
2015; 34 (3): 251-254
- **Real-time web-based assessment of total population risk of future emergency department utilization: statewide prospective active case finding study.** *Interactive journal of medical research*  
Hu, Z., Jin, B., Shin, A. Y., Zhu, C., Zhao, Y., Hao, S., Zheng, L., Fu, C., Wen, Q., Ji, J., Li, Z., Wang, Y., Zheng, et al  
2015; 4 (1)
- **Development, Validation and Deployment of a Real Time 30 Day Hospital Readmission Risk Assessment Tool in the Maine Healthcare Information Exchange.** *PLoS one*  
Hao, S., Wang, Y., Jin, B., Shin, A. Y., Zhu, C., Huang, M., Zheng, L., Luo, J., Hu, Z., Fu, C., Dai, D., Wang, Y., Culver, et al  
2015; 10 (10)
- **Outcomes Following Cardiac Catheterization After Congenital Heart Surgery** *CATHETERIZATION AND CARDIOVASCULAR INTERVENTIONS*  
Siehr, S. L., Martin, M. H., Axelrod, D., Efron, B., Peng, L., Roth, S. J., Perry, S., Shin, A. Y.  
2014; 84 (4): 622-628
- **Outcomes following cardiac catheterization after congenital heart surgery.** *Catheterization and cardiovascular interventions*  
Siehr, S. L., Martin, M. H., Axelrod, D., Efron, B., Peng, L., Roth, S. J., Perry, S., Shin, A. Y.  
2014; 84 (4): 622-628
- **Sedative and analgesic use on night and day shifts in a pediatric cardiovascular intensive care unit.** *AACN advanced critical care*  
Staveski, S. L., Tesoro, T. M., Cisco, M. J., Roth, S. J., Shin, A. Y.  
2014; 25 (2): 114-118
- **Risk prediction of emergency department revisit 30 days post discharge: a prospective study.** *PLoS one*  
Hao, S., Jin, B., Shin, A. Y., Zhao, Y., Zhu, C., Li, Z., Hu, Z., Fu, C., Ji, J., Wang, Y., Zhao, Y., Dai, D., Culver, et al  
2014; 9 (11)
- **Clopidogrel in Infants with Systemic-to-Pulmonary-Artery Shunts** *NEW ENGLAND JOURNAL OF MEDICINE*  
Wessel, D. L., Berger, F., Li, J. S., Daehnert, I., Rakhit, A., Fontecave, S., Newburger, J. W.  
2013; 368 (25): 2377-2384
- **Surgical management of neonatal atrioventricular septal defect with aortic arch obstruction.** *Annals of thoracic surgery*  
Shuhaiber, J., Shin, A. Y., Gossett, J. G., Wypij, D., Backer, C. L., Hanley, F. L., Khan, M. S., Fraser, C. D., Jacques, F., Manning, P. B., Van Arsdell, G., Mayer, J. E., Costello, et al  
2013; 95 (6): 2071-2077
- **Embedding time-limited laboratory orders within computerized provider order entry reduces laboratory utilization\*.** *Pediatric critical care medicine*  
Pageler, N. M., Franzon, D., Longhurst, C. A., Wood, M., Shin, A. Y., Adams, E. S., Widen, E., Cornfield, D. N.  
2013; 14 (4): 413-419
- **Reducing Mortality Related to Adverse Events in Children** *PEDIATRIC CLINICS OF NORTH AMERICA*  
Shin, A. Y., Longhurst, C. A., Sharek, P. J.  
2012; 59 (6): 1293-?
- **SURGICAL MANAGEMENT OF ATRIOVENTRICULAR SEPTAL DEFECTS WITH AORTIC ARCH OBSTRUCTION IN NEONATES: A MULTICENTER STUDY** *J Am Coll Cardiol.*  
Costello JM, Shin AY, Shuhaiber J

2012; 59 (E778)

- **Cardiac troponin increases among runners in the Boston Marathon** *ANNALS OF EMERGENCY MEDICINE*  
Fortescue, E. B., Shin, A. Y., Greenes, D. S., Mannix, R. C., Agarwal, S., Feldman, B. J., Shah, M. I., Rifai, N., Landzberg, M. J., Newburger, J. W., Almond, C. S.  
2007; 49 (2): 137-143
- **Aortic atresia or severe left ventricular outflow tract obstruction with ventricular septal defect: Results of primary biventricular repair in neonates** *42nd Annual Meeting of the Society-of-Thoracic-Surgeons*  
Nathan, M., Rimmer, D., del Nido, P. J., Mayer, J. E., Bacha, E. A., Shin, A., Regan, W., Gonzalez, R., Pigula, F.  
ELSEVIER SCIENCE INC.2006: 2227-32
- **The Boston Marathon study: A novel approach to research during residency** *PEDIATRICS*  
Shin, A. Y., Almond, C. S., Mannix, R. C., Duncan, C. N., Son, M. B., McLauchlan, H. M., Kanaan, U. B., Litzow, J. M., Riney, P. S., Trenor, C. C., Fortescue, E. B., Vinci, R. J., Greenes, et al  
2006; 117 (5): 1818-1822