

Recent Research Publications

A summary of recent publications from our pediatric cardiology faculty is listed below. For additional listings, please visit individual faculty profile pages.

1. Stephens EH, Tingo J, Najjar M, Yilmaz B, Levasseur S, **Dayton JD**, Mosca RS, Chai P, Quaegebeur JM, Bacha EA. Cardiac Function After Tetralogy of Fallot/Complete Atrioventricular Canal Repair. *World J Pediatr Congenit Heart Surg.* 2017;8(2):189-195.
2. Salavitabar A, **Flynn P**, **Holzer RJ**. Transcatheter pulmonary valve implantation: valve technology and procedural outcome. *Curr Opin Cardiol.* 2017.
3. Nadorlik H, Stiver C, Khan S, Miao Y, **Holzer R**, Cheatham JP, Cua CL. Echocardiographic right ventricular function correlations with cardiac catheterisation data in biventricular congenital heart patients. *Cardiol Young.* 2017;27(6):1186-1193.
4. **Holzer R**, Goble J, Hijazi Z. The challenges surrounding preclinical testing in transcatheter device development and the implications on the clinic. *Expert Rev Med Devices.* 2017;14(2):87-92.
5. Gruenstein DH, Ebeid M, Radtke W, Moore P, **Holzer R**, Justino H. Transcatheter closure of patent ductus arteriosus using the AMPLATZER duct occluder II (ADO II). *Catheter Cardiovasc Interv.* 2017;89(6):1118-1128.
6. Backes CH, Rivera BK, Bridge JA, Armstrong AK, Boe BA, Berman DP, Fick T, **Holzer RJ**, Hijazi ZM, Abadir S, Justino H, Bergersen L, Smith CV, Kirpalani H. Percutaneous Patent Ductus Arteriosus (PDA) Closure During Infancy: A Meta-analysis. *Pediatrics.* 2017;139(2).
7. Backes CH, Kennedy KF, Locke M, Cua CL, Ball MK, Fick TA, Rivera BK, Smith CV, **Holzer RJ**, Boe BA, Berman DP, Bergersen L, Armstrong AK. Transcatheter Occlusion of the Patent Ductus Arteriosus in 747 Infants <6 kg: Insights From the NCDR IMPACT Registry. *JACC Cardiovasc Interv.* 2017.
8. Vincent RN, Moore J, Beekman RH, Benson L, Bergersen L, **Holzer R**, Jayaram N, Jenkins K, Ringel R, Rome J, Martin GR. Procedural characteristics and adverse events in diagnostic and interventional catheterisations in paediatric and adult CHD: initial report from the IMPACT Registry. *Cardiol Young.* 2016;26(1):70-78.
9. Nadorlik H, Stiver C, Khan S, Miao Y, **Holzer R**, Cheatham JP, Cua CL. Correlations Between Echocardiographic Systolic and Diastolic Function with Cardiac Catheterization in Biventricular Congenital Heart Patients. *Pediatr Cardiol.* 2016;37(4):765-771.
10. **Holzer RJ**, Sallehuddin A, Hijazi ZM. Surgical strategies and novel alternatives for the closure of ventricular septal defects. *Expert Rev Cardiovasc Ther.* 2016;14(7):831-841.
11. **Holzer RJ**, Hijazi ZM. Transcatheter pulmonary valve replacement: State of the art. *Catheter Cardiovasc Interv.* 2016;87(1):117-128.
12. **Holzer RJ**, Cua CL. Pulmonary Arteriovenous Malformations and Risk of Stroke. *Cardiol Clin.* 2016;34(2):241-246.
13. **Holzer R**, Beekman R, Benson L, Bergersen L, Jayaram N, Jenkins K, Kennedy K, Moore J, Ringel R, Rome J, Vincent R, Martin GR. Characteristics and safety of interventions and procedures performed during catheterisation of patients with congenital heart disease: early report from the national cardiovascular data registry. *Cardiol Young.* 2016;26(6):1202-1212.
14. Goldstein BH, **Holzer RJ**, Trucco SM, Porras D, Murphy J, Foerster SR, El-Said HG, Beekman RH, 3rd, Bergersen L. Practice Variation in Single-Ventricle Patients

- Undergoing Elective Cardiac Catheterization: A Report from the Congenital Cardiac Catheterization Project on Outcomes (C3PO). *Congenit Heart Dis.* 2016;11(2):122-135.
15. Backes CH, Cheatham SL, Deyo GM, Leopold S, Ball MK, Smith CV, Garg V, **Holzer RJ**, Cheatham JP, Berman DP. Percutaneous Patent Ductus Arteriosus (PDA) Closure in Very Preterm Infants: Feasibility and Complications. *J Am Heart Assoc.* 2016;5(2).
 16. Torres A, Vincent JA, Everett A, Lim S, Foerster SR, Marshall AC, Beekman RH, 3rd, Murphy J, Trucco SM, Gauvreau K, **Holzer R**, Bergersen L, Porras D. Balloon valvuloplasty for congenital aortic stenosis: Multi-center safety and efficacy outcome assessment. *Catheter Cardiovasc Interv.* 2015;86(5):808-820.
 17. Tingo JE, **Carroll SJ**, Crystal MA. Triple outlet right ventricle: a previously unknown cardiac malformation. *Cardiol Young.* 2015;25(3):576-579.
 18. Ross RD, Brook M, Feinstein JA, Koenig P, Lang P, Spicer R, Vincent JA, Lewis AB, Martin GR, Bartz PJ, Fischbach PS, Fulton DR, Matherne GP, Reinking B, Srivastava S, Printz B, Geva T, Shirali GS, Weinberg P, Wong PC, Armsby LB, Vincent RN, Foerster SR, **Holzer RJ**, Moore JW, Marshall AC, Latson L, Dubin AM, Walsh EP, Franklin W, Kanter RJ, Saul JP, Shah MJ, Van Hare GF, Feltes TF, Roth SJ, Almodovar MC, Andropoulos DB, Bohn DJ, Costello JM, Gajarski RJ, Mott AR, Stout K, Valente AM, Cook S, Gurvitz M, Saidi A, Webber SA, Hsu DT, Ivy DD, Kulik TJ, Pahl E, Rosenthal DN, Morrow R, Mahle WT, Murphy AM, Li JS, Law YM, Newburger JW, Daniels SR, Bernstein D, Marino BS. 2015 SPCTPD/ACC/AAP/AHA Training Guidelines for Pediatric Cardiology Fellowship Programs (Revision of the 2005 Training Guidelines for Pediatric Cardiology Fellowship Programs). *J Am Coll Cardiol.* 2015.
 19. Lin CH, Desai S, Nicolas R, Gauvreau K, Foerster S, Sharma A, Armsby L, Marshall AC, Odegard K, DiNardo J, Vincent J, El-Said H, Spaeth J, Goldstein B, **Holzer R**, Kreutzer J, Balzer D, Bergersen L. Sedation and Anesthesia in Pediatric and Congenital Cardiac Catheterization: A Prospective Multicenter Experience. *Pediatr Cardiol.* 2015;36(7):1363-1375.
 20. Jayaram N, Beekman RH, 3rd, Benson L, **Holzer R**, Jenkins K, Kennedy KF, Martin GR, Moore JW, Ringel R, Rome J, Spertus JA, Vincent R, Bergersen L. Adjusting for Risk Associated With Pediatric and Congenital Cardiac Catheterization: A Report From the NCDR IMPACT Registry. *Circulation.* 2015;132(20):1863-1870.
 21. El-Said H, Hegde S, Foerster S, Hellenbrand W, Kreutzer J, Trucco SM, **Holzer R**, Burch G, Mirani A, Nicolas R, Porras D, Bergersen L, Moore J. Device therapy for atrial septal defects in a multicenter cohort: acute outcomes and adverse events. *Catheter Cardiovasc Interv.* 2015;85(2):227-233.
 22. Channing A, Szwaast A, Natarajan S, Degenhardt K, Tian Z, Rychik J. Maternal hyperoxygenation improves left heart filling in fetuses with atrial septal aneurysm causing impediment to left ventricular inflow. *Ultrasound Obstet Gynecol.* 2015;45(6):664-669.
 23. Backes CH, Bergersen L, Rome JJ, Batlivala SP, Glatz AC, Ovunc B, David S, Rivera BK, Haque U, Kollins K, Yin H, **Holzer RJ**. Quality metrics in cardiac catheterization for congenital heart disease: utility of 30-day mortality. *Catheter Cardiovasc Interv.* 2015;85(1):104-110.
 24. Armsby LB, Vincent RN, Foerster SR, **Holzer RJ**, Moore JW, Marshall AC, Latson L, Brook M, Society of Pediatric Cardiology Training Program D, American College of C, American Academy of P, American Heart A. Task Force 3: Pediatric Cardiology Fellowship Training in Cardiac Catheterization. SPCTPD/ACC/AAP/AHA. *Circulation.* 2015;132(6):e68-74.
 25. Armsby LB, Vincent RN, Foerster SR, **Holzer RJ**, Moore JW, Marshall AC, Latson L, Brook M. Task Force 3: Pediatric Cardiology Fellowship Training in Cardiac Catheterization. *J Am Coll Cardiol.* 2015;66(6):699-705.

26. Stiver C, Gokhale J, Husain N, Nicholson L, Cordier J, Van Lente L, **Holzer RJ**, Cua CL. Catheterization diastolic pressures correlate with diastolic dyssynchrony in patients with single right ventricles. *Echocardiography*. 2014;31(3):370-374.
27. Patel J, Kupferman F, Rapaport S, **Kern JH**. Preprocedure prophylaxis against endocarditis among United States pediatric cardiologists. *Pediatr Cardiol*. 2014;35(7):1220-1224.
28. Moore JW, Vincent RN, Beekman RH, 3rd, Benson L, Bergersen L, **Holzer R**, Jayaram N, Jenkins K, Li Y, Ringel R, Rome J, Martin GR, Committee NIS. Procedural results and safety of common interventional procedures in congenital heart disease: initial report from the National Cardiovascular Data Registry. *J Am Coll Cardiol*. 2014;64(23):2439-2451.
29. Mitchell E, Cheatham JP, Sisk JM, Nicholson L, **Holzer R**, Galantowicz M, Cua CL. Neutrophil/Lymphocyte ratio and association with arch intervention in patients with hypoplastic left heart syndrome undergoing hybrid procedure. *Congenit Heart Dis*. 2014;9(6):543-548.
30. Lin CH, Hegde S, Marshall AC, Porras D, Gauvreau K, Balzer DT, Beekman RH, 3rd, Torres A, Vincent JA, Moore JW, **Holzer R**, Armsby L, Bergersen L. Incidence and management of life-threatening adverse events during cardiac catheterization for congenital heart disease. *Pediatr Cardiol*. 2014;35(1):140-148.
31. Husain N, Gokhale J, Nicholson L, Perkins A, Cooper AL, Cheatham JP, **Holzer RJ**, Cua CL. Comparing echocardiographic assessment of systolic function with catheterization data in patients with single right ventricles. *Acta Cardiol*. 2014;69(3):281-288.
32. Ghelani SJ, Glatz AC, David S, Leahy R, Hirsch R, Armsby LB, Trucco SM, **Holzer RJ**, Bergersen L. Radiation dose benchmarks during cardiac catheterization for congenital heart disease in the United States. *JACC Cardiovasc Interv*. 2014;7(9):1060-1069.
33. Cua CL, Kollins K, Roble S, **Holzer RJ**. Three-dimensional image of a baffle leak in a patient with a Mustard operation. *Echocardiography*. 2014;31(10):E315-316.
34. Chaudhry-Waterman N, Coombs S, Porras D, **Holzer R**, Bergersen L. Developing tools to measure quality in congenital catheterization and interventions: the congenital cardiac catheterization project on outcomes (C3PO). *Methodist Debaque Cardiovasc J*. 2014;10(2):63-67.
35. Bishnoi RN, Everett AD, Ringel RE, Owada CY, **Holzer RJ**, Chisolm JL, Radtke WA, Scott Lim D, Rhodes JF, Jr., Coulson JD. Device closure of secundum atrial septal defects in infants weighing less than 8 kg. *Pediatr Cardiol*. 2014;35(7):1124-1131.
36. Armsby L, Beekman RH, 3rd, Benson L, Fagan T, Hagler DJ, Hijazi ZM, **Holzer R**, Ing F, Kreutzer J, Lang P, Levi DS, Latson L, Moore P, Mullins C, Ruiz C, Vincent R. SCAI expert consensus statement for advanced training programs in pediatric and congenital interventional cardiac catheterization. *Catheter Cardiovasc Interv*. 2014;84(5):779-784.
37. Walters HM, Aguiar CL, Macdermott EJ, Adams A, Barinstein L, **Dayton JD**, Salvatore C, Thimmappa N, Lehman TJ. Takayasu arteritis presenting in the context of active tuberculosis: a pediatric case. *J Clin Rheumatol*. 2013;19(6):344-347.
38. Moore J, Hegde S, El-Said H, Beekman R, 3rd, Benson L, Bergersen L, **Holzer R**, Jenkins K, Ringel R, Rome J, Vincent R, Martin G, Committee AIS. Transcatheter device closure of atrial septal defects: a safety review. *JACC Cardiovasc Interv*. 2013;6(5):433-442.
39. Li N, Wu X, **Holzer RG**, Lee JH, Todoric J, Park EJ, Ogata H, Gukovskaya AS, Gukovsky I, Pizzo DP, VandenBerg S, Tarin D, Atay C, Arkan MC, Deerinck TJ, Moscat J, Diaz-Meco M, Dawson D, Erkan M, Kleeff J, Karin M. Loss of acinar cell IKKalpha triggers spontaneous pancreatitis in mice. *J Clin Invest*. 2013;123(5):2231-2243.

40. Learn CP, **Holzer RJ**, Daniels CJ, Torres AJ, Vincent JA, Moore JW, Armsby LB, Landzberg MJ, Bergersen L. Adverse events rates and risk factors in adults undergoing cardiac catheterization at pediatric hospitals--results from the C3PO. *Catheter Cardiovasc Interv.* 2013;81(6):997-1005.
41. Husain N, Gokhale J, Nicholson L, Cheatham JP, **Holzer RJ**, Cua CL. Noninvasive estimation of ventricular filling pressures in patients with single right ventricles. *J Am Soc Echocardiogr.* 2013;26(11):1330-1336.
42. **Holzer RJ**, Gauvreau K, Kreutzer J, Moore JW, McElhinney DB, Bergersen L. Relationship between procedural adverse events associated with cardiac catheterization for congenital heart disease and operator factors: results of a multi-institutional registry (C3PO). *Catheter Cardiovasc Interv.* 2013;82(3):463-473.
43. **Holzer RJ**, Cheatham JP. Hybrid Procedures in Congenital Heart Disease: Hypoplastic Left Heart Syndrome/Muscular Ventricular Septal Defect/Stenting of Pulmonary Arteries. *Interv Cardiol Clin.* 2013;2(1):23-38.
44. **Holzer R**, Rosen D. Bronchial carcinoid in college freshman with persistent focal wheeze. *J Am Assoc Nurse Pract.* 2013;25(12):641-643.
45. Gupta-Malhotra M, **Kern JH**, **Flynn PA**, Schiller MS, Quaegebeur JM, Friedman DM. Cardiac troponin I after cardiopulmonary bypass in infants in comparison with older children. *Cardiol Young.* 2013;23(3):431-435.
46. El-Said HG, Bratincsak A, Foerster SR, Murphy JJ, Vincent J, **Holzer R**, Porras D, Moore J, Bergersen L. Safety of percutaneous patent ductus arteriosus closure: an unselected multicenter population experience. *J Am Heart Assoc.* 2013;2(6):e000424.
47. Cheatham SL, **Holzer RJ**, Chisolm JL, Cheatham JP. The Medtronic Melody(R) transcatheter pulmonary valve implanted at 24-mm diameter--it works. *Catheter Cardiovasc Interv.* 2013;82(5):816-823.
48. Bishop NB, Zhou TX, Chen JM, Ward MJ, **Carroll SJ**. The impact of gestational age on resource utilization after open heart surgery for congenital cardiac disease from birth to 1 year of age. *Pediatr Cardiol.* 2013;34(3):686-693.
49. Backes CH, Cua C, Kreutzer J, Armsby L, El-Said H, Moore JW, Gauvreau K, Bergersen L, **Holzer RJ**. Low weight as an independent risk factor for adverse events during cardiac catheterization of infants. *Catheter Cardiovasc Interv.* 2013;82(5):786-794.