

Samir Saba, MD, FACC, FHRS

CURRICULUM VITAE

Undergraduate Education and Degrees:

- 08/80-07/85 French Baccalaureate in Mathematics and Physical Sciences, with Honors
- 08/85-07/89 Bachelor of Electrical Engineering
American University of Beirut - School of Engineering and Architecture
Graduated with High Distinction

Medical Education:

- 08/89-06/93 Doctor of Medicine
American University of Beirut - School of Medicine
Graduated with High Distinction

Medical Training:

- 07/93-06/96 Internship and Residency in Internal Medicine
Tufts University - New England Medical Center, Boston, MA
- 07/96-06/98 Fellowship in Cardiovascular Diseases
Tufts University - New England Medical Center, Boston, MA
- 07/98-06/00 Fellowship in Electrophysiology and Arrhythmia
Tufts University - New England Medical Center, Boston, MA

Academic Positions:

- June 2015 Associate Chief of Cardiology, Clinical Affairs
- August 2014 Associate Professor of Medicine with tenure
- July 2011 Associate Professor in Clinical and Translational Science
University of Pittsburgh, Pittsburgh, PA
- January 2010 Associate Professor of Medicine in the tenure track
University of Pittsburgh, Pittsburgh, PA
- December 2005 Director, Cardiac Electrophysiology Section
University of Pittsburgh, Pittsburgh, PA
- April 2005 Assistant Professor of Medicine in the tenure track
University of Pittsburgh, Pittsburgh, PA
- April 2005 Acting Director, Cardiac Electrophysiology Section
University of Pittsburgh, Pittsburgh, PA
- December 2004 Director, Cardiac Electrophysiology Laboratory
Presbyterian University Hospital
University of Pittsburgh, Pittsburgh, PA
- July 2000 Assistant Professor of Medicine
Cardiovascular Institute
University of Pittsburgh, Pittsburgh, PA

Services:

- September 2016 Member of the Technology and Innovative Practice Assessment Committee
University of Pittsburgh Medical Center, Pittsburgh, PA
- September 2016 Member of the Department of Medicine Appointments and Promotions Committee
University of Pittsburgh Medical Center, Pittsburgh, PA

Awards:

- July 1989 Penrose Award¹ - School of Engineering and Architecture
American University of Beirut
- July 1993 Penrose Award¹ - School of Medicine
American University of Beirut
- July 1993 Prime Minister Hariri's Award for Excellence in Medicine
- June 1996 Award for Excellence in Teaching
Tufts University - School of Medicine
- December 1996 Best Presentation Award
New England Electrophysiology Society - Fellows Competition
- December 1998 Best Presentation Award
New England Electrophysiology Society - Fellows Competition
- June 2006 Edward I. Curtis Memorial Teaching Award
- October 2011 Pitt Innovator Award
- January 2012 'Best Doctors For Women' Pittsburgh Magazine
- May 2012 'Best Doctors 2012' Pittsburgh Magazine
- April 2015 'Best Doctors 2015' Pittsburgh Magazine
- May 2016 'Best Doctors 2016' Pittsburgh Magazine
- September 2016 FY2016 Excellence in Patient Experience, Physician and Medical Staff Honor Roll

Board Eligibility and Certification:

1996. Board certified in Internal Medicine
2006 Board recertified in Internal Medicine
2015 Board recertified in Internal Medicine
- 1999 Board certified in Nuclear Cardiology
- 1999 Board certified in Cardiovascular Diseases
2008. Board certified in Cardiovascular Diseases
- 2000 Board certified in Electrophysiology
2008 Board recertified in Electrophysiology

¹ Penrose Award: "Non-cash honorary award based on scholarship, character, leadership, and contribution to the university life to the outstanding graduate of each faculty".

Teaching Experience:

1986-1993 Private Tutor in Physics and Mathematics - American University of Beirut
1996. Internal Medicine Resident - Tufts University, New England Medical Center
1996-2000 Cardiology and Electrophysiology Fellow - Tufts University, New England Medical Center
2000-2010 Assistant Professor of Medicine – University of Pittsburgh
2010- Associate Professor of Medicine – University of Pittsburgh
2011- Associate Professor of Clinical and Translational Science

Medical Licensing:

1996- Commonwealth of Massachusetts
2000- Commonwealth of Pennsylvania

Memberships:

Annual Scientific Session Program Committee of ACC 2008-2010
Who's Who National Register 2004-2005
American College of Physicians
American Medical Association
Massachusetts Medical Society
Fellow of the American College of Cardiology
North American Society of Pacing and Electrophysiology
Pennsylvania Medical Society
ACC Procedures Training Work Group (2003)
ACC Annual Scientific Session Program Committee (2008-2010)
HRS Education committee (2008-2012)
American Heart Association Premium Professional Member
Fellow of the Heart Rhythm Society 2010-
Electrocardiography & Arrhythmias Committee of the Council on Clinical Cardiology AHA (2015-2017)

Editorial Board:

Heart Rhythm Journal (since 2013)
Circulation (since 2016)
Circulation Arrhythmia and Electrophysiology (since 2017)
Heart Rhythm Society Remarkable Reviewer (2017)

Ad hoc Reviewer:

American Journal of Cardiology
Journal of Cardiovascular Electrophysiology
Journal of Interventional Cardiac Electrophysiology (top reviewer 2005)
Medical Science Monitor
Journal of the American College of Cardiology
Journal of the American College of Cardiology - Electrophysiology
Heart Rhythm
American Heart Journal
Indian Pacing and Electrophysiology Journal
Nature Clinical Practice Cardiovascular Medicine
Circulation

Journal of Women's Health
European Journal of Clinical Investigation
American Journal of Kidney Disease
Device Therapy for Heart Failure: Cardiac Resynchronization Therapy
European Heart Journal
Acta Physiologica
Circulation: Heart Failure
Circulation: Arrhythmia and Electrophysiology
Cardiology Journal
Journal of the American Heart Association
AJP- Heart and Circulatory Physiology
New England Journal of Medicine
Journal of Nuclear Cardiology
American Journal of Respiratory and Critical Care Medicine

Abstract Reviewer

Heart Rhythm Society
American College of Cardiology

Grant Reviewer

The Wellcome Trust – UK
American Heart Association – Electrophysiology study section
NHLBI - Clinical and Integrative Cardiovascular Sciences (CICS) study section

Section Editor

NASPE Website – Section on clinical trials of Sudden Cardiac Death

Author: UpToDate chapters on Cardiac Resynchronization Therapy 2017-

Languages: Fluency in English, French, and Arabic

Grants:

- 2001-2002 American College of Cardiology/Procter and Gamble Pharmaceuticals Career Development Award in Arrhythmias: 'Is Female Gender Protective against Sudden Cardiac Death? Insights from a Mouse Model of Heart Failure'. (Principal Investigator, \$40,000) Completed
2002. NIH Program Project Grant: 'The Cardiovascular Effects of Cocaine in Myopathy'. (Co-Investigator, \$629,500) Completed
- 2004-2005 National Heart Foundation Grant: 'Cardiac Resynchronization in Heart failure'. (Principal Investigator, \$25,000) Completed
- 2004 NIH RO1 'Genetic Modulators of Sudden Death' (Co-I, \$1,861,355) Completed
2004. AHA Grant-in-Aid: 'Elucidating the Pathogenesis of Cardiomyopathies Using Mouse Genetic Strategies'(Co-I, \$236,364), Completed
2006. NIH K08 Award: 'Biventricular Pacing in Heart Failure' (Principal Investigator, \$586,250) Completed
- 2008 AHA Grant-in-Aid (0855526D) 'Predictors of Response to Biventricular Pacing in Heart Failure' (Principal Investigator, \$121,000), Completed
- 2008 NIH RO1 'A Clinical and Molecular Analysis of the Brugada Syndrome' (Co-I, \$900,000), Active

- 2011 Boston Scientific physician initiate grant 'Influencing Referral Patterns for Primary Prevention of Sudden Cardiac Death: The Effect of Automated 'Best Practice' Messages on Patients' Referral Patterns to Electrophysiologists and on Rates of Defibrillator Implantations' (principal investigator, \$190,000), Active
- 2012 Basic to Clinical Collaborative Research Pilot Program (BaCCoR): Relationship of Circadian Gene Expression and Cardiac Arrhythmias in Heart Failure Patients (principal investigator), Completed
- 2017 NIH R34 'Cardiac Resynchronization Therapy in Octogenarians: Piloting Pacemakers versus Defibrillators (principal investigator, \$669,444) Active

Patents:

- 2001 Defibrillator for Discrimination Between Supraventricular and Ventricular Tachy-Arrhythmias Based on the Response to Anti-Tachycardia Pacing. (10/717,248) – (Patent number 7,206, 633)
- 2007 Automated Assessment of Atrioventricular and Ventriculoatrial Cardiac Conduction by a New Dual-Chamber Cardioverter Defibrillator as a Novel Method of Discriminating Between Ventricular and Supraventricular Tachyarrhythmias (60/998147) - (Patent Number 8,442,630)
- 2007 Standard surface electrocardiogram (EKG) reconstruction from implanted device electrograms (EGM) (12/233,297)
- 2013 Fiber Optical Imaging System for Intravascular Imaging (UPitt Ref. No. 03076)

Industry Sponsored National PI:

1. Cognate Trial (Boston Scientific) 2009
2. Member of steering committee of AnalyST study (St Jude Medical) 2009
3. Longevity Study (Boston Scientific) 2013
4. SMART MSP (Boston Scientific) 2017

Original Contributions: 233 published manuscript as of February 1, 2018
List can be found at: <https://www.ncbi.nlm.nih.gov/pubmed/?term=saba+samir>

Book Chapters:

1. **Saba S**, London B. Molecular basis of atrial fibrillation. In Schwartzman D, Zenati MA, ed. Innovative Management of Atrial Fibrillation. Blackwell Publishing, 2005:50-64.
2. Estes M, **Saba S**. Cardiac Arrhythmias and Electrophysiology: Diagnostic Techniques. (ACC EPSAP7; March 2009; Book4, pages: 16.2.1-16.2.22)
3. **Saba S**. Sudden Cardiac Death Risk Stratification and Assessment: Primary Prevention Based on Ejection Fraction Criteria. Heart Failure Clinics 2010;7:175-183.
4. Refaat M, **Saba S**. Total Subcutaneous Defibrillators: The Current Status and Future Prospect of a New Technology. Cardiac Electrophysiology Clinics 2011;7:175-183.
5. **Saba S**. Supraventricular tachycardia discrimination in implantable defibrillators. Advances in arrhythmia technologies. (in press)

6. Liu J, **Saba S**, London B. Ventricular Rhythm Disorders and Selection of Patients for Implantable Cardiac Defibrillators. Pittsburgh Critical Care Series. Oxford University Press.
7. **Saba S**. To Extract or Retain a Sterile, Non-Functional Lead: The Case for Extraction. Difficult Decisions in Cardiac Electrophysiology. Cardiac Electrophysiology Clinics. 2015 (in press)
8. **Saba S**, NA Mark Estes III. Implantable and Wearable Defibrillator Therapy. Cardiac Arrhythmias, Pacing and Sudden Death. Kowey, Piccini, Naccarelli, and Reiffel, 2015
9. **Saba S**, Mian Bilal Alam. EKG Primer: Your guide to the cardiology rotation. CreatSpace. Amazon.com Publishing Company 2015

Abstracts:

1. Berul CI, Reddy S, Aronovitz MJ, **Saba S**, Greenwood J, Housman D, Mendelsohn ME. Atrioventricular Conduction Abnormalities in a Mouse Model of Myotonic Dystrophy. PACE 1997;20(207):1101.
2. **Saba S**, VanderBrink BA, Luciano B, Aronovitz MJ, Berul CI, Reddy S, Housman D, Mendelsohn ME, Estes NAM III, Wang PJ. Localization of the Site of Conduction Abnormality in a Mouse Model of Myotonic Dystrophy. JACC 1999;33(2):155A.
3. VanderBrink BA, Link MS, Aronovitz MJ, **Saba S**, Sloan SB, Homoud MK, Estes NAM III, Wang PJ. A New Technique for the Assessment of AV Nodal and InfraHisian Physiology in the Mouse. PACE 1999
4. **Saba S**, Gorodeski R, Yang S, MacAdam D, Link M, Homoud M, Estes NAM III, Wang P. The Use of Correlation Waveform Analysis in the Discrimination between Antegrade and Retrograde Atrial Electrograms during Ventricular Tachycardia. PACE 2000;23(4):728.
5. **Saba S**, Feld G, Yang S, MacAdam D, Link M, Homoud M, Foote C, Estes NAM III, Wang P. Testing of a New Real-Time Computer Algorithm as an Aid to Pace Mapping and Entrainment with Concealed Fusion. PACE 2000;23(4):705.
6. **Saba S**, Zhu W, Joseph S, Link M, Homoud M, Estes NAM III, Wang P. In-Vivo Monophasic Action Potential Recording in a Mouse Heart and its Relation to Ventricular Effective Refractory Period with and without Pharmacologic Intervention. PACE 2000;23(4):558.
7. VanderBrink BA, **Saba S**, Salito C, Paul DL, Zhu W, Link MS, Homoud MK, Estes NAM III, Wang PJ. Insights into Atrioventricular nodal and InfraHisian Conduction Patterns using Connexin-40 Deficient Mice. PACE 2000;23(4):557.
8. **Saba S**, VanderBrink B, Perides G, Glickstein L, Link M, Homoud M, Estes NAM III, Wang P. Cardiac Conduction Abnormalities in a Mouse Model of Lyme Borreliosis. PACE 2000;23(4):640.
9. **Saba S**, Zhu W, Lepore J, Link MS, Homoud MK, Estes NAM III, Wang PJ, Leiden JM. Cardiac Conduction Abnormalities in a Mouse Model of Idiopathic Dilated Cardiomyopathy. J Card Failure 2000;6:44.
10. **Saba S**, Zhu W, Aronovitz MJ, Estes NAM III, Wang PJ, Mendelsohn ME, Karas RH. Gender and Sex Hormone Effects on Cardiac Electrophysiology in the Mouse. Circulation 2000;102:II-338.
11. Zhu W, **Saba S**, Lepore J, Link MS, Homoud MK, Estes NAM III, Wang PJ, Leiden JM. Cardiac Conduction Abnormalities in a Mouse Model of Idiopathic Dilated Cardiomyopathy. Circulation 2000;102:II-211.
12. Saeed M, **Saba S**, Wang PJ, Link MS, Estes NAM III. High Risk of Ventricular Arrhythmia in Long Term Follow-Up of Patients with Idiopathic Dilated Cardiomyopathy and Unexplained Syncope. Circulation 2000;102:II-370.
13. Zhu W, **Saba S**, Sellito C, Paul DL, VanderBrink B, Link MS, Homoud MK, Estes NAM III, Wang PJ. Age-

Related Changes in A-V Conduction in Connexin-40 Deficient Mice. JACC 2001;37(2):103A.

14. Stewart AF, Maeda T, **Saba S**, Brooks S, Salama G, London B. Hypophosphorylation of Connexin40 Mediates Conduction Disease in RTEF-1 Transgenic Mice. (AHA 2001)
15. Estes NAM, Wang PJ, **Saba S**. Invasive Cardiac Electrophysiologic Observations in the Mouse Model. (The New Frontiers of arrhythmias 2002, 15th International Congress)
16. Shusterman V, Aysin B, Bazaz R, Brode S, **Saba S**, Schwartzman D, Ganz L. Slow Changes in the Cardiac Rhythm Envelope and Ventricular Tachyarrhythmias. (NASPE 2002)
17. **Saba S**, Shusterman V, Usiene I, London B. Cardiac Autonomic Modulation by Estrogen in Female Mice Undergoing Ambulatory Monitoring and In Vivo Electrophysiologic Testing. (ACC 2003)
18. **Saba S**, Barrington W, Ganz LI. New algorithm for the discrimination between SVT and VT in patients with dual-chamber defibrillators. (NASPE 2003)
19. Voigt A, **Saba S**. Underutilization of Implantable Cardioverter-Defibrillators in Survivors of Sudden Cardiac Death: Discrepancies by Sex, Race, and Hospital Size (ACC 2004)
20. Simon M, **Saba S**, Spates J, Murali S. Cardiac Resynchronization Therapy for Inotrope-Dependent Advanced Heart Failure Patients: Can We? Should We? (NASPE 2004)
21. **Saba S**, Xi Q, Ganz LI, Heggs K, Clontz R, Parkinson D, Wang PJ, Syed ZA. Arrhythmia Classification via Atrial and Ventricular Morphology (CardioStim 2004)
22. Bedi M, **Saba S**, Aleong R, Ganz LI, Barrington W, Ngwu O, Bazaaz R, London B, McNamara DM, Schwartzman D. The ACE D allele and the NOS3 Asp298 variant increase the risk of Atrial Fibrillation in Heart Failure Subjects (HFSA 2004)
23. **Saba S**, Mathier MA, Liu T, Metzger M, Gursoy E, Hreybe H, Salama G, London B. Reverse remodeling in a novel rabbit model of myocardial infarction and biventricular pacing (AHA 2004)
24. London B, Mathier MA, McTiernan CF, McCurry KR, Xiao X, **Saba S**, Tjandrawan T, Kormos RL, Dawson JJ, Corb M, Zhu X. Myocarditis in baboon hearts injected with adeno-associated virus expressing soluble tumor necrosis factor receptors (AHA 2004)
25. Quigg RJ, **Saba S**, Estes NAM, Schaechter A, Subacius H, Howard A, Kadish A. Lack of Survival Benefit with ICD Placement in Women with NISCM enrolled in the DEFINITE Trial (AHA 2004)
26. Zahid M, Sonel AF, **Saba S**, Good CB. Peri-operative risk of non-cardiac surgery associated with aortic stenosis (AHA 2004)
27. Bedi M, Gujral V, **Saba S**, Ngwu O, Mathier M, McNamara D, Cadaret L, Kormos R, Murali S. Cardiac resynchronization therapy for patients with end-stage heart failure listed for cardiac transplantation (ACC 2005)
28. **Saba S**, Baker L, Ganz LI, Barrington W, Jain S, Ngwu O, Christensen J, Yee R, London B, Brown M. Simultaneous Atrial and Ventricular Anti-Tachycardia Pacing as a Novel Method of Rhythm Discrimination (HRS 2005)
29. Hreybe H, Ezzeddine R, Ganz LI, London B, **Saba S**. Severity of Heart Failure as a Risk Factor for Inappropriate Defibrillator Shocks (HRS 2005)
30. Williams J, Ganz LI, Shusterman V, London B, **Saba S**. Higher-Order Polynomial Modeling of Rabbit Epicardial Ventricular Electrograms (HRS 2005)
31. Voigt A, **Saba S**. Biventricular Pacing Reduces Arrhythmic Burden in Heart Failure Patients (HFSA 2005)
32. Bedi M, Hreybe H, Ezzeddine R, Barrington W, Ganz LI, Jain S, Ngwu O, London B, **Saba S**. Indications for Internal Cardioverter Defibrillator Implantation Predict Time to First Shock and the Modulating Effect of b-

Blockers (HFSA 2005)

33. Cannesson M, Suffoletto MS, Dohi K, **Saba S**, Gorcsan J III. Which tissue Doppler approach is superior to quantify dyssynchrony and predict response to cardiac resynchronization therapy? (AHA 2005)
34. Suffoletto MS, **Saba S**, Cannesson M, Gorcsan J III. Left ventricular lead position coupled with site of latest mechanical activation by novel speckle tracking echocardiography predicts improvements in ejection fraction following resynchronization therapy (AHA 2005)
35. Suffoletto MS, Cannesson M, Tanabe M, **Saba S**, Gorcsan J. Relationship of Tissue Doppler Dyssynchrony and Acute Hemodynamic Response to Later Reverse Remodeling After Resynchronization Therapy. (ACC 2006)
36. Williams J, **Saba S**. Polynomial Modeling of Ventricular Shock Electrogram for Rhythm Discrimination in Implantable Devices. (ACC 2006)
37. **Saba S**, Mehdi H, London B. Biventricular Pacing Restores Erg levels in a Rabbit Model of Myocardial Infarction. (HRS 2006)
38. Voigt A, Shalaby A, **Saba S**. Cardiac Rhythm Management Device Infections in the United States from 1996 through 2003: An Epidemic on the Rise? (HRS 2006)
39. Bedi M and **Saba S**. QRS Width Predicts Site of Latest Left Ventricular Activation as Measured by Tissue Doppler Imaging. (Cardiostim 2006)
40. Suffoletto M, Tanabe M, **Saba S**, Gorcsan J III. Acute improvements in ventricular synchrony by speckle tracking radial strain are associated with improvements by longitudinal tissue Doppler after cardiac resynchronization therapy. (ASE 2006)
41. Tanabe M, Cannesson M, Suffoletto M, Martin R, Leon A, **Saba S**, Merlino J, Gorcsan J III. Post-systolic peak velocities affect the predictive value of dyssynchrony analysis for cardiac resynchronization therapy. (ASE 2006)
42. Shalaby A, ElSaid A, **Saba S**. Coronary sinus access by intracardiac ultrasound for cardiac resynchronization therapy (Cardiostim 2006)
43. Bedi M, Suffoletto M, Tanabe M, Gorcsan J, **Saba S**. Effect of Scar Site on Acute Electrocardiographic and Echocardiographic Parameters in Ischemic Patients Undergoing Cardiac Resynchronization Therapy (HFSA 2006)
44. Bedi M, Suffoletto M, Tanabe M, Gorcsan J, **Saba S**. Effect of Etiology of Heart Failure on Patterns of Electrocardiographic and Echocardiographic Changes after Cardiac Resynchronization Therapy (HFSA 2006)
45. Suffoletto M, Tanabe M, **Saba S**, Gorcsan J. Improvement in Speckle Tracking Radial Strain Dyssynchrony After Cardiac Resynchronization Therapy (AHA 2006)
46. Adelstein E, **Saba S**. Scar Burden by Myocardial Perfusion Imaging Predicts Echocardiographic Response to Cardiac Resynchronization Therapy in Ischemic Cardiomyopathy (AHA 2006)
47. Ahmad F, Lage ML, Janczewski AM, Tobita K, Smith S, **Saba S**, Conner DA, Tinney JP, Rager J, Moskowitz IP, Perez-Atayde AR, Keller BB, Mathier MA, Shroff S, Seidman CE, Seidman JG. Cardiomyopathies Secondary to Cardiac Troponin T Mutations Result from Abnormal Protein Function Rather than Haploinsufficiency (AHA 2006)
48. Voigt A, **Saba S**, Shalaby A. Elevated Pulmonary Arterial Pressures Predict Mortality and Heart Failure Admission in Cardiac Resynchronization Therapy-Defibrillator Recipients (ACC 2007)
49. Adelstein E, Saba S. Scintigraphic Abnormalities by Myocardial Perfusion Imaging Predict Echocardiographic Response to Cardiac Resynchronization Therapy in Nonischemic Cardiomyopathy (ACC 2007)
50. Thomas NC, Bax JJ, Suffoletto MS, Tanabe M, **Saba S**, Schalij MJ, Tops LF, Gorcsan J. Clinical and

echocardiographic characterization of non-responders to cardiac resynchronization therapy (ACC 2007)

51. Tanabe M, Suffoletto MS, **Saba S**, Martin RP, Merlino J, Leon AR, Gorcsan J. Comparison of the tissue Doppler Yu index to the opposing wall delay method to predict response to cardiac resynchronization therapy: Impact of post-systolic peak velocities (ACC 2007)
52. Gorcsan J, Suffoletto MS, Bleeker GB, Thomas NC, Tanabe M, **Saba S**, Tops LF, Schalij MJ, Bax JJ. Predictive value of combined longitudinal and radial dyssynchrony for response to cardiac resynchronization therapy (ACC 2007)
53. Williams J, **Saba S**. Effect of Ischemia on Implantable Defibrillator Intracardiac Shock Electrograms (HRS 2007)
54. Singla I, Hreybe H, **Saba S**. Survivors of Cardiac Arrest in the Context of Acute Myocardial Infarction: Shouldn't They Receive a Defibrillator? (HRS 2007)
55. Voigt A, Shalaby A, Albany C, **Saba S**. Utilization of Beta Blockers in Patients Receiving Cardiac Resynchronization Therapy: Are We Achieving Optimal Pharmacologic Therapy? (HRS 2007)
56. Shalaby A, Voigt A, El Saeed A, Albany C, **Saba S**. Baseline Renal Insufficiency Predicts Poor Outcome in Cardiac Resynchronization Therapy Recipients. (HRS 2007)
57. Adelstein E, **Saba S**. Right Atrial Pacing May Increase the Risk of Post-Implant Atrial Fibrillation in Cardiac Resynchronization Therapy. (HRS 2007)
58. Wireless Integrated Network for Nurses "WINN": A Winning Innovation for Staff and Patient Safety (3rd International Conference on Rapid Response Systems: Team Systems for Safety)
59. Jinjuvadia R, Bedi M, Adelstein E, **Saba S**, Jain S, Ngwu O. The Impact of Atrioventricular Junctional Ablation in Patients with Atrial Fibrillation Receiving Cardiac Resynchronization Therapy (HFSA 2007)
60. Miske G, Gorcsan J, Tanabe M, **Saba S**. Proximity of lead position to site of latest mechanical activation is associated with improvements in ventricular dyssynchrony and function following resynchronization therapy (AHA 2007)
61. Adelstein E and **Saba S**. Right Atrial Pacing and the Risk of Post-Implant Atrial Fibrillation in Cardiac Resynchronization Therapy Recipients (AHA 2007)
62. **Saba S**, Voigt A, Adelstein E, Tanabe M, Suffoletto M, Gorcsan J. Acute Decrease in Radial but Not Longitudinal Dyssynchrony Predicts Improved Functional Capacity Six Months after Cardiac Resynchronization Therapy (ACC 2008)
63. Miske G, Tanaka H, Adelstein E, Tanabe M, Soman P, **Saba S**, Gorcsan J. Impact of Scar Burden and Dyssynchrony on Response to Cardiac Resynchronization Therapy In Ischemic Cardiomyopathy (ACC 2008)
64. Adelstein E, Voigt A, **Saba S**. Scar Location By Myocardial Perfusion Imaging Predicts Mortality After Cardiac Resynchronization Therapy (ACC 2008)
65. Singla I, Hreybe H, Agarwal S, **Saba S**. Clinical correlates of acute myocardial infarction recurrence in patients presenting at a tertiary care hospital in the US (World Congress of Cardiology 2008)
66. Agarwal S and **Saba S**. Detection, awareness, counseling and control of hypertension in the US adult age 18 years of more: A NHANES 1999-2004 study.
67. Adelstein E, Voigt A, **Saba S**. Cardiac Resynchronization Does Not Narrow Mortality Gap Between Ischemic and Non-Ischemic Patients With Long-Term Follow-Up (HRS 2008)
68. Adelstein E and **Saba S**. Baseline Right Bundle Branch Block Predicts Increased Mortality and Lower Response Rates With Cardiac Resynchronization (HRS 2008)
69. Adelstein E and **Saba S**. Renal Insufficiency Predicts Elevated Mortality and Non-Response to Cardiac

Resynchronization (HRS 2008)

70. Voigt A, Bhattacharya S, Adelstein E, **Saba S**, Bermudez C. Do Implantable Cardioverter-Defibrillators Impact Mortality Following Left Ventricular Surgical Reconstruction? (HRS 2008)
71. Singla I, Agarwal S, Hreybe H, **Saba S**. clinical correlates of acute myocardial infarction recurrence in patients presenting at a tertiary care hospital in the US. (WCC 2008)
72. Oyenuga O, Hara H, Tanaka H, Kim HN, **Saba S**, Gorcsan J. Usefulness of echocardiographic measures of dyssynchrony in patients with borderline QRS duration for selection for resynchronization therapy (AHA 2008)
73. Hara H, Oyenuga O, Tanaka H, Kim HN, **Saba S**, Gorcsan J. Additive value of interventricular mechanical delay to intraventricular dyssynchrony for predicting response to cardiac resynchronization therapy (AHA 2008)
74. Adelstein E, **Saba S**. Scar Burden From Prior Infarction, Not Heart Failure Etiology, Predicts Outcomes After Cardiac Resynchronization (ACC 2009)
75. **Saba S**, Volosin K, Yee R, Brown M. Combined Atrial and Ventricular Anti-Tachycardia Pacing as a Novel Method of Rhythm Discrimination (HRS 2009)
76. Adelstein E, **Saba S**. Echocardiographic Response to Cardiac Resynchronization Predicts Diminished Risk of Ventricular Tachyarrhythmias (HRS 2009)
77. Mendenhall GS, **Saba S**. EKG Reconstruction and Analysis From Implanted Cardiac Devices (HRS 2009)
78. Brumberg G, **Saba S**, Shalaby A. Psychiatric Disorders Impart Poor Prognosis to Cardiac Resynchronization Therapy Recipients (HRS 2009)
79. Jain S, Lakshmi P, **Saba S**. Intensified Remote Monitoring in Medtronic Fidelis Patients (HRS 2009)
80. Bazaz R, Winston B, **Saba S**. In-vivo Crater Formation During Ablation in the Coronary Cusp Region: Biophysical Insights Provided by a Retrograde Aortic Ice-guided Approach (HRS 2009)
81. Hara H, Tanaka H, Oyenuga O, Kim HN, Schwartzman D, **Saba S**, Gorcsan J. Speckle tracking anteroseptal strain patterns predict response after cardiac resynchronization therapy. Accepted to the American Society of Echocardiography National Meeting 2009. J Am Soc Echocardiogr 2009 (In Press).
82. Tanaka H, Hara H, **Saba S**, Gorcsan J. Mechanical dyssynchrony in heart failure patients with right bundle branch block Accepted to the American Society of Echocardiography National Meeting 2009. J Am Soc Echocardiogr 2009 (In Press).
83. Hara H, Tanaka H, Oyenuga O, Kim HN, Schwartzman D, **Saba S**, Gorcsan J. Differences in dyssynchrony and ejection fraction response to cardiac resynchronization therapy in patients with and without left bundle branch block. Accepted to the American Society of Echocardiography National Meeting 2009. J Am Soc Echocardiogr 2009 (In Press). (Featured Moderated Presentation).
84. Tanaka H, Hara H, **Saba S**, Gorcsan J. Three- Dimensional speckle tracking strain to quantify ventricular dyssynchrony in patients referred for resynchronization therapy. Accepted to the American Society of Echocardiography National Meeting 2009. J Am Soc Echocardiogr 2009 (In Press). (Featured Moderated Presentation).
85. Soman P, **Saba S**, Adelstein E. Feasibility of a Novel Protocol for Serial Assessment of Left Ventricular Synchrony by Gated SPECT Before and After Cardiac Resynchronization Therapy With a Single Injection of Radiotracer (ASNC 2009)
86. **Saba S**, McTiernan C, Gutmann R, Adelstein E, London B. Clinical Improvement After Cardiac Resynchronization Therapy Foretells Lower Serum Levels of Biomarkers Reflecting Cardiac Collagen Deposition. (AHA 2009)
87. Mehdi H, Frangiskakis JM, Grimley S, Gutmann R, Bloom HL, Dudley SC, Ellinor PT, Shalaby A, Weiss R, **Saba S**, McNamara D, London B. *NOS1AP* is Associated With Arrhythmias in a Heart Failure Population With

Severe LV Dysfunction. (AHA 2009)

88. Tanaka H, Adelstein EC, Hara H, **Saba S**, Gorcsan J. Comparison of long-term response to resynchronization therapy in patients in chronic right ventricular pacing to those with intrinsic left bundle branch block (AHA 2009)
89. Tanaka H, Haberman S, Hara H, **Saba S**, Gorcsan J. Characteristics and response to cardiac resynchronization therapy in heart failure patients with left bundle branch block and atypical dyssynchrony (AHA 2009)
90. Tanaka H, Oyenuga O, Habib P, **Saba S**, Gorcsan J. Three-dimensional radial, circumferential and longitudinal speckle-tracking strain to quantify dyssynchrony. Accepted to the American College of Cardiology National Meeting 2010. J Am Coll Cardiol 2010 (In Press).
91. Oyenuga O, Habib PJ, Tanaka H, Haberman SC, Adelstein EC, **Saba S**, Gorcsan J. Survival benefit from cardiac resynchronization therapy in patients with borderline QRS duration. Accepted to the American College of Cardiology National Meeting 2010. J Am Coll Cardiol 2010 (In Press)
92. Tanaka H, Oyenuga O, Habib P, Haberman S, **Saba S**, Gorcsan J. Clinical and echocardiographic characteristics of heart failure patients with wide QRS but without mechanical dyssynchrony and their response to resynchronization therapy. Accepted to the American College of Cardiology National Meeting 2010. J Am Coll Cardiol 2010 (In Press)
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Presentations:

1. Localization of the Site of Conduction Abnormality in a Mouse Model of Myotonic Dystrophy. (ACC 1999)
2. The Use of Correlation Waveform Analysis in the Discrimination between Antegrade and Retrograde Atrial Electrograms during Ventricular Tachycardia (NASPE 2000).
3. Testing of a New Real-Time Computer Algorithm as an Aid to Pace Mapping and Entrainment with Concealed Fusion (NASPE 2000).
4. In-Vivo Monophasic Action Potential Recording in a Mouse Heart and its Relation to Ventricular Effective Refractory Period with and without Pharmacologic Intervention (NASPE 2000).
5. Cardiac Conduction Abnormalities in a Mouse Model of Lyme Borreliosis (NASPE 2000).
6. Cardiac Conduction Abnormalities in a Mouse Model of Idiopathic Dilated Cardiomyopathy. (Heart Failure Society of America 2000)
7. Gender and Sex Hormone Effects on Cardiac Electrophysiology in the Mouse. (AHA 2000)
8. Invasive Cardiac Electrophysiologic Observations in the Mouse Model. (The New Frontiers of arrhythmias 2002, 15th International Congress)
9. Cardiac Autonomic Modulation by Estrogen in Female Mice Undergoing Ambulatory Monitoring and In Vivo Electrophysiologic Testing. (ACC 2003)
10. New algorithm for the discrimination between SVT and VT in patients with dual-chamber defibrillators. (NASPE 2003)
11. Arrhythmia Classification via Atrial and Ventricular Morphology (CardioStim 2004)
12. Reverse remodeling in a novel rabbit model of myocardial infarction and biventricular pacing (AHA 2004)
13. Simultaneous Atrial and Ventricular Anti-Tachycardia Pacing as a Novel Method of Rhythm Discrimination (HRS 2005)
14. Biventricular Pacing Restores Erg levels in a Rabbit Model of Myocardial Infarction. (HRS 2006)
16. Biventricular Pacing Restores Erg Levels in a Rabbit Model of Myocardial Infarction (Cardiostim 2006)
17. Combined Atrial and Ventricular Anti-Tachycardia Pacing as a Novel Method of Rhythm Discrimination (HRS 2009)
18. Simultaneous Atrial and Ventricular Pacing Can Separate Atrial Tachycardia from Atrioventricular Nodal Reentrant Tachycardia (AHA 2010)
19. NOS1AP Polymorphisms Affect NOS1AP RNA Levels in Cardiac Tissue Recovered from Extracted Pacemaker and Defibrillator Leads (ACC 2011)
20. A Randomized Controlled Trial of Echocardiographic-Guided Lead Placement for Cardiac Resynchronization Therapy: Results of the STARTER Study (HRS LBCT 2012)
21. Left ventricular dyssynchrony predict ventricular tachyarrhythmias in patients with severely reduced left ventricular systolic function. (HRS 2013)
22. Differences in Mortality and Risk of Shocks from ICD and CRT-D Devices According to Patient Age at Implant

(HRS 2015)

23. Racial Disparities In Risk Of Stroke And Mortality Among Patients Undergoing Rhythm Control Of Atrial Fibrillation (AHA ISC 2016)
24. Anticoagulation Use and Clinical Outcomes Following Major Bleeding on Dabigatran or Warfarin in Atrial Fibrillation (AHA 2016)

Invited Presentations:

1. 'Techniques and Applications of Invasive Cardiac Electrophysiology in the Mouse'. Toronto General Hospital (2000)
2. 'Evaluation and Management of Patients with Syncope'. Cardiac Arrhythmia Update, Pittsburgh, PA (2000)
3. 'Update on Invasive Cardiac Electrophysiology in the Mouse', Marilleva, Italy (2002)
4. 'Evaluation and Management of Patients with Syncope'. Medical Grand Rounds. McKeesport Hospital, PA (2003)
5. 'Prevention of Sudden Cardiac Death in Heart Failure'. Heart Failure Symposium, Pittsburgh, PA (2003)
6. 'Pacing of the Failing Heart: Myocardial Rejuvenation Through Electrical Stimulation'. Medical Grand Rounds. University of Pittsburgh Presbyterian Hospital (June 2004)
7. 'Pacing of the Failing Heart: Myocardial Rejuvenation Through Electrical Stimulation'. Medical Grand Rounds. University of Pittsburgh Shady Side Hospital (July 2004)
8. Careers in Academic EP: What the EP Fellow Needs to Know: Choosing a Mentor (HRS 2007)
9. Avoiding Disasters: How to Minimize Complications with Device Implantations: Reversing the Growing Device infection Epidemic: How to Avoid and Manage Device Infections (HRS 2007)
10. Echo-guided versus Echo-blinded LV Lead positioning in CRT (Cardiology GR, UPMC, 9/18/2007)
11. The role of CRT in patients with AF: Do we have enough data? (HRS 2008)
12. CRT in patients with class III NYHA and a normal QRS duration: Does it work?
13. Advances in cardiology April 11-13, 2008 (Program Director)
14. PA ACC EP symposium for cardiology fellows: Management of the patient presenting with Wide complex Tachycardia (Bedford Springs, PA, May 2008)
15. PA ACC EP symposium for cardiology fellows: Management of the patient presenting with Palpitations (Bedford Springs, PA, May 2008)
16. Improving the success of cardiac resynchronization therapy: patient selection, implantation, and programming (ACC 2009)
17. Sudden Cardiac Death: Epidemiology, Etiology, and Evaluation (ACC 2009)
18. Interpretation of ICD and CRT Recordings: the best of the best (HRS 2009)
19. 'Cardiac Rhythm Management Device Infections' (Cardiology Grand rounds at Mercy Hospital, Pittsburgh, PA 3/27/09)
20. 'Technical Aspects of Tachycardia Therapy'. Cardiac rhythm Device Therapy Certification Exam 2009.

Sponsored by Ohio State University (June 2009)

21. 'Cardiac Defibrillator case Studies with Stored EGM'. Cardiac rhythm Device Therapy Certification Exam 2009. Sponsored by Ohio State University (June 2009)
22. Clinical Improvement After Cardiac Resynchronization Therapy Foretells Lower Serum Levels of Biomarkers Reflecting Cardiac Collagen Deposition. (AHA 2009)
23. Cardiac Rhythm Management Devices: An Anesthesiologists Perspective. Anesthesia Grand Rounds. University of Pittsburgh (April 2010)
24. Update on Device Management of Heart Failure: What we've learned and what we're still trying to learn. Conemaugh 3rd Annual Cardiovascular Symposium (April 2010)
25. Heart Failure Patients with Class III-IV with a Narrow QRS Complex: Should We Proceed to CRT? (HRS 2010)
26. Starting an Extraction program: Getting you ducks in a row (Management of Cardiac Implantable Lead Systems and Complications 2010: Guidance from the Experts), The Ohio State University Medical Center, Columbus, OH
27. Cardiac Implantable Electronic Devices: Beyond Implantation and Extraction. Cardiology Grand Rounds, Mercy Hospital, Pittsburgh, PA 12/17/2010
28. Cardiac Implantable Electronic Devices: Beyond Implantation and Extraction. Cardiology Grand Rounds, Minnesota Heart Institute, Minneapolis, MN 1/10/2011
29. Eastern Update in Advanced CIED and Lead Management: Superfluous and Non-Functional Leads, Extract or Abandon? (Miami, 6/11/11)
30. Stanford Biodesign New Arrhythmias Technology Retreat: New Defibrillator Algorithms (Boston, MA May 2012)
31. Effectiveness of Defibrillators in Octogenarians (HRS 2012)
32. Using the EKG for Differentiation and Localization of Wide Complex Tachycardia (HRS 2012)
33. Optimizing HF patients' response to cardiac resynchronization therapy (DUKE CLINICAL MEDICINE SERIES CARDIOLOGY CONFERENCE 2012)
34. Cardiac Resynchronization Therapy: Cardiac Stimulation for Heart Failure Management (Medical GR University of Pittsburgh Medical Center 11/2/2012)
35. Wide Complex Tachycardia. (HRS 2013)
36. Acute Arrhythmia Management (Medical GR University of Pittsburgh Medical Center 6/24/2013)
37. Stanford Biodesign New Arrhythmias Technology Retreat 2014: Novel ICD Algorithms (Stanford, May 2014)
38. Chair Session on Established and Emerging Applications of Radionuclide Imaging in Electrophysiology (HRS 2014)
39. Chair Session on CIED Infections: Prevention, Diagnosis, and Management (HRS 2014)
40. Chair Session on Outcomes in CRT (HRS 2014)
41. New Frontiers in Atrial Fibrillation invited discussion as part of the Cardiovascular Care, Quality & Outcomes in the New Healthcare Era: An Interactive Forum (June 2014)

42. Stanford Biodesign New Arrhythmias Technology Retreat 2015: Novel ICD Algorithms (Boston, May 2015)
43. Chair session on CRT - New Approaches in Technology and Optimization (HRS 2015)
44. Differentiation of SVT Mechanism: Making the Correct Diagnosis (HRS 2015)
45. Echo-Guided LV Lead Placement in Non-LBBB Patients (HRS 2015)
46. SVT Management for the Allied Professionals (HRS 2016)
47. Stanford Biodesign New Arrhythmias Technology Retreat 2016: Novel ICD Algorithms (San Francisco, May 2016)
48. Joint ANMCO-ACC Symposium on Cardiac Resynchronization Therapy: Implantable Defibrillators in Octogenarians: A controversial Indication of ICD Therapy (Rimini-Italy June 2, 2016)
49. Cardiac resynchronization Therapy: Who benefits from it and who does not? (AHA 2016)
50. AHA Strive to Revive Conference: Implantable Defibrillators and Other Related Topics. Pittsburgh, PA (November 2016)
51. Medical Grand Rounds 'The Year in Cardiology', University of Pittsburgh Medical Center, February 2017
52. 'My daughter's school bus driver needs an ICD', Case Based Tutorial entitled 'Planes, Trains and Automobiles: Practical Management of EP Patients With High Risk Occupations' (HRS 2017)
53. Medical Grand Rounds 'From Bench (Kitchen Table) to Venture Capital to Bedside: The Evolution/Revolution of Devices in Cardiology', University of Pittsburgh Medical Center, February 2018