

MIKEL DWAIN SMITH, M.D.

Professor of Medicine

Director, Adult Echocardiography Laboratory
University of Kentucky Medical Center

PERSONAL DATA

Address: (Office) Division of Cardiology
University of Kentucky Medical Center
Kentucky Clinic, Room L-543
740 South Limestone
Lexington, Kentucky 40536-0084
Telephone: (859) 323-5479

Birth Place: Eugene, Oregon

Citizenship: United States

EDUCATION

<u>Year</u>	<u>Degree</u>	<u>Institution</u>
1970	High School	Paducah Tilghman High School Paducah, Kentucky
1973	Bachelor of Science (Biology) Summa cum laude	Murray State University Murray, Kentucky

POST GRADUATE TRAINING

<u>Year</u>	<u>Degree</u>	<u>Institution</u>
1977	M.D.	University of Kentucky College of Medicine Lexington, Kentucky
1977-1978	Internship in Medicine	Medical College of Virginia Richmond, Virginia
1978-1980	Resident in Medicine	Medical College of Virginia Richmond, Virginia
1980-1982	Fellow in Cardiology	Medical College of Virginia Richmond, Virginia

ACADEMIC APPOINTMENTS

<u>Year</u>	<u>Position</u>	<u>Institution</u>
1982-1983	Instructor in Medicine/Cardiology	University of Kentucky College of Medicine Lexington, Kentucky
1983-1987	Assistant Professor of Medicine/Cardiology	University of Kentucky College of Medicine Lexington, Kentucky
1987-1992	Associate Professor of Medicine/Cardiology (with tenure-1987)	University of Kentucky College of Medicine Lexington, Kentucky
1987-1997	Director, Cardiovascular Fellowship Training Program	University of Kentucky College of Medicine Lexington, Kentucky
1989-present	Director, Adult Echocardiography Laboratory	University of Kentucky College of Medicine Lexington, Kentucky
1992-present	Professor of Internal Medicine/ Cardiology	University of Kentucky College of Medicine Lexington, Kentucky
1997-present	Associate Chairman for Academic Affairs Department of Internal Medicine	University of Kentucky College of Medicine Lexington, Kentucky
2001-present	Medical Director Cardiovascular Sonographer Training Program	St. Catharine College Bardstown, Kentucky

OTHER EMPLOYMENT PERTAINING TO CURRENT PROFESSIONAL APPOINTMENTS

<u>Year</u>	<u>Position</u>	<u>Institution</u>
1987-1991	Echo Consultant	Molecular Biosystems, Inc. San Diego, California
1987-1989	Echo Consultant	Berlex Laboratories (Schering)

Berlin, West Germany

1988-1992 Echo Consultant Kings Daughters Memorial Hospital
Frankfort, Kentucky

1990-1994 Cardiovascular Consultant/Staff Physician Kings Daughters Memorial Hospital
Frankfort, Kentucky

HONORS

1969 National Merit Scholar Finalist

1969-1970 Who's Who Among American High School Students

1970 American Society of Chemical Engineers Award, Paducah
Tilghman High School, Paducah, Kentucky

1971 Outstanding Freshman Biology Student, Murray State University

1971-1973 Beta Beta Beta, National Biology Honor Society
President, MSU Chapter 1972-73

1972-1973 Alpha Chi Honor Society

1973 Bausch and Lomb Science Award:
Outstanding Senior Biology Student, Murray State University

1973 Summa Cum Laude, Murray State University:
Cumulative GPA 4.0/4.0

1973 Who's Who in American Colleges and Universities

1973-1977 Robert Wood Johnson Scholarship Award,
University of Kentucky College of Medicine

1995 Chairman's Award for Excellence in Teaching
Department of Internal Medicine
University of Kentucky College of Medicine

1996 American College of Physicians - Kentucky Chapter
Outstanding Teacher Award
University of Kentucky College of Medicine

1997 Who's Who in Medicine and Healthcare

First Edition, 1997-98

CERTIFICATION AND LICENSURE

a) Board Certification:

	<u>Date</u>	<u>Number</u>
Diplomate, National Board of Medical Examiners	7/1/78	188055
Diplomate, American Board of Internal Medicine	9/9/80	075853
Subspecialty Certification: Cardiovascular Disease	11/20/85	075853
American Society of Echocardiography - Examination of Special Competency in Echo	6/6/96	183
American College of Cardiology and Institute for Clinical Evaluation of ECG EXAM: Proficiency in Interpretation of Electrocardiograms	9/15/99	000122
Advanced Cardiac Life Support (ACLS) Provider	6/17/00	H5899
Certified in Basics of Radioisotope Handling (Nuclear Medicine)	2/18/01	
Board Certified in Nuclear Cardiology	10/30/01	2211

b) Licensure:

<u>State</u>	<u>Date</u>	<u>Perm/Temp</u>	<u>Number</u>
Virginia	1977-1982	Temporary	0101-03671
Kentucky	1982	Permanent	22018
Drug Enforcement Administration (DEA)			1982-present

PROFESSIONAL AFFILIATIONS

American College of Physicians, 1980-1982

Fellow, American College of Cardiology, 1987-present

American Society of Echocardiography, 1985-present
Board of Directors, 1994-1997

Fellow, American Heart Association, Council on Clinical Cardiology, 1992-present

Member, Laennec Society, American Heart Association, 1993-present

COMMITTEES

Medical Grand Rounds Planning Committee, University of Kentucky Medical Center, 1983-1987

Medical Records Utilization and Review Committee, 1985-1988

Graduate Medical Education Committee, 1987-1989

Ad Hoc Committee on Medicine Residency, 1988-1990

Internal Medicine Chairman's Advisory Committee, 1988-1992

Internal Medicine Residency Education Committee, 1991-1992

Cardiology Chief Search Committee, University of Kentucky, 1992-1996; 1998-2000

American Heart Association, Committee on Echocardiography, 1992-1994

University of Kentucky College of Medicine Committee on Faculty Appointments, Appeals, Promotions and Tenure, 1993-1996

American Society of Echocardiography, WebSite Committee, 1997-1999

American Society of Echocardiography, Committee on Training & Credentialing, 1993-2000

Department of Internal Medicine, Ad Hoc Committee on Resident and Fellow Training Programs, 1995-1997

Associate Chairman for Academic Affairs, Internal Medicine, University of Kentucky, 1997-present

Chairman, Appointments, Promotion, and Appeals Committee
Department of Internal Medicine, 1997-present

University of Kentucky College of Medicine Committee on Conscious Sedation, 1999-present

Master Thesis Committee (1998-99) for Tina Julian, M.S. Wenner-Gren (NASA) Research Labs, Lexington, KY. "Volume Changes of Heart Chambers During 6° Head-Down Tilt Measured by ECG-Gated MRI".

Ophthalmology Chair Search Committee, University of Kentucky, July 2002

Preventive Medicine Chair Search Committee, University of Kentucky, August 2002

Cardiology Steering Committee, 2003 – present

Internal Medicine Resident Evaluation Committee, 2003 - present

SERVICE TO EDITORIAL BOARDS

Journal of the American Society of Echocardiography, 1987-present

Editorial board, 1991-1997

Ad Hoc Reviewer for:

American Heart Journal

Journal of the American College of Cardiology

Journal of the American Society of Echocardiography

GRANTS/FUNDING

University of Kentucky PSP Grant-1984-1985 (\$8,600). Correlation of Doppler Ultrasound Velocities with Cardiac Catheterization Gradients in Canine Aortic Stenosis. Principal Investigator.

American Critical Care-1985-1986 (\$40,000). Effect of Esmolol on Left Ventricular Function in Patients with Coronary Artery Disease. Principal Investigator.

American Heart Association, Kentucky Affiliate-1986-1987 (\$22,000). Infarct Imaging Using Computer-Enhanced 2D-Echocardiography. Co-Investigator with Jonathan Elion, M.D.

American Heart Association, Fellowship Award 1984-1985. Quantitation of Aortic Stenosis by Doppler Ultrasound. Faculty Sponsor for Marcelo Branco, M.D.

Tobacco and Health Research Institute-1986-1987 (\$24,000). Characterization of Human Natural Killer (NK) Cells Within Various Pulmonary Compartments and Evaluation of Changes in NK Activity in Smokers With and Without Chronic Obstructive Pulmonary Disease. Co-Investigator with Ernest Marshall, M.D.

National Institutes of Health-1984-1985 (Approved but not funded). Evaluation of Prosthetic Heart Valves by Doppler Ultrasound. Co-Investigator with Anthony N. DeMaria.

National Institutes of Health-1985-1986 (Approved but not funded). Role of Platelet Aggregates in Intracardiac Thrombosis. Co-Investigator with Cheryl Mahony, M.D.

American Heart Association, Kentucky Affiliate. Fellowship Award-1987-1988 (\$20,000). Assessment of Left Ventricular Diastolic Function by Exercise Doppler. Principal Investigator and Sponsor (Niksa Drinkovic).

Short Term Educational Leave-March 24-25, 1988 (Funding of Expenses to Attend Course "2D Trans-Esophageal and Epicardial Echocardiography" in Atlanta, GA).

Corometrics (\$3,000) Educational Grant to National Learning Center (Heart House) to Sponsor Course, December 6-8, 1989.

Molecular Biosystems, Inc. (Mallinkrodt)-1988-1989 (\$38,000). Efficacy and Safety of Intravenous Alburnex Injections for Enhancing Image Contrast in Echocardiography. Principal Investigator in Multicenter Trial.

Berlex Labs (Schering)-1989-1990 (\$15,000). Evaluation of LV Function in Dogs Using SHU-508, a New Transpulmonary Echo Contrast Agent. Co-Investigator with Anthony N. DeMaria.

Molecular Biosystems, Inc. (Mallinkrodt)-1989-1990 (\$50,000). Efficacy of High-Dose Intravenous Alburnex^R in Technically Difficult Echoes. Principal Investigator in Multicenter Trial.

Acuson (\$5,000) Educational Grant to cover production costs of Book Chapter: Evaluation of Valvular Regurgitation by Doppler; 1991 Cardiology Clinics.

Sepracor, Inc.-1991-1992 (\$100,000). Single Oral Dose Pharmacokinetic and Pharmacodynamic Comparison of S-Atenolol and Racemic Atenolol (Tenormin) in Healthy Adults. Co-Principal Investigator with G. Dennis Clifton, Pharm.D.

American Lung Association, Kentucky Affiliate-1991-ongoing (\$15,000). The Role of Atrial Natriuretic Peptide in Cor Pulmonale. Co-Principal Investigator with J.W. McConnell.

Medtronic (\$1,500) Educational Grant for National Learning Center (Heart House) Course, December 14-16, 1992.

Burroughs Wellcome Co.-1992-1993 (\$235,000). Acute Dose Tolerance and Pharmacokinetics of Oral 104U85HCl in Healthy Male Volunteers. Co-Principal Investigator with Drs. Dennis Clifton, Daniel Wermeling (College of Pharmacy).

Berlex Laboratories-1994-95 (\$32,000). Safety and Efficacy of Levovist for Enhancing Echo/Doppler Images in Humans. Principal Investigator for UK Site in Multicenter Trial.

DuPont Pharma (\$4,000) Educational Grant for National Learning Center (Heart House) Course. January 10-12, 1994.

Bracco s.p.a.-1994-95 (\$50,000). Efficacy of Contrast Echo in Enhancing LV Endocardial Borders During Stress Echo: Alburnex vs. BR-1. Principal Investigator for UK site of Multicenter Trial. (1996-97)

Genesa - 1996-97 (\$30,000). Safety and Efficacy of Arbutamine as a New Agent for Pharmacologic Stress Echo. Principal Investigator for UK in Multicenter Trial.

Redux Study 1997-1998 (\$30,000): Effects of Fenfluramine/Phentermine on the Heart. Echo Core Lab for Local Study. Co-Principal Investigator with Dr. James Anderson.

Mallinkrodt (\$2,000) Educational Grant to Sponsor fellow to attend 1998 American Society of Echocardiography National Meetings in San Francisco, CA. June 11-14, 1998.

Kentucky Evaluation of Diet Drug Effects on Heart Valves (Class-Action Settlement with American Home Products). UK: Regional Core Echo Lab. April-July 2000.

TEACHING CONFERENCES

Awards:

Awarded Best Teaching Division (Cardiology) by Third Year Class (1984)-March 1983

Awarded Best Medicine Grand Rounds of Year-1987-1988 ("Mitral Stenosis")

Special Appreciation Award (given by Internal Medicine Residents) for Educational Contributions to Morning Report-June 15, 1991

Contributor of Echocardiographic Cases to 1993 ABIM: Cardiovascular Board Examination

Nominated by Medical School Class of 1996: Excellence in Teaching Award

Chairman's Award for Excellence in Teaching: Department of Internal Medicine, 1995.

Awarded 3 Master Teacher Awards in Teaching, Innovation, and Leadership, College of Medicine, Office of Academic Affairs, University of Kentucky, October 1998.

Lectures/Conferences:

Coordinator, Cardiology Graphics Conference (weekly)-1984-present
Division of Cardiology, University of Kentucky

Coordinator and Presenter (monthly)-Cardiovascular Journal Club (Monthly)-January, 1992-1996

Medicine 831: Coordinator and Presenter (Cardiac Pathology) 2nd year Medical Students: 1988-2000 (4 hours)

Medicine 811-Physical Diagnosis 2nd year Medical Students Lecturer: 1983-1995 (4 hours, case presentations)

Medicine 811-Physical Diagnosis 2nd year Medical Students Clinical Tutor: 1983, 1984, 1986, 1988

Noon Conference:

Medicine Housestaff Conferences (Noon Conference):

September 1982	May 25, 1988	October 4, 1996
September 1984	October 25, 1988	June 12, 2001
March 1985	January 19, 1989	March 25, 2002
April 1985	May 26, 1989	August 16, 2002
(Yearly) – August 1985-1995	June 8, 1989	October 25, 2002
April 10, 1986	January 15, 1990	December 13, 2002
October 8, 1986	September 25, 1990	February 20, 2003
October 29, 1986	August 21, 1991	April 24, 2003
January 27, 1987	August 27, 1991	May 15, 2003
April 12, 1988	March 6, 1992	
April 15, 1988	May 7, 1992	
April 19, 1988	April 7, 1994	

Cardiology Graphics Conferences 1983-Present, Bi-Monthly (list available).

Internal Medicine Residency ECG Conference (six per year) 2002-present.

"Medical Approach to Angina Pectoris"

Presented at Regional ACP Meetings-October 1982. Hyatt Regency Hotel, Lexington, Kentucky

"Compressive Cardiac Disorders: Evaluation and Management"

Medicine Grand Rounds, University of Kentucky-January 1985

"Utility and Current Applications of Transesophageal Imaging"

Cardiology Grand Rounds-April 17, 1990

"Transesophageal Echo: University of Kentucky Experience 1987-Present"

Medicine Grand Rounds-April 25, 1990

"Doppler Quantitation of Valvular Regurgitation"

Cardiology Grand Rounds-April 9, 1991

"Medical Games (Cardiology): A New Approach to Learning for Housestaff:

November 9, 1990; February 8, 15, 22, 1991; March 1, 1991; May 17, 31, 1991; and August 28, 1991

“Performing and Interpreting Stress Tests”
Housestaff Workshop (3 hours each) – 1999, 2000

Invited Lectures

"Use of Contrast Echo in Diagnosis in Shunts, Regurgitation, and Myocardial Perfusion"
CME Course-Advances in Cardiovascular Medicine
Hyatt Regency, Lexington, Kentucky-October 13-15, 1983

"Core Curriculum on Cardiac Ultrasound"
University of Kentucky Division of Cardiology and General Electric Company
Campbell House Inn, Lexington, Kentucky-February 20-24, 1984

"Core Curriculum on Cardiac Echo-Doppler"
University of Kentucky Division of Cardiology and General Electric Company
Campbell House Inn, Lexington, Kentucky-July 16-20, 1984

"Update in Cardiac Ultrasound"
University of Kentucky Division of Cardiology and General Electric Company
Radisson Plaza Hotel, Lexington, Kentucky-January 15-19, 1985

"Quantitation of Valvular Stenosis by Doppler Echocardiography"
Cardiology Grand Rounds, Medical College of Virginia
Richmond, Virginia-April 24, 1986

"Role of Echo-Doppler in Clinical Decision-Making"
Co-Director of the American College of Cardiology Course at Learning Center (Heart House)
Bethesda, Maryland
December 8-10, 1986
December 14-17, 1987
December 6-8, 1989
December 5-7, 1990
December 9-11, 1991
December 14-16, 1992
January 10-12, 1994
January 23-25, 1995

"Aortic Stenosis and Aortic Insufficiency"
Sixth Annual Ultrasound and Echocardiography Educational Seminar:
The Indiana Society of Ultrasound, Methodist Hospital
Indianapolis, Indiana-April 25-26, 1987

"Quantification of Mitral Stenosis", and "Relationship of Color Flow Jet Areas to Physical Exam"
1st International Conference on Cardiac Doppler and Color Flow Imaging

Dubrovnik, Yugoslavia-May 29-June 2, 1988

"Intraoperative Transesophageal Echo"

Anesthesia Grand Rounds, University of Kentucky-June 15, 1988

"Cardiac Doppler and Color Flow Imaging"

University of Kentucky Division of Cardiology and Hewlett-Packard Company-August 12-14, 1988

"Clinical Applications of Doppler Echo"

Family Medicine Review, Hyatt Regency Hotel

Lexington, Kentucky-February 22, 1989; May 24, 1989; and November 17, 1989

"Conventional and Color Flow Doppler Evaluation of Mitral Valve Disease"

Eighth Annual Ultrasound and Echocardiography Educational Seminar: The Indiana Society of Ultrasound, Indianapolis, Indiana-June 24-25, 1989

"Transesophageal Echo: A Review of the UK Experience, 1987-1989"

Cardiology Conference at Miriam Hospital, Brown University

Providence, Rhode Island-November 1, 1989

"Diagnostic and Therapeutic Advances in Cardiovascular Disease"

Transesophageal Echocardiography-Sponsored by the Kentucky Heart Institute, Hyatt Regency, Lexington, Kentucky-December 9, 1989

"Advances in Cardiovascular Disease-Color Flow, Transesophageal, and Exercise Echo Imaging"

Cardiology of Tulsa, Tulsa, Oklahoma-May 4, 1990

"Utility of Transesophageal Echo in Operative and Ambulatory Patients"Medical Grand Rounds:

Allentown General Hospital

Allentown, Pennsylvania-May 8, 1990

Kentucky Heart Institute Cardiovascular Research Forum

(poster presenter-3 abstracts): Lexington, Kentucky-May 24, 1990

"New Advances in Contrast Echo: Transpulmonary Agents, Image Processing Techniques;"

"Role of Echo-Doppler in Management Decisions in Mitral Stenosis;" "Comparison of Transesophageal and Transthoracic Echo-Doppler in the Assessment of Valvular Regurgitation and LV Ejection Fraction"

2nd International Conference on Cardiac Doppler-Echo and Color Flow Imaging

Dubrovnik, Yugoslavia-May 27-31, 1990

"Evolving Applications of Echocardiography"

Symposium: New Frontiers in Cardiac Imaging-Update 1990, Loew's Anatole Hotel, Dallas, Texas-November 11, 1990

"Application of Digital Processing Techniques to Contrast Echo"
Hospital Grand Rounds, Cleveland Clinic Foundation
Cleveland, Ohio-July 29, 1991

"Technical Aspects of Contrast Echocardiography"
Symposium Panelist: "Echo Now, Echo 2000"
Williamsburg, Virginia-September 12-15, 1991
October 8-11, 1992

"Basics of Transesophageal Echo"
Department of Medicine Rounds, Central Baptist Hospital
Lexington, Kentucky-November 20, 1991

"Timing of Intervention in Patients with Valvular Heart Disease"
Family Medicine Review Course, Hyatt Regency Hotel
Lexington, Kentucky-February 23, 1992; May 17, 1992; October 25, 1992

"Clinical Applications of Acoustic Quantification"
Philadelphia Society of Echo
Lankenau Hospital, Philadelphia, Pennsylvania-September 30, 1992

"Advances in Contrast Echocardiography"
Plenary Lecture at the Japanese College of Cardiology; 40th Annual Meetings Takamatsu,
Japan-October 16, 1992

"Potpourri of Interesting Echo Cases"
Invited lecturer at MCV Cardiology Day
Medical College of Virginia, Richmond, Virginia-October 21, 1992

"Calculation of Left Ventricular Volumes and EF by Echo"
Michigan Society of Echocardiography
Botsford Hospital, Detroit, Michigan-February 10, 1993

"Noninvasive Evaluation of the Mitral Valve and Timing for Valve Surgery" and "Specialty Panel: Cardiologist/Surgeon Teamwork in Valvular Surgery" (with Dr. Robert Salley, UKMC)
Annual Cardiovascular Update
Baptist Medical Center, Little Rock, Arkansas-February 19, 1993

Symposium panelist at "Future of Echo" Meeting, Carmel, CA-December 2-5, 1993

Symposium Panelist Echo 2000 Meetings: "Echo in Acute MI" Chateau Elan, Braselton, Georgia-October 26-29, 1995

"Dobutamine Stress Echo in Hibernating Myocardium." CT Surgery Rounds, University of Kentucky Hospital. September 17, 1997.

Case Presentation: "Marantic Endocarditis." Tumor Board. University of Kentucky. September 25, 1997.

"Transesophageal Echocardiography: Live Demonstration of Technique and Case Studies with Impact on Patient Management." Invited faculty and lecturer at American College of Cardiology Learning Center (Heart House - Bethesda, Maryland. April 15 – 17, 1998.

"Role of TEE in Intraoperative Decision Making." Faculty participant in Live Symposium and Videoconference; recorded at Heart House. April 17, 1998.

"Pitfalls in the Echo-Doppler Evaluation of Valvular Stenosis." Visiting Professor, East Carolina University, Greenville, North Carolina. April 17, 2002.

AREAS OF RESEARCH INTEREST

Digital Processing and Transmission of Echocardiographic Images
Echo Evaluation of Traumatic Aortic Injury
Use of Hand-Held Echo Imaging Devices in Teaching Physical Diagnosis

SCIENTIFIC SESSIONS

Abstract Grader for American College of Cardiology Scientific Sessions:
Echocardiography Section, March 1984, 1985, 1988, 1989, 1990, 1991, 1993, 1995, 1997, 1999.

Evaluation of Aortic Stenosis by Doppler Velocity Measurements:
Co-Chairman for Original Contribution Session
36th American College of Cardiology, New Orleans, Louisiana-March 1987

Symposium Lecture: "Assessment of Prosthetic Valve Function:
38th American College of Cardiology Scientific Session, Anaheim, California-March 1989

Intravascular Ultrasound II. Co-Chairman for Original Contribution Session:
39th American college of Cardiology, New Orleans, Louisiana-March 1990

Color Mapping I: Proximal Isovelocity Surface Area. Co-Chairman for Original Contribution Session: 39th American College of Cardiology Scientific Session, New Orleans, Louisiana-March 1990

Abstract Grader for 2nd International Congress on Cardiac Doppler-Echo and Color Flow Imaging: Dubrovnik, Yugoslavia-May 1990

Symposium Lecture: "Future Directions in Echocardiography"
Update in Cardiovascular Imaging. Sponsored by Kentucky Heart Institute, Dallas, Texas-
November 11, 1990

Meet the Experts: Transesophageal Echo/Doppler
Co-Chairman, 40th American College of Cardiology Scientific Session, Atlanta, Georgia-
March 1991

Mini-Course-"Clinical Applications of Echocardiography: Transesophageal Echo" 40th
American College of Cardiology Scientific Session, Atlanta, Georgia-March 1991

Evaluation of Prosthetic Valves. Co-Chairman for Original Contribution Session:
3rd American Society of Echocardiography Meetings, Boston, Massachusetts-June 17, 1992.

Meet the Experts Panel: "Intraoperative Assessment of the Mitral Valve Anatomy and
Function." 3rd American Society of Echo Scientific Sessions. Boston, Massachusetts-June 16,
1992.

"Experimental and Clinical Observations in Valve Disease." Co-Chairman for Original
Contributions Session: 65th American Heart Association Scientific Session, New Orleans,
Louisiana-November, 1992

Fireside Panel: "Contrast Echocardiography-Agents and Uses." 41st American College of
Cardiology Scientific Sessions, Anaheim, California-March 15, 1993

"New Developments in Contrast Echo." Co-Chairman for Original Contributions Session:
42nd American College of Cardiology Scientific Sessions, Anaheim, California-March 17,
1993

Panel Discussion Moderator: "Cardiac Source of Embolism." 4th Annual American Society of
Echocardiography Meeting, Orlando, Florida-June 17, 1993
Chairman, Poster Session. 4th Annual American Society of Echocardiographic Meetings-June
17, 1993.

"Echo Findings in Source of Embolism Patients." Meet the Experts Session. 4th Annual
American Society of Echocardiographic Meetings, Orlando, Florida-June 18, 1993.

"Echo in Trauma Patients." Critical Care Case Studies. 4th Annual American Society of
Echocardiographic Meetings, Orlando, Florida-June 16, 1993.

"Valvular Disease." Case Review. 6th Annual American Society of Echocardiography Meetings, Toronto, Canada, June 16, 1995

"Use of Transesophageal Echo in Trauma Patients". Symposium Lecture: 45th American College of Cardiology Meetings, Orlando, Florida, March 26, 1996

"Echocardiography in Management of Acute Myocardial Infarction Patients". Luncheon Panel: 45th American College of Cardiology Meetings, Orlando, Florida, March 27, 1996

Moderator, Poster Session "Myocardial Function". 7th Annual American Society of Echocardiography, Chicago, Illinois, June 11, 1996

"Advances in Quantitation of Valvular Regurgitation". Chairman and Moderator. 8th Annual American Society of Echocardiography, Orlando, FL-June 12-15, 1997.

Chairman, Abstract Session: Vibrations and Reverberations: The Resounding Effects of Noninvasive Testing. American College of Chest Physicians. New Orleans, LA. October 29, 1997.

"Echocardiography in the Emergency Room." Chairman, Meet the Experts Session: 9th Annual American Society of Echocardiography Meetings, San Francisco, CA. June 12, 1998.

Abstract Grader for 64th American College of Chest Physicians Scientific Session: Echocardiography Section. November 1998, 1999, 2000, 2003.

"Emergency Echocardiography." Panel, Meet the Experts Session: 10th Annual American Society of Echocardiography Meetings, Washington, D.C., June 10-12, 1999.

"Transesophageal Echo in the Intensive Care Unit." 4th World Congress of Echocardiography. Cairo, Egypt. January 19-21, 2000.

"Prosthetic Heart Valves" TTE and TEE." Chairman, Plenary Session 11th Annual American Society of Echocardiography Meetings, Chicago, IL. June 11-14, 2000.

"Echocardiographic Approach to Selection of Patients for Mitral Valve Repair." Chairman and Presenter, 50th Annual American College of Cardiology Meeting, Orlando, FL. March 19, 2001.

"Echo Evaluation of Diastolic Function." Chairman and Moderator, 74th American Heart Association Scientific Sessions; Anaheim, CA. November 12, 2001.

“Pitfalls in the Noninvasive and Invasive Evaluation of Valve Stenosis.” Co-Chairman and Presenter, 51st Annual American College of Cardiology Meeting, Atlanta, GA. March 19, 2002.

Abstract Grader, Echo Section, 76th American Heart Association Scientific Sessions, November 2003.

BIBLIOGRAPHY

Published Papers

1. Smith MD, Sagar KB, Mauck P, Cowley MJ, and Lower RR: Surgical Correction of Congenital Tricuspid Stenosis. **Ann Thorac Surg** 1982;34:329-32.
2. Smith MD, Mohanty PK, Craddock CT, Hassan ZU: Atrial Septal Defect: An Unusual Case With Two Separate Defects. **J Clin Ultrasound** 1983;11:289-91.
3. Smith MD, Romhilt DW: Atrial Dissociation. **Virginia Med** 1983;110:177-78.
4. DeMaria AN, Bommer W, Kwan OL, Riggs K, Smith MD, Waters JS: In Vivo Correlation of Thermodilution Cardiac Output and Videodensitometric Indicator Dilution Curves Obtained From Contrast Two-Dimensional Echocardiograms. **J Am Coll Cardiol** 1984;3:992-98.
5. Smith MD, Cowley MJ, Vetrovec GW: Aneurysms Of The Left Main Coronary Artery: A Report of Three Cases and Review of the Literature. **Cath and Cardiovasc Diag** 1984;10:583-91.
6. Smith MD, Kwan OL, DeMaria AN: The Role of Echocardiography in Infective Endocarditis. **Pract Cardiol** 1984;10:78-110.
7. Smith MD, Kwan OL, Reiser HJ, DeMaria AN: Superior Intensity and Reproducibility of SHU-454, a New Right Heart Contrast Agent. **J Am Coll Cardiol** 1984;3:992-99.
8. DeMaria AN, Smith MD, Kwan OL: Doppler Flow Imaging: Another Step in the Evolution of Cardiac Ultrasound. **Echocardiography** 1985;2:295-500.
9. Smith MD, Waters JS, Kwan OL, DeMaria AN: Evaluation of Pericardial Compressive Disorders by Echocardiography. **Echocardiography** 1985;2:67-86.
10. Smith MD, Dawson PL, Elion JL, Booth DC, Kwan OL, Earle GF, DeMaria AN: Correlation of Continuous Wave Doppler Velocities with Cardiac Catheterization Gradients: An Experimental Model of Aortic Stenosis. **J Am Coll Cardiol** 1985;6:1306-14.

11. Clifton GD, Smith MD: Thrombolytic Therapy in Heparin-Associated Thrombocytopenia with Thrombosis. **Clin Pharm** 1986;5:597-601.
12. DeMaria AN, Smith MD, Branco M, Kwan OL: Normal and Abnormal Blood Flow Patterns by Color Doppler Flow Imaging. **Echocardiography** 1986;3:475-82.
13. Grayburn PA, Smith MD, Handshoe R, Friedman BJ, Handshoe S, DeMaria AN: Detection of Aortic Insufficiency by Standard Echocardiography, Pulsed Doppler Echocardiography, and Auscultation. **Ann Intern Med** 1986; 194:599-605.
14. Handshoe R, Nissen S, Smith MD, DeMaria AN: Mural Thrombi: Role of Two-Dimensional Echocardiography in Diagnosis and Management. **Cardiovasc Rev and Rep** 1986;7:183-96.
15. Harrison MR, Smith MD, O'Connor WN, DeMaria AN: Post-Operative Valve Ring Aneurysm Formation, Coronary Arteritis, and Myocardial Infarction in Systemic Lupus Erythematosus. **Am Heart J** 1986;112:414-17.
16. Smith MD, Dawson PL, Elion JI, Wisenbaugh T, Kwan OL, Handshoe S, DeMaria AN: Systematic Correlation of Continuous-Wave Doppler and Hemodynamic Measurements in Patients with Aortic Stenosis. **Am Heart J** 1986;111:245-52.
17. Smith MD, DeMaria AN: Value and Limitations of Continuous-Wave Doppler Echocardiography in Estimating Severity of Valvular Stenosis. **JAMA** 1986;255:3145-51.
18. Smith MD, Handshoe R, Handshoe S, Kwan OL, DeMaria AN: Comparative Accuracy of Two-Dimensional Echocardiography and Doppler Pressure Half-Time in Assessing Severity of Mitral Stenosis in Patients With and Without Prior Commissurotomy. **Circulation** 1986;73:100-107.
19. Smith MD, DeMaria AN: Mitral Stenosis: Assessment with Two-Dimensional Echocardiography and Doppler Methods. **Cardiol Board Rev** 1986;3:74-84.
20. Spain M, Smith MD, DeMaria AN: Echocardiography: Options for 1987. **Diagnosis** 1986;8:72-78.
21. DeMaria AN, Smith MD: Color Doppler Flow Imaging 1987: State of Integration in the Echocardiography Laboratory. **Echocardiography** 1987;4:465-67.
22. DeMaria AN, Spain M, Garrahy P, Grayburn PA, Kwan OL, Smith MD: Considerations in the Quantitation of Color Flow Doppler Imaging. **Echocardiography** 1987;4:495-501.

23. Grayburn PA, Handshoe R, Smith MD, Harrison MR, DeMaria AN: Quantitative Assessment of the Hemodynamic Consequences of Aortic Regurgitation by Means of Continuous Wave Doppler Recordings. **J Am Coll Cardiol** 1987;10:135-41.
24. Grayburn PA, Smith MD, Gurley JC, Booth DC, DeMaria AN: Effect of Aortic Regurgitation on the Assessment of Mitral Valve Orifice Area by Doppler Pressure Half-Time in Mitral Stenosis. **Am J Cardiol** 1987;60:322-26.
25. Grayburn PA, Smith MD: Non invasive Methods for Detecting Aortic Insufficiency. **Cardiol Board Rev** 1987;4:27-32.
26. Harrison MR, Smith MD, Friedman BJ, DeMaria AN: Uses and Limitations of Exercise Doppler Echocardiography in the Diagnosis of Ischemic Heart Disease. **J Am Coll Cardiol** 1987;10:809-17.
27. Harrison MR, Smith MD, Grayburn PA, Kwan OL, DeMaria AN: Normal Blood Flow Patterns by Color Doppler Flow Imaging. **Echocardiography** 1987;4:485-93.
28. Rovai D, Nissen SE, Elion J, Smith MD, L'Abbate A, Kwan OL, DeMaria AN: Calculation of Left Ventricular Ejection Fraction From Contrast Echo Washout Curves: A New Method Independent of Geometric Assumptions. **Am Heart J** 1987;113:1437-44.
29. Rovai D, Nissen SE, Elion JL, Smith MD, L'Abbate A, Kwan OL, DeMaria AN: Contrast Echo Washout Curves: Application of Basic Principles of Indicator Dilution Theory and Calculation of Ejection Fraction. **J Am Coll Cardiol** 1987;10:125-34.
30. Booth DC, Wisenbaugh T, Smith MD, DeMaria AN: Left Ventricular Distensibility and Passive Elastic Stiffness in Atrial Septal Defect. **J Am Coll Cardiol** 1988;12:1231-37.
31. Grayburn PA, Harrison MR, Smith MD, DeMaria AN: Assessment of Aortic Regurgitation by Doppler Ultrasound. **Cardiol Board Rev** 1988;5:67-76.
32. Grayburn PA, Smith MD, Harrison MR, Gurley JC, DeMaria AN: Pivotal Role of Aortic Valve Area Calculation by the Continuity Equation for Doppler Assessment of Aortic Stenosis in Patients with Combined Aortic Stenosis and Regurgitation. **Am J Cardiol** 1988;61:378-81.
33. Harrison MR, Gurley JC, Smith MD, Grayburn PA, DeMaria AN: A Practical Application of Doppler Echocardiography for the Assessment of Severity of Aortic Stenosis. **Am Heart J** 1988;115:622-28.

34. Harrison MR, Smith MD, Nissen SE, Grayburn PA, DeMaria AN: Use of Exercise Doppler to Evaluate Cardiac Drugs: Effects of Propranolol and Verapamil on Aortic Blood Flow Velocity and Acceleration. **J Am Coll Cardiol** 1988;11:100-09.
35. Hendren WG, Jones EL, Smith MD: Aortic and Mitral Valve Replacement in Idiopathic Hypereosinophilic Syndrome. **Ann Thorac Surg** 1988;93:471- 75.
36. Phillips BA, McConnell JW, Smith MD: The Effects of Hypoxemia on Cardiac Output, A Dose-Response Curve. **Chest** 1988;93:471-75.
37. Smith MD, Grayburn PA, Spain MG, Kwan OL, DeMaria AN: Observer Variability in the Quantitation of Color Flow Doppler Jet Areas for Mitral and Aortic Regurgitation. **J Am Coll Cardiol** 1988;11:579-84.
38. Phillips B, Smith MD, Friedman B, Earle G. Effect of Coronary Artery Revascularization on Left and Right Ventricular Ejection Fractions During Rest and Exercise. **So Med Jour** 1988;81:666-69.
39. Kandil H, Smith, MD, Ibrahim M, El-Said G, Mikhail YS, DeMaria AN: Value of Color Flow Doppler Imaging in Evaluation of Prosthetic Valvular Malfunction. **J Dynamic Cardiovasc Imaging** 1988; 251-56.
40. DeMaria AN, Smith MD, Harrison MR: Clinical Significance of In-Vitro and In-Vivo Experimental Findings Regarding Doppler Flow Velocity Recordings. **J Am Coll Cardiol** 1989;13:1682-86.
41. Harrison MR, MacPhail B, Gurley JC, Harlamert EA, Steinmetz JE, Smith MD, DeMaria AN: Usefulness of Color Doppler Flow Imaging to Distinguish Ventricular Septal Defect from Acute Mitral Regurgitation Complicating Acute Myocardial Infarction. **Am J Cardiol** 1989;64:697-701.
42. Smith MD, Kwan OL, Elion JL, McClure R, Kwan OL, DeMaria AN: Left Heart Opacification with Peripheral Venous Injection of a New Sac- charide Echo Contrast Agent in Dogs. **J Am Coll Cardiol** 1989;13:1622-28.
43. Smith MD, Metcalfe M, DeMaria AN, Hendren WG, Walter PF, Jones EL: Hypereosinophilic Syndrome Resulting in Aortic and Mitral Stenosis: A Case Requiring Double Valve Replacement. **Am Heart J** 1989;17:475-79.
44. Spain MG, Smith MD, Grayburn PA, Harlamert EA, O'Brien M, DeMaria AN: Quantitative Assessment of Mitral Regurgitation by Doppler Color Flow Imaging: Angiographic and Hemodynamic Correlations. **J Am Coll Cardiol** 1989;13:585-90.

45. Spain MG, Smith MD, Kwan OL, DeMaria AN: Effect of Isometric Exercise on Aortic and Mitral Regurgitation as Assessed by Color Flow Doppler. **Am J Cardiol** 1990;65:78-84.
46. Gurley JC, Booth DC, Hixson C, Smith MD: Removal of Retained Intracoronary PTCA Equipment By a Percutaneous Twin Guidewire Method. **Cath and Cardiovasc Diag** 1990;19:251-56.
47. Grayburn PA, Berk MR, Kwan OL, Spain MG, Harrison MR, Smith MD, DeMaria AN: Relation of Valvular Anatomy and Coaptation to Mitral Regurgitation in Mitral Valve Prolapse: Assessment by Color Flow Doppler Imaging. **Am Heart J** 1990;119:1095-1102.
48. Hixson CS, Cater A, Smith MD: Diagnosis and Documentation of Healing in a Case of Descending Thoracic Aortic Dissection by Transesophageal Echocardiography and Doppler Color Flow Imaging. **Am Heart J** 1990;119:1432-35.
49. Smith MD, Harrison MR, Pinton R, Kandil H, Kwan OL, DeMaria AN: Regurgitant Jet Size by Transesophageal Compared with Transthoracic Color Flow Doppler Imaging. **Circulation** 1991;83:79-86.
50. Smith MD, Wisenbaugh T, Grayburn PG, Gurley JC, Spain MG, DeMaria AN: Value and Limitations of Doppler Pressure Half-time in Quantifying Mitral Stenosis: Comparison with Micromanometer Catheter Recordings. **Am Heart J** 1991;121:480-88.
51. Salley RK, Smith MD, Sekela ME: The Role of Intraoperative Echocardiography in Cardiac Surgical Decision Making. **Highlights of the ACC Learning Center** 1991;6:17-19. (invited article)
52. DeMaria AN, Wisenbaugh TW, Smith MD, Harrison MR, Berk MR: Doppler Echocardiographic Evaluation of Diastolic Dysfunction. **Circulation** 1991;84:I-288-95.
53. Mostafa AH, DeMaria AN, Smith MD: Mechanical Complications Post-MI: The Role of Echo. **Cardiology** 1991:52-62. (invited article)
54. Harrison MR, Grigsby CG, Souther SK, Smith MD, DeMaria AN: Midventricular Obstruction Associated With Chronic Hypertension and Severe Left Ventricular Hypertrophy. **Am J Cardiol** 1991;68:761-65.
55. Cassidy JM, Smith MD, Gurley JC, Booth DC, Cater AL, Salley RK: Detection of Thrombosis of St. Jude Medical Prostheses by Transesophageal Echocardiography: Report of Two Cases. **Am Heart J** 1991;122:1466-69.

56. Harrison MR, Smith MD, Clifton GD: Stress Doppler Echocardiography in the Evaluation of Ischemic Heart Disease. **Echocardiography** 1992;9:189-97.
57. Smith MD, Kwan OL, Spain MG, Harlamert EA, DeMaria AN: Temporal Variability of Color Doppler Jet Areas in Patients with Mitral and Aortic Regurgitation. *J Am Soc Echocardiogr* 1992;5:57-62.
58. Smith MD, MacPhail B, Harrison MR, Lenhoff S, DeMaria AN: Value and Limitations of Transesophageal Echocardiography in the Determination of Left Ventricular Volumes and Ejection Fraction. **J Am Coll Cardiol** 1992;19:1213-22.
59. Smith MD, Drinkovic N, Harrison MR, Wisenbaugh T, Berk MR, DeMaria AN: Doppler Evaluation of Left Ventricular Compliance and Ventricular Filling Abnormalities. **Echocardiography** 1992;9:407-20.
60. Hixson CS, Smith MD, Mattson MD, Morris EJ, Lenhoff SJ, Salley RK: Comparison of Transesophageal Color Doppler Flow Imaging of Normal Regurgitant Jets in St. Jude and Medtronic-Hall Cardiac Prostheses. **J Am Soc Echocardiogr** 1992;5:57-62.
61. DeMaria AN, Smith MD: Quantitation of Color Doppler Flow Recordings- An Oxymoron? (Editorial) **J Am Coll Cardiol** 1992;20:439-40.
62. Kearney PA, Smith DW, Johnson SB, Barker DE, Smith MD, Sapin PM: Use of Transesophageal Echocardiography in the Evaluation of Traumatic Aortic Injury. **Journal of Trauma** 1993;34:696-703.
63. Sapin PM, Schroeder K, Smith MD, DeMaria AN, King DL: Three Dimensional Echocardiography Measurement of Left Ventricular Volume In Vitro: Comparison to Two-Dimensional Echocardiography and Cineventriculography. **J Am Coll Cardiol** 1993;22:1530-37.
64. Crouse LJ, Cherif JB, Hanly DE, Kisslo, JA, Labovitz AJ, Raichlen JS, Schutz RW, Shah PM, Smith MD: Opacification and Border Delineation Improvement in Patients With Suboptimal Endocardial Border Definition in Routine Echocardiography: Results of a Phase III Alburnex Multicenter Trial. **J Am Coll Cardiol** 1993;22:1494-1500.
65. Schroeder KM, Sapin PM, King DL, Smith MD, DeMaria: Three-Dimensional Echocardiographic Volume Computation: In Vitro Comparison to Standard Two-Dimensional Echocardiography. **J Am Soc Echocardiogr** 1993;6:467-75.
66. McCoy RA, Clifton GD, Clementi WA, Smith MD, Garvey TQ, Wermeling

- DP, Schwartz SE: Pharmacodynamics of Racemic and S-Atenolol in Humans. **J Clin Pharmacol** 1994;34:816-22.
67. Xie G, Berk MR, Smith MD, Gurley JC, DeMaria AN: Prognostic Value of Doppler Transmitral Flow Patterns in Patients with Congestive Heart Failure. **J Am Coll Cardiol** 1994;24:132-39.
68. Sapin PM, Schroder KM, Gopal AS, Smith MD, DeMaria AN, King DL: Comparison of Two- and Three-Dimensional Echocardiography with Cineventriculography for Measurement of Left Ventricular Volume in Patients. **J Am Coll Cardiol** 1994;24:1054-63.
69. Mahony C, Spain MG, Spain C, Smith MD. Intravascular Platelet Aggregation and Spontaneous Contrast. **Jour Ultrasound in Med** 1994;13:443-50.
70. Xie G, Berk MR, Smith MD, DeMaria AN. A Simplified Method to Determine Regurgitant Fraction by Doppler in Patients with Aortic Regurgitation. **J Am Coll Cardiol** 1994;24:1041-45.
71. Buckmaster MJ, Kearney PA, Johnson SB, Smith MD, Sapin PM. Further Experience with Transesophageal Echocardiography in the Evaluation of Thoracic Aortic Injury. **J Trauma** 1994;37:989-95.
72. Smith MD, Cassidy JM, Smith AL, Gurley JC, Booth DC. Echo/Doppler in Acute Mitral Regurgitation: Superiority of Transesophageal Echocardiography with Color Flow Imaging . **Am Heart J** 1995;129:967-74.
73. Smith MD, Cassidy JM, Souther S, Morris EJ, Sapin PM, Johnson SB, Kearney PA. Transesophageal Echocardiography in the Diagnosis of Traumatic Rupture of the Aorta. **N Engl J Med** 1995;332:356-63.
74. Sapin PM, Schroeder KM, Gopal AS, Smith MD, King DL. Three-Dimensional Echocardiography: Limitations of Apical Biplane Imaging for Measurement of Left Ventricular Volume. **J Am Soc Echocardiogr** 1995;8:576-84.
75. Woodward DK, Clifton DG, McCoy RA, Smith MD, Harrison MR. Reliability of Blood Pressure, Doppler-Derived Hemodynamic Measurements During Exercise. **J Am Soc Echocardiogr** 1995;8:21-8.
76. Xie GY, Smith MD, DeMaria AN. The Question of Incremental Value of Doppler Transmitral Flow Patterns in Patients with Congestive Heart Failure. (Reply to Letter to the Editor). **J Am Coll Cardiol** 1995;25:1223.

77. Smith MD, Kearney PA. Transesophageal Echo in Aortic Trauma. (Reply to Letters to the Editor) **N Engl J Med** 1995.
78. Xie GY, Berk MR, Hixson CS, Smith AC, DeMaria AN, Smith MD: Quantification of Mitral Regurgitant Volume by the Color Doppler Proximal Isovelocity Surface Area Method: A Clinical Study. **J Am Soc Echocardiogr** 1995;8:48-54.
79. Sapin PM, Kwan OL, Xie G, Smith MD, DeMaria AN. The Assessment of Left Ventricular Filling Dynamics Using an On-Line Automatic Border Detection Algorithm: Comparison with Cineventriculography. **Echocardiography** 1995;12:559-69.
80. Xie GY, Berk MR, Smith MD, DeMaria AN. Relationship of Doppler Transmitral Flow Patterns to Functional Status in Patients with Congestive Heart Failure. **Am Heart J** 1996;131:766-71.
81. Sapin PM, Clarke GB, Gopal AS, Smith MD, King DL. Validation of Three-Dimensional Echocardiography for Quantifying the Extent of Dyssynergy in Canine Acute Myocardial Infarction: Comparison with Two-Dimensional Echocardiography. **J Am Coll Cardiol** 1996; 27: 1761-70.
82. Smith AC, Wolf JG, Xie, GY, Smith MD. Musculoskeletal Pain in Cardiac Sonographers: Results of a Random Survey **J Am Soc Echocardiogr** 1997;10:357-62.
83. Sapin RM, Gopal AS, Clarke GB, Smith MD, King DL. Three-Dimensional Echocardiography Compared to Two-Dimensional Echocardiography for Measurement of Left Ventricular Mass. Anatomic Validation in an Open Chest Canine Model. **Am J Hypertens**, 1996; 9: 467-74.
84. Kearney K, Xie GY, Smith MD. Massive Air Embolus to the Left Ventricle: Diagnosis and Monitoring by Serial Echocardiography. **J Am Soc Echocardiogr** 1997; 10: 982-87.
85. Xie GY, Fiedler AJ, Sapin PM, Clarke GB, Smith MD. Left Atrial Dysfunction in Congestive Heart Failure: Assessment by Transmitral and Pulmonary Vein Doppler. **Int J Cardiovasc Imag** 1998; 14: 47-53.
86. Xie GY, Lin CS, Preston HM, Sekela ME, Taylor CG, Kearney K, Sapin PM, Smith MD. Assessment of Left Ventricular Diastolic Function After Single Lung Transplantation in Pulmonary Hypertension Patients. **Chest** 1998; 114:477-481.
87. Smith MD, Xie GY. Current Echo Doppler Approaches to Quantitation of

Valvular Regurgitation. **Cardiology in Review** 1998; 6:168-181.

88. Smith MD. Unusual Case of Right Atrial Mass. Case report with Cine-echo Shown On-line via Internet at American Society of Echocardiography Web Site: Images in Echo, April 1998. (Peer reviewed).
89. Popp R, Agatson A, Armstrong W, Nanda N, Pearlman A, Rakowski H, Seward J, Silverman N, Smith MD, Stewart W, Taylor R, Thys D, Davis D. Recommendations for Training and Performance and Interpretation of Stress Echocardiography. **J Am Soc Echocardiogr**, 1998; 11: 95-96.
90. Rorie M, Miles H, Xie G-Y, Smith MD. Combined Use of Transesophageal Echo and Catheterization in Diagnosis of Cor Triatriatum. **Cathet and Cardiovasc Diagnosis**. 2000;51: 83-86.
91. Hasan M, Rorie M, Stamper S, Smith MD, Xie G-Y. Traumatic Aorto-Left Atrial Fistula: Diagnosis by Transesophageal Echo. **Circulation** 2001; 103:1819-20.
92. Xie G-Y, Bhakta D, Smith MD. Echocardiographic Follow-up Study of the Ross Procedure in Older Versus Younger Adult Patients. **Am Heart J** 2001; 142:331-35.
93. Xie G-Y, Smith MD. Pseudonormal or Intermediate Pattern? (Editorial) **J Am Coll Cardiol** 2002;39:1796-98.

Papers Submitted or in Preparation

Smith MD, Xie G-Y, Kearney PA. TEE Characteristics of Traumatic Aortic Injury: Can We Eliminate the Need for Aortography? (In Preparation).

Book Chapters

1. DeMaria AN, Smith MD, Kwan OL. The Role of Echocardiography in the Diagnosis of Cardiomyopathy. In Giutiani, ed. Two-dimensional Real-time Ultrasonic Imaging of the Heart. The Netherlands: Martinus Nijhoff, 1985:Chapter 16.
2. Smith MD, Phillips BA. Right heart catheterization in the ICU. In: Phillips BA, ed. Pocket Reference for Medical Intensive Care. Rockville, MD: Aspen Publishers Inc., 1986:255-76.
3. Smith MD. Pericardial Tamponade. In: Phillips BA, ed. Pocket Reference for the Medical Intensive Care. Rockville, MD: Aspen Publishers Inc., 1986:247-50.
4. Smith MD, Phillips BA. Cardiac arrhythmias. In: Phillips BA, ed. Pocket Reference for Medical Intensive Care. Rockville, MD: Aspen Publishers

5. Mazzoleni A, Smith MD, Kwan OL, DeMaria AN. Clinical applications of Doppler echocardiography. In: Popp RM, ed. 1987 Cardiology Update. New York: Elsevier Biomedical, 1986.
6. Smith MD. Evaluation of Valvular Regurgitation by Doppler Echocardiography. In: Carabello B, ed. 1991 Cardiology Clinics: Valvular Heart Disease. Philadelphia: WB Saunders, 1991 (May), 9(Vol2):193-228.
7. Teitz NW, O'Connor WN, Smith MD, Porter WH. Woman with angina pectoris. Case 40. In: A Textbook of Clinical Pathology Cases. WB Saunders, 1992.
8. Sapin PS, Smith MD. Echocardiography in the Preoperative Assessment of the Vascular Surgery Patient. Chapter 10. In: Kazmers A, ed. Cardiac Risk Assessment Before Vascular Surgery. Armonk, NY: Futura Publishing Co., Inc. 1994:pp183-217.
9. Berk MR, DeMaria AN, Smith MD. Application of Echocardiography to Catheter Balloon Valvuloplasty. In: Vogel JHK and King SB, eds. The Practice of Interventional Cardiology. St. Louis, MO: Mosby, 1993: 67-76.
10. Johnson SB, Kearney PA, Smith MD. Echocardiography in the Evaluation of Thoracic Trauma. In: Shackelford SR, ed. 1995 Surgical Clinics of North America. Philadelphia: WB Saunders 1995 (April), 75(2):193-205.
11. Smith MD. Diastolic Function. Chapter 4, In: Otto CM, Pearlman AS, eds. Textbook of Advanced Clinical Echocardiography. Philadelphia, PA, W.B. Saunders, 1996.
12. Smith MD. Echo-Doppler Assessment of Diastolic Function. Chapter 6, in: Otto CM, Pearlman AS. Eds. Textbook of Advanced Clinical Echocardiography. Second Edition. Philadelphia, PA, W.B. Saunders, 2002.
13. Smith, MD. Cor Triatriatum. The NORD Guide to Rare Disorders. Lippincott, Williams and Wilkins. Philadelphia, PA., 2003, pp. 45-46.

ABSTRACTS (Accepted):

1. Smith MD, Mohanty P, Craddock K, Hassan Z: Atrial Septal Defect: An Unusual Case With Two Separate Defects. VA Medical 1982;109:117.
2. Smith MD, Kwan OL, Reiser J, DeMaria AN: Intensity and Reproducibility of Ultrasonic Contrast Agents: Superiority of a New Substance, SHU-454, to Conventional Agents. Circulation 1983;68:III-92.

3. Kwan OL, Handshoe S, Smith MD, DeMaria AN: Application of Doppler Flow Recordings in the Assessment of Prosthetic Heart Valves. *Circulation* 1983;68:III-88.
4. Kwan OL, Handshoe R, Handshoe SD, Smith MD, DeMaria AN: Sensitivity and Specificity of Doppler Ultrasound in the Detection of Valvular Regurgitation: Comparison of Continuous and Pulsed Wave Techniques. *Circulation* 1983;68:III-228.
5. Waters JS, Nissen SE, Booth DC, Smith MD, DeMaria AN: Measurement of Left Ventricular Volumes Without Geometric Assumptions from Intravenous Digital Subtraction Ventriculography. *Circulation* 1983;68:III-139.
6. Nissen SE, Booth DC, Smith MD, DeMaria AN: Sources of Error in Videodensitometric Calculation of Ejection Fraction. *Circulation* 1983;68:III-350.
7. Booth DC, Smith MD, Nissen SE, Waters J, Dawson P, DeMaria AN: Left Ventricular Distensibility and Elastic Stiffness in Atrial Septal Defect and in Right Ventricular Hypertension in Adults. *Circulation* 1983;68:III-102.
8. Smith MD, Dawson P, Elion J, Wisenbaugh T, Handshoe S, Kwan OL, DeMaria AN: Comparative Correlation of Continuous Wave Doppler Spectral Measurements with Hemodynamic Parameters in Patients with Aortic Stenosis. *Circulation* 1984;70:II-116.
9. Handshoe R, Handshoe S, Kwan OL, Smith MD, DeMaria AN: Value and Limitations of Doppler Measurements in the Estimation of Left Ventricular End Diastolic Pressure in Patients with Aortic Regurgitation. *Circulation* 1984;70:II-117.
10. Callahan P, Kinzel T, Wekstein D, Smith MD, DeMaria AN: Cardiovascular Alterations Associated with Aging: Implications of Echocardiographic Findings in Centenarians. *J Am Coll Cardiol* 1985;5:536.
11. Smith MD, Handshoe R, Handshoe S, Kwan OL, DeMaria AN: Comparative Accuracy of Two -Dimensional Echocardiography Versus Doppler Recordings in Assessing Mitral Valve Area in Post- Commissurotomy Patients. *J Am Coll Cardiol* 1985;5:484.
12. Smith MD, Dawson P, Elion JL, Booth DC, Kwan OL, DeMaria AN: Systematic Correlation of Doppler Aortic Gradient with Specific Catheter Pressure Measurements in Experimental Aortic Stenosis: Mean Doppler Gradient is Optimal. *J Am Coll Cardiol* 1985;5:402.

13. Handshoe R, Smith MD, Elion J, Handshoe S, Kwan OL, Banks C, DeMaria AN: Determination of Aortic and Mitral Valve Area by Means of Continuous Wave Doppler and Thermodilution Cardiac Output. *J Am Coll Cardiol* 1985;5:485.
14. Smith MD, Kwan OL, Nissen SE, Elion JL, Rovai D, DeMaria AN: Left Heart Opacification After Peripheral Venous Injection: Pulmonary Transmission of ZK44012, A New Echo Contrast Agent. *Circulation* 1985;72:II-57.
15. Grayburn PA, Smith MD, Friedman BJ, Kwan OL, Handshoe R, Handshoe S, DeMaria AN: Comparative Accuracy of Echocardiography, Doppler, and Auscultation in the Detection of Aortic Insufficiency. *Circulation* 1985;72:II-372.
16. Nissen SE, Elion JL, Smith MD, Wisenbaugh T, DeMaria AN: Unsharp Masking: A New Technique For Digital Coronary Angiography Unaffected by Motion Artifact. *Circulation* 1985;72:II-454.
17. Nissen SE, Elion JL, Smith MD, DeMaria AN: Predictive Value of Angiography in Assessment of Coronary Flow Reserve. *Circulation* 1985;72:II-262.
18. Harrison MR, Smith MD, Friedman BJ, Kwan OL, DeMaria AN: Doppler Aortic Flow Velocities During Exercise: Comparison to Thallium Perfusion Scintigraphy. *J Am Coll Cardiol* 1986;7:15.
19. Drinkovic N, Wisenbaugh T, Kwan OL, Handshoe R, Smith MD, DeMaria AN: Assessment of Diastolic Left Ventricular Function by Doppler; Comparison With Catheterization Measurements of Compliance. *J Am Coll Cardiol* 1986;7:227.
20. Smith MD, Handshoe R, Allin D, Hau T, McAllister RG, DeMaria AN: Effect of Esmolol on Left Ventricular Function in Patients with Ischemic Heart Disease. *Xth World Congress of Cardiology; Abstracts* 1986:139.
21. Phillips BA, Marshall ME, Smith MD, Rhoades JL: Natural Killer Cells in the Human Circulation. *Chest* 1986;89:6.
22. Smith MD, Spain MG, Grayburn PA, Kwan OL, Nissen SE, DeMaria AN: Intraobserver and Interobserver Variability in the Quantitation of Regurgitant Jet Area in Patients With Mitral and Aortic Regurgitation. *Circulation* 1986;74:II-131.
23. Spain M, Smith MD, Drinkovic N, Kwan OL, DeMaria AN: Effects of Vasodilation and Isometrics Upon Valvular Regurgitation: Assessment by Color Doppler Flow Imaging. *Circulation* 1986;74:II-386.

24. Kwan OL, Spain M, Booth DC, Smith MD, DeMaria AN: Temporal Variability in the Size of the Flow Disturbance by Color Doppler Flow Imaging in Patients with Valvular Regurgitation. *Circulation* 1986;74:II-145.
25. Grayburn PA, Smith MD, Gurley JC, Kwan OL, DeMaria AN: Effect of Aortic Regurgitation on the Determination of Mitral Valve Area by Doppler Pressure Half-Time Measurements. *Circulation* 1986;74:II-231.
26. Drinkovic N, Wisenbaugh T, Nissen SE, Elion JL, Smith MD, Kwan OL, DeMaria AN: Sensitivity and Specificity of Transmitral Flow Velocity Measurements in Detecting Impaired Left Ventricular Compliance. *Circulation* 1986;74:II-46.
27. Phillips BA, Smith MD, Earle G, Friedman B: Improvement of Resting and Exercise Left and Right Ventricular Ejection Fractions Following Coronary Revascularization. *So Med J* 1986.
28. Rovai D, Nissen SE, Smith MD, Drinkovic N, Distante A, DeMaria AN: Limitation of Digital Subtraction Contrast Echocardiography to Improve Left Ventricular Edge Identification in Canines. *Xth World Congress of Cardiology; Abstracts* 1986:219.
29. Smith MD, Harrison MR, Gurley JC: Accuracy of Doppler in Predicting Severity of Aortic Stenosis: A Practical Application of the Continuity Equation. *J Am Coll Cardiol* 1987;8:21A.
30. Harrison MR, Smith MD, Nissen SE, DeMaria AN: Use of Exercise Doppler to Evaluate Cardiac Drugs: Comparative Influence of Beta and Calcium Blockers on Aortic Acceleration and Velocity. *J Am Coll Cardiol* 1987;8:67A.
31. Spain M, Smith MD, Harrison M, Grayburn P, Kwan OL, O'Brien M, DeMaria AN: Hemodynamic Implications of Jet Size by Color Doppler Flow Imaging in Patients with Mitral Regurgitation. *J Am Coll Cardiol* 1987;8:67A.
32. McConnell JW, Phillips BA, Smith MD: The Effects of Hypoxemia on Cardiac Output: A Dose-Response Curve. *Clin Res* 1987;35:4A.
33. Smith MD, Gurley JC, Spain MG, Wisenbaugh T: Accuracy of Pressure Half-Time in Quantifying Mitral Stenosis in a Clinically Relevant Range: Comparison with Micromanometer Catheter Recordings. *Circulation* 1987;76:IV-354.
34. Harlamert EA, Smith MD, Booth DC, Grayburn P, Kwan OL, DeMaria AN: Relationship of the Murmur in Mitral Regurgitation to Jet Size, Shape, and Direction by Doppler Flow Imaging. *Circulation* 1987;76:IV-317.

35. Grayburn PA, Smith MD, Harrison MR, Gurley JC: Doppler Assessment of Aortic Stenosis with Mixed Aortic Valve Disease: Pivotal Role of Aortic Valve Area Calculation by the Continuity Equation. *Circulation* 1987;76:IV-353.
36. Garrahy P, Grayburn P, Smith MD, Kwan OL, Booth DC, DeMaria AN: Abnormal Systolic Left Ventricular Blood Flow in Patients with Dyssynergy: Assessment by Color Doppler Flow Imaging. *Circulation* 1987;76:IV-526.
37. Harrison MR, Grayburn PA, Smith MD, DeMaria AN: Evaluation of Hemodynamic Effects of Calcium Channel Antagonists by Exercise Doppler: Comparison of Verapamil and Nifedipine. *J Am Coll Cardiol* 1988;11:122A.
38. Grayburn PA, Berk MR, Kwan OL, Sapin MG, Harrison MR, Smith MD, DeMaria AN: Relation of Valvular Anatomy and Coaptation to Mitral Regurgitation in Mitral Valve Prolapse: Assessment by Color Doppler Flow Imaging. *J Am Coll Cardiol* 1988;11:126A.
39. Harlamert EA, Smith MD, Spain M, DeMaria AN: Heterogeneity of Shape and Direction of Mitral Regurgitant Jets: Characterization by Color Doppler Flow Imaging. *J Am Coll Cardiol* 1988;11:20A.
40. Harlamert EA, Smith MD, Spain MG, Gash DL, Berk MR, DeMaria AN: Color Doppler Flow Imaging Underestimates the Severity of Acute Mitral Regurgitation. *Circulation* 1988;78:II-434.
41. Smith MD, Gurley JC, Grayburn PA, Harlamert EA, Harrison MR: Measurement of Mitral Pressure Half-Time in Patients with Curvilinear Spectral Patterns. *Circulation* 1988;78:II-31.
42. Harlamert E, Harrison MR, Smith MD, Booth DC, Moffett C, Kwan OL, DeMaria AN: Quantitative Evaluation of Ventricular Septal Defects by Color Doppler Flow Imaging. *J Am Coll Cardiol* 1989;13:24A.
43. Harrison MR, Harlamert EA, Gurley JC, MacPhail B, Smith MD, DeMaria AN: Evaluation of Ventricular Septal Defect Complicating Acute Myocardial Infarction: Identification, Localization, and Differentiation from Mitral Regurgitation by Color Doppler Flow Imaging. *J Am Coll Cardiol* 1989;13:209A.
44. Kandil H, Smith MD, Pinton R, Haynie D, MacPhail B, Kwan OL, DeMaria AN: Transesophageal Echocardiographic Evaluation of Normally Functioning St. Jude Valves. *Circulation* 1989;80:II-669.
45. Pinton R, Smith MD, Harrison MR, Kandil H, Kwan OL, DeMaria AN:

- Comparison of Regurgitant Jet Size By Transesophageal as Compared to Transthoracic Color Doppler. Brazilian Congress of Cardiology 1989.
46. Smith MD, Harlamert EA, Sublett KL, Miles H, Kwan OL, Cater A, Knapp C, Harrison MR, DeMaria AN: Doppler Harmonic Spectral Signals ("Stripes"): In Vivo and In Vitro Evidence of Artifact Due to Leaflet Reverberations. *J Am Coll Cardiol* 1989;13:49A.
 47. Smith MD, Harrison MR, Kandil H, Chitwood R, Salley R, Kwan OL, DeMaria AN: Overestimation of Regurgitation Jet Area by Transesophageal as Compared to Transthoracic Color Doppler. *J Am Coll Cardiol* 1989;13:68A.
 48. Smith MD, MacPhail B, Pinton R, Kandil H, Haynie D, Kwan OL, DeMaria AN: Value and Limitations of Transesophageal Echo for Estimation of Left Ventricular Volumes and Ejection Fraction. *Circulation* 1989;80:II-339.
 49. Smith MD, Harrison MR, Kwan OL, DeMaria AN: Intraoperative Evaluation of Prosthetic Valve Regurgitation with Transesophageal Color Flow Doppler Imaging. *Chest* 1989;96:115S.
 50. Harrison MR, Clifton DG, Berk MR, Smith MD, DeMaria AN: Effect of Heart Rate on Doppler Indices of Left Ventricular Diastolic Filling in Man. *J Am Coll Cardiol* 1990;15:164A.
 51. Pinton R, Wisenbaugh TW, Booth DC, Harrison MR, Smith MD, DeMaria AN: Quantitative Assessment of Aortic Regurgitation Using Color Doppler Flow Imaging. *J Am Coll Cardiol* 1990;15:54A.
 52. Smith MD, Hollingsworth P, Elion JL, Kwan OL, Loughery EJ, DeMaria AN: Determination of Cardiac Output from Right Ventricular Contrast Echograms in Dogs. *J Am Coll Cardiol* 1990;15:194A.
 53. Xie G, Pinton R, Wisenbaugh T, Booth DC, Kwan OL, Smith MD, DeMaria AN: A Simplified Method to Determine Regurgitant Fraction by Doppler in Patients With Aortic Regurgitation. *J am Coll Cardiol* 1990;15:153A.
 54. Smith MD, Cassidy M, Lenhoff SJ, Harrison MD, DeMaria AN: Evaluation of Abnormal Porcine Prostheses by Transesophageal and Transthoracic Echo Doppler with Color Flow Imaging. 1st International Symposium on Transesophageal, Intraluminal, and Stress Echocardiography; Mainz, Germany-November 1, 1990.
 55. Salley RK, Smith MD, Floyd RD, Gross DR: The Use of Intraoperative Echocardiography for the Evaluation of Cardiac Surgical Repairs. NIH Conference on Cardiac Surgery; Louisville, Kentucky-December 1990.

56. Mostafa A, Grines CL, Harrison MR, Smith MD, El-Said GM, DeMaria AN: The Value of Quantitative Analysis of Exercise Echocardiography in Evaluating Infarct Area and Vessel Patency Following Reperfusion Therapy. *Circulation* 1990;82:III-192.
57. Crouse LJ, Cherif JB, Kisslo JA, Labovitz AJ, Raichlen JS, Schutz RW, Smith MD: Opacification and Border Delineation Improvement in Patients with Suboptimal Endocardial Border Definition on Routine Echocardiography: Results of a Phase III Albutex Multi-Center Trial. *Advances in Echocardiography*; Chicago, Illinois-September 1990.
58. Smith MD, Lenhoff SJ, MacPhail B, Kwan OL, Booth DC, Gurley JC, DeMaria AN: Value and Limitations of Biplane Transesophageal Echo in the Estimation of Left Ventricular Volumes and Ejection Fraction. *J Am Coll Cardiol* 1991;17:35A.
59. Cassidy MJ, Smith MD, Lenhoff SJ, Harrison MR, Cater AL, Kwan OL, DeMaria AN: Superiority of Transesophageal Echo with Color Flow Doppler in the Detection and Quantitation of Acute Severe Mitral Regurgitation. *J Am Soc Echo* 1991;4:278.
60. Smith MD, Hollingsworth P, Loughery EJ, Fischer C, Xie G, Cater A, Miles H, DeMaria AN: Improved Detection of Left Ventricular Endocardium Using Gated Digital Subtraction of Contrast Echograms. *J Am Soc Echo* 1991;4:285.
61. Mostafa AH, Smith MD, Harrison M, El-Said EM, DeMaria AN: Pre-discharge Exercise Echocardiography: Identifies Stunned Myocardium After Myocardial Infarction. *Circulation* 1991;84:II-206.
62. Yamagishi M, Miyatake K, Seo H, Kwan OL, Smith MD, DeMaria AN: An Enhanced Method for Measuring Cardiac Output Using Color Doppler Echocardiography. *Circulation* 1991;84:II-637.
63. Bakshi M, Popham J, Reed S, Smith MD: Primary Fibrosarcoma of the Heart: Diagnosis by 2D-Echocardiography. Presented at Regional American College of Physicians Meeting, Hyatt Regency Hotel, Lexington, Kentucky-October 19, 1991.
64. Smith MD, Xie G, Sapin PM, Souther S, Reed S, Bates MC, Morris EJ, DeMaria AN: Heterogeneity of Regional Contractile Function in Normal Subjects as Assessed by Acoustic Quantitation. *J Am Coll Cardiol* 1992; 19:19A. Presented at the 41st Annual Scientific Sessions of the American College of Cardiology, Dallas TX, April 12, 1992.

65. Smith MD, Xie G, Sapin PM, Reed S, Cater A, Mahoney S, Kwan OL, DeMaria AN: Factors Affecting the Determination of Left Ventricular Area by Acoustic Quantitation. J Am Coll Cardiol 1992;19:199A. Presented at the 41st Annual Scientific Sessions of the American College of Cardiology, Dallas TX, April 14, 1992.
66. Smith MD, Cassidy JM, Mattson MD, Jochimsen F, Sapin PM, Smith DW, Kearney PA, DeMaria AN: The Role of Transesophageal Echo in Patients with Suspected Traumatic Transsection of the Aorta. J Am Coll Cardiol 1992;19:279A. Presented at the 41st Annual Scientific Sessions of the American College of Cardiology, Dallas TX, April 14, 1992.
67. Sapin PM, Xie G, Smith MD, Kwan OL, DeMaria AN: Identification of Normal and Abnormal Left Ventricular Diastolic Filling Using a Real-Time Automatic Border Detection Algorithm. J Am Coll Cardiol 1992;19:19A.
68. Sapin PM, Xie G, Smith MD, Kwan OL, DeMaria AN: The Timing of Changes in Left Ventricular Area by Echocardiography Derived From a Real-Time Automatic Border Detection Algorithm: Comparison With Cineventriculography. J Am Coll Cardiol 1992;19:261A.
69. Xie G, Berk MR, Smith MD, Hixson CS, Harrison MR, DeMaria AN: Quantification of Mitral Regurgitant Volume Using Color Doppler PISA Method. J Am Coll Cardiol 1992;19:379A.
70. Schroeder K, Sapin P, King D, Smith MD, DeMaria AN: Is Three-Dimensional Echocardiography Superior to Two-Dimensional Echocardiography for Volume Determination? J Am Soc Echo 1992;5:315.
71. Sapin P, Schroeder K, King D, Smith MD, DeMaria AN: Comparison of Three-Dimensional Echocardiography, Two-Dimensional Echocardiography, and Biplane Angiography for Left Ventricular Volume Determination. J Am Soc Echo 1992;5:316.
72. Clifton GD, McCoy RA, Clementi WA, Smith MD, Garvey TQ, Schwartz SE: Pharmacokinetics of Atenolol Enantiomers Following Oral Racemic and S-Atenolol. Presented at the 13th Annual Meeting of the American College of Clinical Pharmacy, Toronto, Ontario, Canada- August 9-12, 1992.
73. Kearney PA, Smith DW, Johnson SB, Barker DE, Smith MD, Sapin PM: The Use of Transesophageal Echocardiography in the Evaluation of Traumatic Aortic Injury. Accepted for American Association for the Surgery of Trauma.

74. Xie GY, Sapin PM, Mattson MD, Souther SK, Reed S, Cater AL, Smith MD: Value of a New Diastolic Index Combining Transmitral Doppler and Echo Automatic Border Detection in Normals vs. Heart Failure Patients. *Circulation* 1992;86:I-447.
75. Schroeder KM, Sapin PM, King DL, Smith MD, Kwan OL, DeMaria AN: Improved Reproducibility of Left Ventricular Volume Measurements Using Guided Two-Dimensional and Three-Dimensional Echocardiography. *Circulation* 1992;86:I-271.
76. Bakshi M, Popham J, Reed S, Smith MD: Diagnosis of Primary Fibrosarcoma of the Heart by 2D-Echocardiography. Presented at The Southern Medical Association Meeting, San Antonio, Texas-November, 1992.
77. Schroeder KM, Sapin PM, Xie GY, Cater AL, Hall RF, Smith MD, DeMaria AN: Three-Dimensional Guiding of Two-Dimensional Echocardiography Improves the Reproducibility of Serial Left Atrial Volume Measurements. *J Am Coll Cardiol* 1993;21:
78. Xie GY, Berk MR, Mattson MD, Souther SK, Cutshaw BA, Herring AS, Smith MD, DeMaria AN: Prognostic Value of Doppler Transmitral Flow Patterns in Patients with Congestive Heart Failure. *J Am Coll Cardiol* 1993;21:417A.
79. Xie GY, Morris EJ, Mattson MD, Mahoney SC, Sekela ME, Taylor CG, O'Connor WN, Smith MD: Value of Right and Left Ventricular Diastolic Parameters by Doppler Echo to Predict Cardiac Rejection After Transplantation. *J Am Coll Cardiol* 1993; 21:41A.
80. Sapin PM, Xie GY, Smith MD, Kwan OL, Cater AL, Souther SK, Reed SK, Shahab ST, DeMaria AN. Peak Emptying and Peak filling Rates Derived From Automatic Border Detection Echocardiography: Comparison with Cineventriculography. *J Am Coll Cardiol* 1993; 21:41A.
81. Cater AL, Wolf JG, Smith MD: Musculoskeletal Pain in Cardiac Sonographers: Results of a Random Survey. *J Am Soc Echo* 1993;6:S-19.
82. Schroeder KM, Sapin PM, Xie G, Cater AL, Hall RF, Smith MD, DeMaria AN, King DL: Improved Reproducibility of Serial Left Atrial Volume Determination by Three-Dimensional Echocardiography. *J Am Soc Echo* 1993;6:S-22.
83. Xie G, Berk MR, Smith MD, Moffett C, Cater AL, DeMaria AN: The Role of the Left Atrium in Heart Failure: Assessment by Transmitral and Pulmonary Vein Doppler. *J Am Soc Echo* 1993;6:S-34.

84. Sapin PM, Schroeder KM, King DL, Kwan OL, Xie G, Smith MD, DeMaria AN: Three-Dimensional Guiding of Apical Biplane Views Fails to Improve the Accuracy of Echocardiographic Left Ventricular Volume Determinations. *J Am Soc Echo* 1993;6:S-37.
85. Sapin PM, Schroeder KM, Gopal AA, Keller AM, Shen Z, Smith MD, King DL: Three-Dimensional Echo vs. Two-Dimensional Echo for LV Volume Determination in Patients with Abnormal Ventricles. *Circulation* 1993;88:I-167.
86. Salley RK, Smith MD, Sekela ME, Robinson MC, Wyatt DA, Gross DR: The Ross Procedure: Initial Experience and Echocardiographic Analysis. *American Society of Thoracic Surgeons*-April, 1993.
87. Xie GY, Lawton MA, Sapin PM, Smith MD. Can Quantitative Wall Motion Analysis (Centerline Method) Improve the Sensitivity and Specificity of Exercise Echocardiography for the Detection of Coronary Artery Disease? *J Am Coll Cardiol* 1994;23:240A.
88. Buckmaster MJ, Kearney PA, Johnson SB, Smith MD, Sapin PM. Further Experience with Transesophageal Echocardiography in the Evaluation of Thoracic Aortic Injury. Presented at the 7th Scientific Assembly of the Eastern Association for the Surgery of Trauma, January 13, 1994; Freeport, Bahamas.
89. Xie GY, Fiedler AJ, Sapin PM, Clarke GB, Smith MD, Value of a New Index Combining Transmitral and Pulmonary Venous Doppler to Estimate Pulmonary Wedge Pressure in Heart Failure Patients. *Circulation* 1994;90:I-439.
90. Xie GY, Trout SC, Sapin PM, Clarke GB, Sekela ME, Taylor CG, Smith MD:. Left Ventricular Filling Alterations in Combined Right Ventricular Pressure and Volume Overload: A Relation to Left Ventricular Geometry? *Circulation* 1994;90:I-441.
91. Clarke GB, Salley RK, Sapin PM, Xie GY, Gross DR, Smith MD: Echocardiographic Assessment of Valvular Function in Patients Undergoing Replacement of the Aortic Valve with a Pulmonary Autograft. *J Am Soc Echo* June 1995, Toronto, Canada.
92. Sapin PM, Clarke GB, Gopal AS, Smith MD, Schroeder KM, Keller AM, Schnellbaecher MJ, King DL: Superiority of 3D vs 2D Echo for Measurement of Left Ventricular Mass: An *In Vivo* Anatomic Validation. *American Society of Hypertension* 1995.

93. Zhu H-S, Xie GY, Wu YX, Smith MD. Relation of LV Remodeling and Outcome after Mitral Valve Replacement: A Follow-up of 100 Patients with Rheumatic Mitral Regurgitation. J Am Soc Echo June 1995, Toronto, Canada.
94. Sapin PM, Clarke GB, Gopal AS, Smith MD, O'Connor WS, Schroeder , O'Connor WS, Schroeder KM, King, DL. Superiority of 3D Echo vs. 2D Echo for Quantitating Wall Motion Abnormality as an Index of Myocardial Infarction Size. J Am Coll Cardiol February 1995;184A.
95. Xie GY, Fiedler AJ, Sapin PM, Clarke GB, Preston H, Lin C, Smith MD. Left Atrial Dysfunction in Heart Failure Patients with Restrictive Transmitral FLOW Pattern by Doppler Echo. J Am Coll Cardiol 1996;27:266A.
96. Sapin PM, Gopal AS, Keller AM, Smith MD, King DL. Comparison of 1D, 2D, and 3D Echo for Measurement of Canine Left Ventricular Mass In Vivo. J Am Soc Echo, June 1996.
97. Xie GY, Lin CS, Preston HM, Sekela ME, Taylor CG, Kearney K, Sapin PM, Smith MD. Assessment of Left Ventricular Diastolic Function After Lung Transplantation in Pulmonary Hypertension Patients. J Am Coll Cardiol, 1997;29:437A.
98. Xie GY, Lin CS, Preston HM, Sekela ME, Taylor CG, Kearney K, Sapin PM, Smith MD. Doppler Echo Evaluation of Right Ventricular Function After Lung Transplantation in Pulmonary Hypertension Patients. J Am Soc Echo 1997;10:429.
99. Xie GY, Preston HM, Lin CS, O'Connor WN, Tritz DM, Sapin PM, Smith MD. Do Right Ventricular Indices by Doppler Echo Provide an Incremental Value to Predict Cardiac Rejection After Transplantation? J Am Soc Echo 1997;10:428.
100. Strickmeyer RB, Xie GY, Smith MD, Kearney K, Sapin PM. Post-MI Pre-Discharge Exercise Echocardiography: The Significance of Changes in Infarct Zone Wall Motion. J am Soc Echo 1997;10:433.
101. Kearney PA, Ochoa JB, Charash WE, Sapin PM, Smith MD. The Diagnosis of Thoracic Aortic Injury (TAI): A Six Year Experience with Transesophageal Echocardiography (TEE). Southeastern Surgical Congress. February 2-4, 1997, Atlanta, GA.
102. Smith MD, Xie GY, Charash W, Ochoa J, Kearney PA. TEE Characteristics of Traumatic Aortic Injury: Can we Eliminate the Need for Aortography? J Am Soc Echo 1998;11:503.
103. Xie GY, Smith MD. Ross Procedure as a Surgical Option in Adult Pts: Followup Evaluation by Echo-Doppler. J Am Soc Echocardiogr 1999; 12:354.

Updated 08/11/03