

# CONGENITAL CARDIOLOGY TODAY

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### CONGENITAL CARDIOLOGY TODAY

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### UPCOMING MEDICAL MEETINGS

See website for additional meetings

#### AAP National Conference & Exhibition

Oct. 14-16, 2011 - Boston, MA USA

<http://www.aap.org/sections/cardiology/abstractinfo.htm>

#### UCLA Fetal Cardiology Symposium

October 22, 2011 - Los Angeles, CA USA

<http://www.cme.ucla.edu/courses/event-description?event%5fid=1987072>

#### AEPC (Association of European Pediatric Cardiology) Junior Teaching Course "Fetal Cardiology"

Nov. 3-5, 2011; Warsaw, Poland

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## Hand-Held/Pocket Echocardiography: Expanding Applications in Pediatric Cardiology

By Stephanie R. Lacey, DO; Craig A. Sable, MD

Portable laptop-size echocardiography machines have been in use for almost 15 years. Availability of these systems, with functionality ranging from limited screening to a full complement of scanning tools comparable to traditional cart-size machines, has greatly enhanced access to adult and pediatric echocardiography. In the last few years a new generation of hand-held or pocket echocardiography (PECHO) units has been developed that has the potential to have an even more profound impact on the way ultrasound is used in cardiology and other areas of medicine. In this article we describe our experience with



Figure 1a.

one such system, the General Electric VSCAN, in a busy children's hospital inpatient unit and outpatient clinic and during a medical/surgical mission to Uganda. We will also review the current literature on PECHO and discuss potential future applications and drawbacks of this technology.

**GE VSCAN** The GE VSCAN (Figure 1a) weighs less than one pound (device and probe together weigh 390 g). The dimensions of the device are 13.5 x 7.3 x 2.8 cm, approximately 50% bigger than a standard iPhone or Blackberry One, the screen is flipped closed. This display screen has a 3:4 aspect ratio, measures 5.3 x 7.1 cm, and has a resolution of 240 x 320 pixels. The image sector is 75 degrees and depth ranges from 6 cm to 25 cm. Black and white and color Doppler modes are

*"Availability of these systems (portable laptop-size echocardiography machines), with functionality ranging from limited screening to a full complement of scanning tools comparable to traditional cart-size machines, has greatly enhanced access to adult and pediatric echocardiography."*

available on the VSCAN. The color flow box can be moved but the size can not be changed. There is one phased array probe with a frequency range of 1.7 to 3.8 MHz and a footprint similar to most adult echo transducers (3.3 x 2.6 cm). The gain is adjusted automatically for all depths. The very simple to use machine has a limited number of controls that allow for: adjustment of depth and gain; turning color on and off; storing still frames, loops and voice recordings (for patient identification); measurements of point-to-point distances and playback of images. The device offers an image based "Auto-Cycle" function for the automatic detection of a full heart cycle beginning with end-diastole with a fall back of 2-second loops.

Stills, image loops, and voice recordings are stored on a 4-GB micro-SD memory card in MP4 format and can be transferred to a computer or other device via the included docking station or directly from the card. Offline software which is included with the device adds additional functionality including measuring areas and saving still frames and loops (Figure 1b). The offline software is not necessary to transfer files. The system takes approximately 20 seconds to turn on and has a battery life of approximately one hour (and takes two hours to charge via a docking station of cable).

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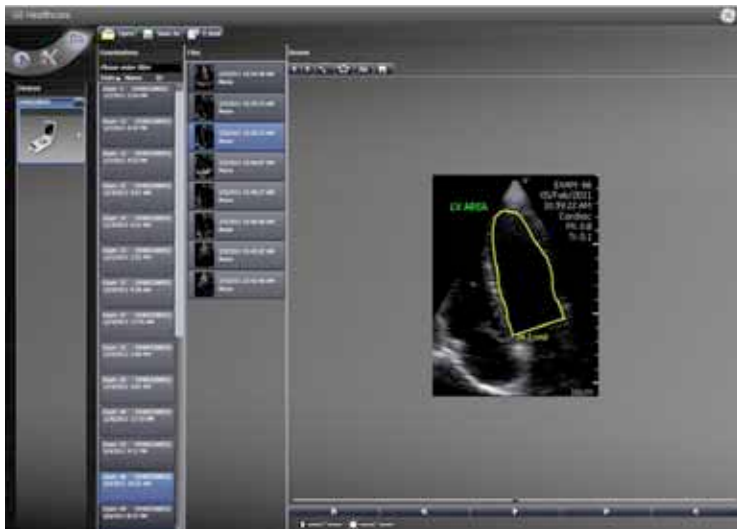


Figure 1b.

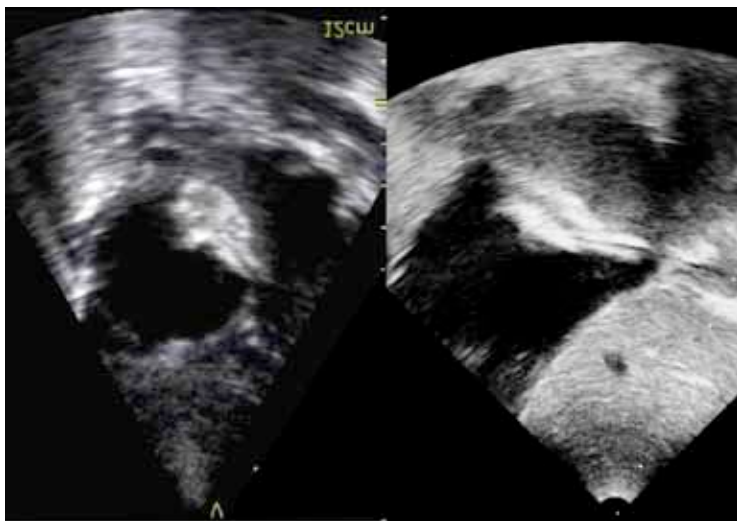


Figure 2.

**Pediatric Uses** Potential applications for PECHO in pediatric cardiology include assessment of critically ill patients in whom pericardial effusion or severe cardiac dysfunction is suspected (in the intensive care unit or emergency room settings), initial screening for congenital heart disease in the outpatient setting, fetal echocardiography screening, and population based screening for athletes (for hypertrophic cardiomyopathy) in schools. Screening in the neonatal intensive care unit for congenital heart disease, patent ductus arteriosus, and umbilical venous catheter position is also attractive, but may be limited by the lack of higher frequency transducers. PECHO may have additional value-added in developing countries where large volumes of patients are seen by a limited number of cardiologists. In many countries, cardiologists are already performing their own echocardiograms and the ability to triage patients more efficiently would have a significant impact on care. In each

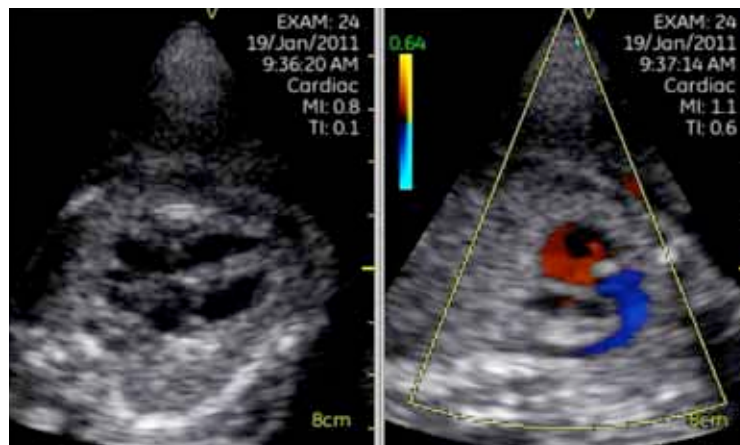


Figure 3.

of these applications, PECHO is being used as an extension of the physical examination and not meant to replace a more complete echocardiogram.

**Authors Experience** Our experience in pediatric cardiology with PECHO includes our own use in our own intensive care unit, cardiac catheterization laboratory, and outreach maternal-fetal clinic, as well as use during two recent medical missions to Uganda. In 2003 we reported successful use of a prototype PECHO system (Philips Optigo) by intensive care doctors to assess for pericardial effusions and cardiac dysfunction. Each ICU physician received four hours of focused training. In 29/30 cases they correctly identified the presence or absence of effusions and/or ventricular dysfunction. We currently have two VSCANs deployed in our intensive care unit and are initiating a similar protocol in our emergency room. Our cardiac catheterization laboratory currently utilizes a GE VIVID I for intracardiac echocardiography during placement of atrial septal defect devices. Patients subsequently get scanned on cart-size systems (Philips iE33) prior to discharge the next day. In recent cases we have been testing the performance of the VSCAN in this setting. Figure 2 shows a comparison of a VSCAN (left) and iE33 (right) image from a 4-year-old-girl who had two Amplatzer devices placed. We also have a very busy fetal outreach program and have teamed with local maternal-fetal medicine specialists in an attempt to address the very low rate of successful prenatal detection of congenital heart disease in the community. PECHO could be an ideal way to train large numbers of obstetricians--- and do four-chamber and outflow assessment on a large number of patients. Figure 3 shows a black and white four-chamber and color Doppler image of the aortic arch in a normal fetus.

We were able to utilize the VSCAN in even more ways during two recent medical missions to Uganda. We have had a relationship with the Uganda Heart Institute at Mulago Hospital in Uganda for almost a decade and have visited 12 times. We have evaluated nearly 1,000 children by echocardiography, conducted 5 open heart surgery missions there, facilitated placement of children abroad, and partnered with the local team to develop a sustainable heart surgery program in Uganda. Nearly 300 children have been treated to date. We also have a strong research collaboration to assess the prevalence of rheumatic heart disease and establish primary and secondary prevention programs.

## Third Annual Phoenix Fetal Cardiology Symposium

November 3-6, 2011; Phoenix, AZ USA

For more information, email course director:

Ernerio Alboliras, MD - [eaalboliras@phoenixchildrens.com](mailto:eaalboliras@phoenixchildrens.com)

Save the Date!





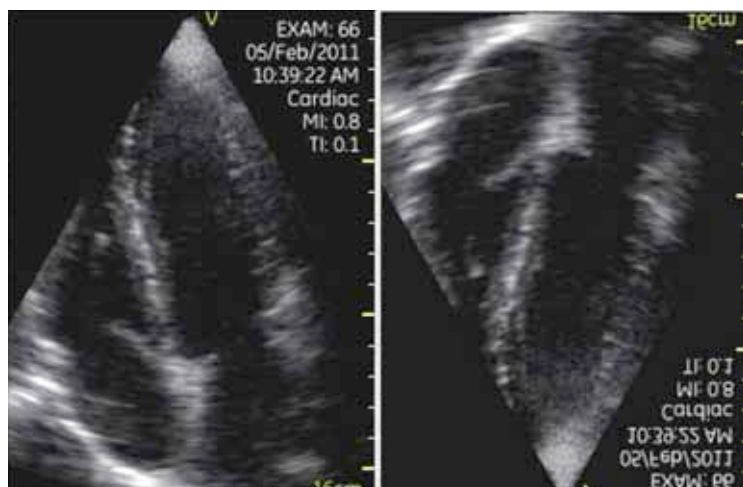


Figure 4.



Figure 5.

During a surgery mission in December 2010, the VSCAN was used to assess for effusions, function, and significant residual disease (by the authors) in 9 post-operative patients (atrial septal defects, ventricular septal defects, and Tetralogy of Fallot) ranging in age from 1 – 18 years. In all 9 patients the VSCAN findings agreed with assessment on a larger system (GE VIVID I or Philips CX50). We also sent one of our senior

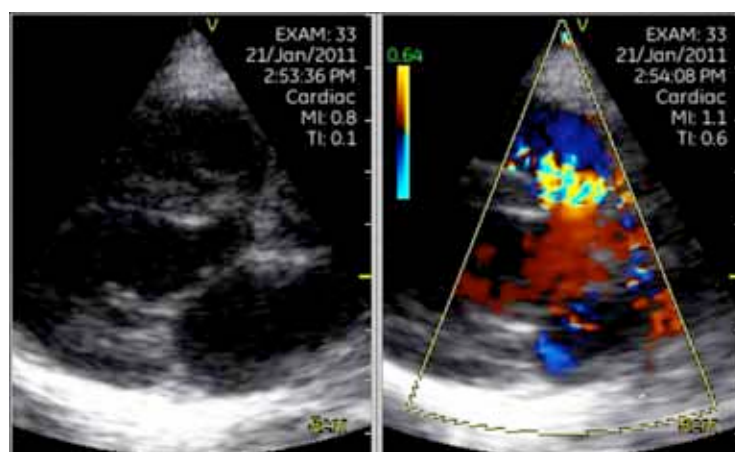


Figure 6.

cardiology fellows to an offsite cardiology clinic which usually does not have access to echocardiography. With limited training (less than 5 minutes) she was able to correctly use the VSCAN to acquire images on patients and bring them back for review. Figure 4 shows a normal 4-chamber view. Note that the original image was acquired “upside down” in accordance with adult standards. However, the VSCAN itself can simply be turned upside down; the probe can be left-right inverted to make 4-chamber and subcostal imaging look “pediatric-friendly.” Figure 5 shows an image from a 6-year-old with Tetralogy of Fallot, and Figure 6 shows black-and-white and color Doppler images from a 2-year-old with a membranous ventricular septal defect.

Over 30,000 babies are born at Mulago Hospital each year, more than any hospital in the United States. Although most babies room-in with mothers, the neonatal units are extremely busy. Echocardiography is not available in the nursery. Despite only having a low frequency transducer, we attempted to use the VSCAN in a 1.8 kg premature baby with a suspected patent ductus. Dr. Lacey is shown scanning the baby in Figure 7. A large patent ductus is seen reasonably well in black-and-white and color imaging (Figure 8).

Rheumatic Heart Disease is the number one cause of cardiac disease worldwide. Over 16 million people are affected, with over 250,000 new cases and 350,000 deaths each year. Dr. Andrea Beaton recently completed a prevalence study using World Health Organization screening guidelines which is the largest conducted to date. Dr. Beaton screened nearly 5,000 children in schools (Figure 9) over a four month period with several different units and did use the VSCAN at the end of her screening period. Children with probable or definite rheumatic heart disease were started on secondary prophylaxis, which has the potential to prevent development of more severe cardiac disease. Her findings will be published later this year. The results of this study could pave the way for larger studies and begin to have an impact on primary prevention of rheumatic heart disease. One of the biggest obstacles to more widespread implementation of screening protocols is the cost, size, and short battery life of most available ultrasound systems. We estimated that if the VSCAN were utilized over a one year period, it would cost less than \$0.18/study to screen. PECHO could truly have a major impact on a worldwide epidemic.

## Save the Date...

### Evolving Concepts in the Management of Complex Congenital Heart Disease III: San Diego

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Figure 7.

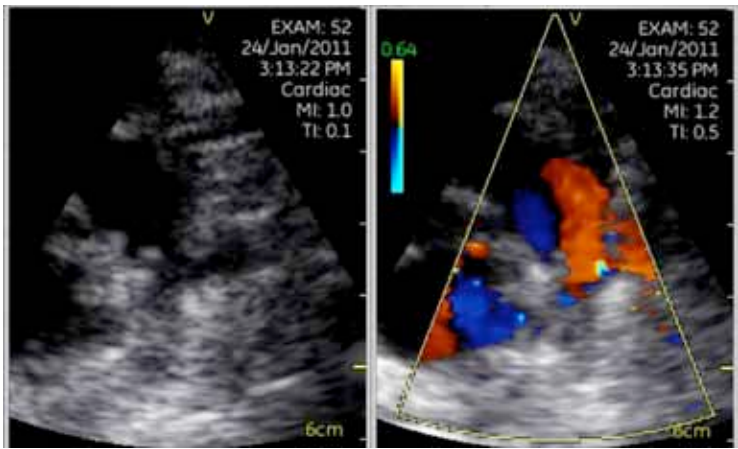


Figure 8.

**Literature Review** There are a small number of published reports assessing Pecho in adult patients but none in pediatric populations. Prinz et al. compared performance of the VSCAN to full cart size echocardiography systems (GE VIVID 7 or GE E9). Experienced cardiologists specializing in echocardiography reviewed images from the Pecho in 349 adult patients and found no significant differences in assessments of ejection fraction, left ventricular chamber and wall size, wall motion, degree of valvar regurgitation, and pericardial fluid. Other



Figure 9.

studies have reported acceptable image quality in comparison studies using the GE VSCAN and SIEMANS P10 Pecho devices. The European Association of Echocardiography recently published a position paper on the use of Pecho in adults. Their recommendations are listed in Table 1.

**Non-Cardiology Operators** There are no published data on Pecho utilization by non-cardiologists. However, there are several reports of limited echocardiograms using laptop size systems being performed by intensive care (including our own experience) and emergency room physicians as well as neonatologists. There is a growing body of literature in pediatric emergency medicine assessing the utility of limited cardiac ultrasound to evaluate left-ventricular function, pericardial fluid, and intravascular volume status (inferior vena cava size/compressibility).

There are no published guidelines that are endorsed by the pediatric cardiology community, but there are guidelines for adult patients in the emergency room setting that are endorsed jointly by the American Society of Echocardiography and American College of Emergency Physicians. These guidelines address the indications and training requirements for **FOCUS (FOcused Cardiac UltraSound)** by adult emergency room physicians. Indications for FOCUS are limited to:

1. Assessment for the presence of pericardial effusion
2. Assessment of global cardiac systolic function

**Table 1: European Association of Echocardiography Position on Use of Pecho**

1. Pocket-size imaging devices do not provide a complete diagnostic echocardiographic examination. The range of indications for their use is therefore limited to the following:
  - I. Complement to a physical examination in the coronary and intensive care unit
  - II. Tool for a fast initial screening in an emergency setting
  - III. Cardiologic counseling in- or outside health-care facilities and hospitals
  - IV. First cardiac evaluation in ambulances
  - V. Screening programs in schools, industry, and community activities
  - VI. Triaging candidates for a complete echocardiographic examination
  - VII. Teaching tool
  - VIII. Semi-quantification of extravascular lung water
2. Imaging assessment with pocket-size imaging devices should be reported as part of the physical examination of the patient. Image data should be stored according to the applicable national rules for technical examinations.
3. With the exception of cardiologists who are certified for transthoracic echocardiography according to national legislation, specific training and certification is recommended for all users. The certification should be limited to the clinical questions that can potentially be answered by pocket-size devices.
4. The patient has to be informed that an examination with the current generation of pocket-size imaging devices does not replace a complete echocardiogram.

3. Identification of marked right ventricular and left ventricular enlargement
4. Intravascular volume assessment
5. Guidance of pericardiocentesis
6. Confirmation of transvenous pacing wire placement

FOCUS training guidelines are as follows:

1. It is recognized that the training requirements for comprehensive echocardiography are not the same as those for FOCUS, and therefore each society is responsible for maintaining the integrity of their training protocols and for ensuring the responsible practice and use of these imaging techniques.
2. It is essential that the trainee has acquired and interpreted ultrasound images that represent the full range of diagnostic possibilities for that training level. Trainees are required to have a case mix of positive and negative studies that include the breadth of pathology expected to be recognized by a given level of training. It is recommended that training occur in partnership with a comprehensive echocardiography laboratory.
3. Any program that uses FOCUS to make clinical decisions must have quality assessment reviews of scan quality both internally and externally, comparing interpretations with pathologic and surgical data, as well as clinical outcomes and final diagnoses. Correlation with non-ultrasound imaging results (i.e., computed tomography), comprehensive echocardiography findings, and/or with over-read review by qualified experts should occur.
4. Ongoing continuing education programs, competency assessment and didactic programs should be carried out.

It is likely that miniaturization of technology will become increasingly attractive to the non-cardiologist in several pediatric settings. Considerable debate exists about the utility of PECHO being performed by non-cardiologists. At a minimum, set protocols for training and limits to what can be assessed must be clearly defined. It is incumbent on the pediatric cardiology community to remain very active in the dialogue about how this new technology is implemented.

**Perspective** PECHO will continue to be a very attractive tool in the hands of cardiologists and other medical providers. Although PECHO is not going to replace more comprehensive echocardiography, it may challenge many of our

current practice paradigms. Ongoing evaluation and scientific studies are needed to determine its utility in a variety of clinical settings. Very strict training, focused protocols, ongoing education, and quality control are needed if PECHO is to be utilized by non-cardiologists. Several other issues must be considered when utilizing PECHO including how data is stored, how the findings on these studies are documented, and how one gets reimbursed for these examinations. Opinions range from those who believe that the data is simply an extension of the physical examination and requires minimal documentation and no storage to those who feel any ultrasound image that alters management should be stored, lead to a formal report, and generate revenue.

The features of the next generation of PECHO systems are not yet known, but will likely include higher frequency transducers, a longer battery life, wireless (and possibly 3G/4G) data transfer capability, and DICOM compatible images. It is likely that slightly larger "tablet" style systems will emerge with even more functionality, analogous to the iPad and the iPhone. A portable "all in one" telemedicine unit the size of the current VSCAN is not beyond reach. Although there continue to be risks in how this new and exciting technology will be used, it is likely the benefits will significantly outweigh these risks. A systematic evaluation of PECHO and development of guidelines by the pediatric cardiology community for use by cardiologists and non-cardiologists is a much needed complement to this evolving technology.

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# Highlights from the 2011 PICS/AICS in Boston

By Ziyad M. Hijazi, MD

With almost 800 attendees from 55 countries, the *PICS/AICS* meeting (Pediatric and Adult Interventional Cardiac Symposium) was a huge success. Forty percent of the attendees were from outside the US. One-hundred-thirty-six faculty members (the largest ever) gave over 120 talks, and nine cardiac centers transmitted 24 live cases from North America, South America, Europe and Asia, making this year's meeting a memorable event! The quality of live cases this year was outstanding; everyone I talked to made special reference to the live cases and operators...congratulations to these operators, centers and their staff for making this possible.

*PICS/AICS* unofficially started Saturday, July 23rd at 10:00 a.m. with industry-sponsored workshops. We had three excellent workshops sponsored by Cook Medical, AGA Medical (St. Jude) and W. L. Gore. These three workshops attracted a large number of attendees. One particular workshop focused on trans-septal puncture techniques sponsored by Cook. Attendees in this workshop had the pleasure and honor to work hand-in-hand with the experts in this technique including Dr. Charles E. Mullins, perhaps the world's most expert in this technique. Medtronic had a private workshop that was also very well attended. In this

workshop, attendees had the opportunity to see new valve designs for patients with native outflow tract. The AGA workshop focused on newer devices for PmVSD closure. The issue of device erosion, which is very rare was also discussed at depth by Dr. Hellenbrand. The W. L. Gore workshop focused on newer device designs and new clinical trials they are conducting for patients with stroke and PFO.

Sunday July 24th marked the first official day of *PICS/AICS*. The entire day was dedicated to *Imaging in Congenital and Structural Cardiovascular Therapies*. This mini symposium was directed by Dr. Girish Shirali and co-sponsored by the American Society of Echocardiography. More than 450 attendees were present for this phenomenal symposium. During this symposium, many speakers discussed various topics including: various modalities of imaging, intraprocedural monitoring and guidance, ASD/PFO/VSD device closure and guidance using various imaging tools and paravalvar leak/transcatheter valve therapies. Evan Zahn gave a talk on 3D rotational angiography. This symposium attracted excellent national/international faculty that are expert in imaging. Furthermore, the role of MRI in interventional therapies was thoroughly discussed.

At the end of the day, oral abstract presentations were done in three separate rooms. Excellent abstracts were presented

from young interventional fellows/junior faculty and the best abstract in each room was chosen to be presented Tuesday for a final abstract winner award.

The day's activities ended with the opening of the Exhibits. A reception celebrating the collaboration between industry and physicians was held that night. This year, *PICS/AICS* had 36 exhibitors representing various industries/publishers that cater to patients with congenital and structural heart disease.

The following day, Monday, July 25th, 2011 was full of action. Live cases were transmitted from Danta Pazzanese Instituto de Cardiologia in Sao Paulo, Brazil, where Dr. Carlos Pedra and his team performed three excellent cases (LAA closure, ASD device closure and coarctation stenting). From Prince Sultan Cardiac Centre, in Riyadh-Saudi Arabia, Dr. Tarek Momenah and his team transmitted three excellent cases, including for the first time a live case of percutaneous tricuspid valve replacement, transcatheter pulmonary valve replacement and a muscular VSD device closure. Like the last 2 years, Dr. Shakeel Qureshi was a guest operator with Dr. Momenah. The last transmission was from Giessen-Germany where Dr. Dietmar Schranz performed two excellent cases including transcatheter pulmonary valve replacement and a multi-fenestrated ASD device closure. The quality



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of transmission and, of course, the cases were rather superior this year.

Also, on Monday, many didactic sessions took place, most notably a speech by Dr. Martin B. Leon about the value of live cases in such educational meetings. Dr. Leon discussed his opinion and convinced the attendees of the importance of continuing to do live cases.

Follow-up of all live cases performed in the previous year (*PICS-2010*) was presented by Dr. Damien Kenny. A session on structural heart disease took place in the afternoon. In that session, Dr. John Lasala discussed how to establish a program that caters to patients with structural heart disease; TAVR was discussed by Dr. Leon, mitral valve repair was discussed by Dr. Feldman, and post infarct VSD was discussed by Dr. Jo DeGiovanni. Intervention in pregnant women with congenital/structural heart disease was discussed by Dr. Igor Palacios and, finally, the issue of paravalvar leaks was discussed by Dr. Zoltan Turi and Dr. Carlos Ruiz.

Two important breakout sessions took place that day, including a breakout session for the nurses and technologists led by Sharon Hill and Kathleen Nolan. Many speakers who are expert in their field talked in that session. The other breakout session was a bioengineering session attended by many engineers and physicians interested in device designs and development. This session was very well-attended.

At the end of the day, Dr. John P. Cheatham presented the annual *PICS Achievement Award* to Dr. Horst Sievert from Germany. Clearly, this was a surprise to Horst, who deserved this award. I also presented a surprise "*Pioneer Award*" to Dr. Charles S. Kleinman who kindly attended despite his illness. Charlie has contributed so much to the field of echocardiography. Specifically, he and Bill Hellenbrand were the first ones to use TEE to guide ASD device closure! Everyone was emotionally moved when they saw Charlie and listened to him. We wish Charlie a speedy recovery from his illness (see award video: [www.chdvideo.com/podcasts/PICS-Foundation-Award.html](http://www.chdvideo.com/podcasts/PICS-Foundation-Award.html)).

I must say, Monday July 25th, 2011 was a memorable day for me personally! Sharon Hill, John P. Cheatham, and Bill Hellenbrand surprised me by presenting me with a proclamation from the Mayor of Boston, Mr. Thomas Menino who sent his representative to announce "*The Ziyad M. Hijazi Day in Boston*." I was speechless and I'm grateful to Sharon, and everyone who was involved in this proclamation!

Tuesday July 26th, was the third full day of the meeting. Again, we had many excellent live cases transmitted live from Yale University Medical Center in New Haven, CT, where Dr. Robert White and his team transmitted two excellent and demonstrative cases of pulmonary arterio-venous malformations, and how to manage such cases in the cath lab. Dr. White is the world's foremost expert in this disease, and it was a privilege to have him as an operator for *PICS/AICS* this year. The other center that transmitted cases for the first time was Montreal Heart Institute. Dr. Reda Ibrahim performed three excellent cases, including an excellent case of a TAVR using the new Edward's Sapien XT valve, an LAA closure and an ASD device closure. His cases were again of excellent quality, and the discussion that resulted from these cases was very highly educational.

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Other highlights of the day included many talks and breakout sessions. The day started with a session designed for fellows-in-training. In this session many of the field's experts talked about their experiences, and how to become an excellent interventionist, a researcher and how to beef up your CV. Other sessions included: discussion of the new AHA guidelines for pediatric catheter intervention. This session was stimulating, and many wished that it was even longer than 30 minutes.

A special summit took place, coordinated between the PICS Foundation and the PFO Research Foundation. In this session, Ms. Bray Patrick-Lake, the president of the PFO Research Foundation had invited the best-of-the-best in the field of stroke, migraine and catheter intervention. Clinical trials were discussed and neurologists and cardiologists debated the issue of PFO closure in patients with stroke or migraine.

Other sessions that day included a full session on coarctation of the aorta in infants and adults, and the heart-brain symposium.

Of course, Tuesday is famous for "My Nightmare Case in the Cath Lab" and the winner of this year's contest was Vijaya Lakshmi from India.

At the end of the day, the attendees were treated to a night of fun at the traditional Gala Dinner. The Gala was very well-attended (over 650 people), and this year was held aboard the *Odyssey*, a ship that sailed in the Boston Harbor throughout the evening.

The last day of the meeting was Wednesday, July 27th, 2011, and it was as much fun as the first day.

Again, live cases were transmitted from three sites. Michael De Moor transmitted cases from Boston. He had me as a guest operator. Of course this took me 15 years back, where PICS started when I was at the Floating Hospital. We had three excellent cases transmitted, actually including an old patient of mine when I was at Boston Floating who required a LPA sent. Another case of coarctation stenting was transmitted, as was the third case, an ASD device closure and pulmonary valvuloplasty in a patient with severe TR. This case generated a lot of discussion and debate between the attendees, panelists, moderators and the operators. The second site was St. Louis Children's Hospital in St. Louis, MO where David Balzer and his team performed three excellent cases (left SVC closure with a plug, a muscular VSD device closure and a coronary artery fistula closure). Evan Zahn performed three interventional procedures on two patients including an excellent case of coarctation stenting and a percutaneous



pulmonary valve replacement. Again, the quality of the cases was superb.

The didactic sessions on Wednesday included a session on the RVOT from fetus to adulthood. In these sessions we had excellent topics including: transcatheter management strategies in patients with pulmonary atresia by Dr. Alwi, transcatheter management of infants with Tetralogy of Fallot by Dr. Schranz, use of intra-operative balloons in patients with Tetralogy of Fallot by Dr. Bacha, stenting of pulmonary arteries by Dr. Kreutzer, transcatheter pulmonary valves by Dr. Mullen and then a debate between Drs. Bonhoeffer and del Nido on percutaneous pulmonary valves.

Other sessions included: management of adults with complex CHD. In this session, many talks were given: femoral vessels rehabilitation by Frank Ing, working on the coronary arteries by Cliff Kavinsky, management of stenosis/leaks by Eric Horlick, embolization of complex collaterals by Jack Rome, stenting in adults with complex CHD by Carlos Ruiz and finally an interesting and controversial debate between Tom Forbes and John Carroll. This debate focused on who should be catheterizing the adult with structural heart disease? A pediatric cardiologist or an adult cardiologist. This debate was featured on the Boston Scientific website a few days later.

After lunch, a few sessions took place, one again on left heart obstructive lesions from fetus to the adult, and the final interesting session of the symposium, labeled "The Future," which included a small number of speakers discussing various issues. Finally,

the last debate, between Dr. Ilbawi and Kevin Walsh, was held. The subject of the debate was whether Tetralogy of Fallot can be treated totally in the cath lab within the next 10 years.

At the end of the day, there was an iPad2 drawing for the person who visited the most Exhibits. The winner this year came from Belgium.

During PICS/AICS this year, there were many side meetings, including the SCAI Congenital Heart Disease Council meeting that elected its new president, Phil Moore; the IMPACT registry meeting headed by Gerard Martin and the Young Interventionalists forum headed by Dan Levi, Dan Gruenstein and Damien Kenny.

We want to thank first the attendees, who came from all over the world to participate in this meeting, the faculty members who took time from their busy schedules to share their knowledge with us, the exhibitors/industry without whose support this meeting would have never been a reality. I want to thank the staff (Colene and Sally) and my staff from Rush University (specially Kim Ray) and their friends and the Administration of Rush University Medical Center who supported me over the last few years to hold this meeting. Special thanks go to Ray Romero, our anchorman, Ralf Holzer, Karim Diab, Francisco Garay and Ivan Fu our medical news editors and factoid producers, Qi-Ling Cao, official photographer of PICS/AICS, Mike Fitzgerald and his staff for the audiovisual support of the meeting and *Congenital Cardiology Today* for its support with the daily briefing.

Already plans are well underway for a great meeting next year that will take place in Chicago April 15-18th, 2012. Next year's meeting will have more breakout sessions focusing on structural heart disease interventions, and live cases from many international and national venues; the preliminary list includes: Chicago, Columbus, Copenhagen, Denver, Israel, Italy, Montreal and Seattle.

We hope to see you all in the lovely city of Chicago, April 15-18th, 2012. The website for abstract submission (deadline is December 1st) and registration and hotel accommodation (Marriott Downtown Chicago) is: [www.picsymposium.com](http://www.picsymposium.com).

**CCT**

**On Behalf of The Course Directors  
and Co-Directors.**

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# SCAI Monthly Column: The SCAI Pediatric/Congenital & Structural Cardiology Fellows Course

By Ziyad M. Hijazi, MD

The Society for Cardiovascular Angiography and Interventions (SCAI) is holding its *4th Annual Fellows Course in Pediatric/Congenital and Structural Interventions*. Initiated after the huge success of the *Adult Cardiology Fellows Course*, the pediatric course is designed as a comprehensive review course for third- and fourth-year fellows-in-training (FITs) who have an interest in cardiac catheterization.

This year's course will begin on Sunday, December 4, 2011 with the *Gore Symposium* starting at 2:00 pm. This symposium focuses mainly on structural heart disease (how to start a program and how to become a structuralist) and stroke interventions. The symposium invites nationally renowned faculty to cover these topics and concludes on Monday, December 5 at 1:00 pm. Both pediatric and adult interventional Cardiology FITs are encouraged to attend this symposium. However, be sure to preregister for this symposium as space is limited.

On Monday December 5th at 1:00 p.m., the actual *Pediatric/Congenital Fellows Course* starts with topics covering the entire spectrum of cardiac conditions that can be treated/palliated interventionaly in the cath lab with in depth discussions from echocardiography to hemodynamic evaluation to the therapeutic intervention with emphasis on procedural details.

## Monday, December 5th Agenda:

### **The Working Pediatric Catheter Lab:**

1. Things used in the cath lab: catheters, wires, balloons, stents, devices, etc.
2. Preparation for the case, monitoring, nursing staff, anesthesia/sedation.
3. Vascular access, including: transhepatic & vessel closure;
4. Fluoroscopy & Radiation Exposure.
5. Hemodynamic assessment: everything we do in the cath lab.
6. The art of angiography: diagnostic needs; interventional projections, locations, etc.
7. Diagnostic cardiac cath: Pre Glenn, Pre Fontan....what are we looking for and the last talk of the day: Cardiac Catheterization Complications: How to avoid, how to think and how to manage!

## Tuesday, December 6th Agenda:

### **The Atrial Septum:** Opening the Septum.

1. Balloon septostomy, blade, dilation.
2. RF and Stents & Trans-septal.

**The Pulmonary Valve:** Stenosis/Atresia/Regurgitation: Open it or Resurrect it - From Echo to intervention.

1. Echo assessment of the pulmonary valve in stenosis/atresia & regurgitation.
2. Balloon valvuloplasty/ RF perforation for patients with Critical PS & or PA/IVS.
3. Pulmonary valve implantation: indications, evaluation and technical aspects using the Edwards Sapien valve.
4. Pulmonary valve implantation using the Medtronic Melody valve: Indications, technique and outcome.

### **The Aortic Valve:** Stenosis/Regurgitation: Open or resurrect it.

1. Echocardiographic assessment of AS/AR.
2. Balloon aortic valvuloplasty in infants and children: indications, technique and outcome.
3. Balloon aortic valvuloplasty in the fetus.
4. Case Demonstrations: Technical Aspects.

### **Embolization Therapy:** APC, Coronary, PAVM, etc.

1. APC's & Coronary artery fistulas.
2. PAVMS's & venovenous collaterals.

### **ASDs/PFOs:** Echo-Closure in Children. Table demonstration of all available devices.

1. Echo assessment of the atrial septum.
2. Device closure of ASD in children-Indications and catheter preparations, technique and outcome using the Amplatzer devices.
3. Closure of ASDs using Helex devices.
4. Case demonstrations.

### **ICE & TEE Monitoring in Cath lab**

1. TEE for ASD/PFO closure.
2. ICE monitoring for ASDs/PFOs.

### **VSDs: Echo-Closure:** Table demonstration of all devices.

1. Echo evaluation of the ventricular septum.
2. Transcatheter closure of muscular & PmVSD.
3. Periventricular closure of muscular VSD.

### **PDAs:** Angio Assessment & Closure.

1. Closure using coils-Indications, technique & outcome.
2. Closure using devices-Indications, technique & outcome.

### **Overview of the Day**

## Wednesday, December 7th Agenda:

**The Adult with Congenital Heart Disease:** Evaluation & management of simple diseases that can present as adult; Evaluation and management of complex disease.

**Branch Pulmonary Arteries Stenosis:** Angioplasty-cutting balloons & stents.

1. Angioplasty-conventional & cutting balloons-indications, preparations, technique & outcome.



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2. Stent implantation for PPS-Indications, types of stents, technique of deployment, complications & outcome.
3. Case demonstration.

**Coarctation of the Aorta:** Angioplasty, Stents, etc.

1. Infants & Children: Indications, technique & outcome.
2. Adults: Indications, technique & outcome.
3. Case demonstration.

**Retrieval Techniques:** Snares, baskets, biotomes.

1. Case demonstration of retrieval technique.

#### HLHS:

1. Echo assessment.
2. Septostomy: indications, technique and outcome.
3. Hybrid management: Indications, technique for stage 1 and outcome.
4. Patients on ECMO: Role of the cath lab.

**Myocardial Biopsy:** Pericardiocentesis

1. Adult patients.
2. Pediatric patients.

#### Presentation of Cases by Fellows

##### Thursday, December 8th Agenda:

Includes combined session with adult cardiology fellows to discuss:

1. PFO and the atrial septum: Indications for closure and results of clinical trials.
2. Trans-septal puncture techniques.
3. Aortic and mitral valvuloplasty: with case demonstrations.
4. Percutaneous aortic valve replacement.
5. Percutaneous mitral valve repair.

As you can see, the agenda is packed and almost every topic in catheter intervention is covered. We have assembled ten renowned faculty members including: Lee Benson, MD, FSCAI; John P. Cheatham, MD, FSCAI; Ted Feldman, MD, FSCAI; William E. Hellenbrand, MD, FSCAI; Ziyad M. Hijazi, MD, FSCAI; Eric Horlick, MD, FSCAI; Frank Ing, MD, FSCAI; Doff McElhinney, MD, FSCAI; Shakeel Qureshi, MD, FSCAI; Girish Shirali, MD FSCAI.

***“For international fellows, the SCAI will cover the cost of attending the meeting (hotel/registration/meals onsite), however, travel from your city to Las Vegas should be covered by each respective international society.”***

The course is free and SCAI covers the cost of travel (air and hotel), and provides meals onsite. We encourage 3rd and 4th year fellows from every program in the US and Canada to register for this exciting educational course. For international fellows, the SCAI will cover the cost of attending the meeting (hotel/registration/meals onsite), however, travel from your city to Las Vegas should be covered by each respective international society.

Please note space is limited and registration is available on a first-come, first-served basis. Act now as enrollment is filling fast! For more details on the course, including registration, please visit the SCAI website at [www.scai.org/fellows](http://www.scai.org/fellows).

I hope to see you in Las Vegas.

**CCT**

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## CONGENITAL CARDIOLOGY TODAY

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Do you have interesting research results, observations, human interest stories, reports of meetings, etc. to share?

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- Title page should contain a brief title and full names of all authors, their professional degrees, and their institutional affiliations. The principal author should be identified as the first author. Contact information for the principal author including phone number, fax number, email address, and mailing address should be included.
- Optionally, a picture of the author(s) may be submitted.
- No abstract should be submitted.
- The main text of the article should be written in informal style using correct English. The final manuscript may be between 400-4,000 words, and contain pictures, graphs, charts and tables. Accepted manuscripts will be published within 1-3 months of receipt. Abbreviations which are commonplace in pediatric cardiology or in the lay literature may be used.
- Comprehensive references are not required. We recommend that you provide only the most important and relevant references using the standard format.
- Figures should be submitted separately as individual separate electronic files. Numbered figure captions should be included in the main Word file after the references. Captions should be brief.
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#### Update in Congenital Heart Management

Immediately preceding the World Congress of Cardiology  
April 17, 2012; Jumeriah Beach Hotel, Dubai, UAE  
For more information contact Alan Weisman at  
[aweisman@childrensnational.org](mailto:aweisman@childrensnational.org) or call +1-202-476-2728

## SAVE THE DATE



#### Course Directors:

Richard Jonas, MD and Gerard Martin, MD

**Faculty:** Charles Berul, MD; Richard Levy, MD;  
Craig Sable, MD and David Wessel, MD



# The Third Phoenix Fetal Cardiology Symposium (PFCS): Nov 3-6, 2011 Embassy Suites, Phoenix, Arizona

By Karim Diab, MD

The time draws near for the *Third Phoenix Fetal Cardiology Symposium*, which will be held on November 3-6 in Phoenix, Arizona. The course format will follow the successful two prior sessions and will include an interesting and innovative program that will focus on basic knowledge and techniques as well as recent advances in the diagnosis and management of fetal cardiac disease. This year, however, the symposium features significant differences including the expansion of the symposium to 4 days and the addition of various didactic and interactive sessions, all given by nationally and internationally prominent faculty.

The first symposium took place in October 2008 in Phoenix and included 2.5 days of sessions focusing on various topics in fetal cardiac disease. The second symposium, held in 2010, was expanded to include a larger number of sessions and discussed screening for fetal cardiac disease, advanced imaging techniques, various fetal cardiac lesions and fetal arrhythmias. Last year's symposium was attended by almost two hundred physicians, nurses and sonographers. Attendees came not only from the United States but also from the Philippines, South Korea, Canada, Panama, and Bulgaria!

There are key aspects to highlight in this year's symposium. The four-day symposium is expanded to offer up to a maximum of 27 AMA PRA Category 1 Credits (compared to 18 in the previous year) with sessions that will include lectures, technical procedures and live demonstrations. This will provide a comprehensive understanding of the uniqueness of the fetal cardiovascular system with focus on basic aspects of fetal cardiology as well as recent advances in the field.

A major feature of this conference is the live case demonstration during which the actual technique of fetal cardiac imaging is performed live on actual patients in a separate area of the symposium and transmitted directly into the main conference room. This provides a practical session that helps acquaint physicians as well as sonographers with the technique of fetal echocardiography, which

hopefully would help in improving screening for fetal CHD. The live case session will take place during the first day of the symposium. There will be normal and selected abnormal cases demonstrated, which provides the attendees with an exceptional educational opportunity. We hope that this will allow significant participation from the audience. There will also be other interactive sessions during the symposium such as the special jeopardy session on Saturday that will feature interesting fetal cases and will allow for more interaction from the audience.

In addition to the live cases, the first day will include sessions discussing the techniques for evaluating fetal cardiac function with a focus on the cardiovascular profile, maternal conditions affecting the fetal cardiovascular system, fetal

echocardiography in multiple stages of gestation and genetics in fetal cardiac disease.

On the second day of the symposium, sessions will focus on fetal arrhythmias as well as structural heart lesions. The arrhythmia lectures will focus on the diagnosis and management of fetal bradycardias and tachycardias, while the lectures on structural heart lesions will discuss in detail specific malformations such as anomalies of the venous system, cardiac septation defects, HLHS, DORV, TOF, single ventricle and heterotaxy syndromes.

After the reception on Friday evening, there will be a fun and interesting dinner lecture on the evolution of fetal cardiac intervention before and beyond the Boston Children's Hospital experience presented by Dr. Wayne Tworetzky!



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### Key sessions topics in this year's symposium:

- Live fetal cases demonstrations
- Fetal arrhythmias
- Fetal Cardiology Jeopardy
- Evolution of Fetal Cardiac Intervention

Saturday November 5th, will feature lectures that will focus on fetal myocardial disease and heart failure, pericardial disease, cardiac tumors and extra-thoracic anomalies affecting the fetal heart. In addition, there will be lectures discussing the mode of delivery of the fetus with CHD, cardiac issues in IVF, 3D and 4D fetal imaging and twin-twin transfusion syndromes. As noted above, the day will end with an interesting jeopardy session that we hope will elicit continuous participation from the audience!

On Sunday, the last day of the symposium, topics will include practical issues in fetal cardiac screening, helping the mother and family cope with the diagnosis of a heart defect in their unborn child and urgent postnatal surgery and intervention in the prenatally diagnosed fetus with cardiac defect. There will also be discussion of the utility of telemedicine as a tool in delivering fetal echocardiographic services to remote areas.

As such, the fetal symposium this year includes a comprehensive program that will cover various practical, technical and clinical aspects in the understanding and management of the fetal cardiovascular system. It will provide an immense educational experience that will benefit the attendees from physicians, sonographers and nurses working in the fields of Pediatric Cardiology, Fetal Echocardiography, Obstetrics and Maternal Fetal Medicine as well as any health care professional or staff who cares for neonates with cardiac disease.

Join us in shaping the future of fetal cardiology during a pleasant and educational break in sunny Arizona in November 2011!!

For more details about the program and registration, please visit the website at [www.fetalcardio.com](http://www.fetalcardio.com)

**CCT**

### On Behalf of the Course Directors

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