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ASE (American Society of Echocardiography) 22nd Annual Scientific Sessions
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http://www.asecho.org

9th Edition of the International Congress on Complications During Cardiovascular Intervention: Management & Prevention (ECC)
June 15-17, 2011; Lausanne, Switzerland
http://www.ecc-conference.com

20th International PARMA Echo Meeting - From Fetus to Young Adult
June 22-24, 2011; Parma, Italy
http://www.unipr.it/arpa/echomeet/home.html

Congenital Heart Disease in the Adult
June 19-22, 2011; Cincinnati, OH USA
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CSI 2011 - Catheter Interventions in Congenital & Structural Heart Disease
June 23 to 25, 2011, Frankfurt, Germany
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PICS-AICS
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27th Annual Echocardiography in Pediatric and Adult Congenital Heart Disease (Mayo Clinic)
October 9-12, 2011; Rochester, MN USA
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Physician/Hospital Integration in Pediatrics: An Update for Pediatric Cardiologists

By Michael A. Rebolledo, MD, MBA and Darin E. Libby, MHA

Certainty in a Time of Uncertainty

The healthcare industry is undergoing a time of unprecedented change that will require hospitals and physicians to work more collaboratively to reduce the cost of care while improving quality (Porter and Teisberg 2006). Regardless of the exact changes to be implemented as a result of the Patient Protection and Affordable Care Act (PPACA)[1], lowering cost, improving quality, and increasing access will be paramount to success. And the degree of success will be linked to the ability to realize improvements across a continuum of healthcare services. This will require that hospitals and physicians rethink their business strategies and implement more integrated care models. While the future of healthcare industry changes are less than certain, it will be essential that hospitals and physicians integrate care delivery and information exchange to drive more value.

Déjà Vu

For those who practiced in the 1990s, the call for integration may sound all too familiar and likely has evoked memories that are less than favorable. Back then providers and hospitals began to form alliances in order to strengthen their positions against managed care organizations (Fraschetti and Sugarman 2009). Hospitals acquired physician practices in an attempt to better control expected decreases in inpatient occupancy rates and increases in outpatient care (Feldstein 2007). Many of these ventures failed. These failures were often due to significant cultural clashes and distrust between hospital leadership and physicians (Fraschetti and Sugarman 2009). Other problems included the failed economics of high practice-acquisition valuations and decreased productivity after physicians were awarded multi-year salary guarantees. These challenges were compounded by poor practice management, in which hospitals assigned management responsibilities to hospital-trained executives with limited physician practice management expertise (Feldstein 2007). Institutional memories remain, and today hospitals and physicians are using the lessons learned from past failures to enable successful alignment.

This article shares key insights that pediatric cardiologists should consider when evaluating alignment with hospitals and reviews the Professional Services Agreement (PSA)[2] structure as an alternative to employment.

> ***"The healthcare industry is undergoing a time of unprecedented change that will require hospitals and physicians to work more collaboratively to reduce the cost of care while improving quality (Porter and Teisberg 2006)."***

Impetus for Change

Why are physicians now considering alignment with hospitals? While the answer to that question will vary depending on the circumstances of the physician's practice (e.g., specialty, location, group structure), there are several common industry forces that are moving hospitals and physicians into more collaborative arrangements. Figure 1 illustrates several of theses key drivers of alignment.

Footnote 1. PPACA is a federal statute that was signed into United States law by President Barack Obama on March 23, 2010. This act and the Health Care and Education Reconciliation Act of 2010 compose the healthcare reforms of 2010.

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Impact to Cardiologists

Over the past year, many private practice cardiologists have been driven to consider closer alignment with hospitals, even employment, due to significant cuts to cardiology payments in the 2010 Medicare Physician Fee Schedule (Anderson 2010). A recent American College of Cardiology (ACC) member survey (ACC 2010) found that 30% of those in private practices have plans to be employed by a hospital system, while 25% are considering employment but do not have a plan in place. In addition, cardiologists are facing the same industry forces mentioned above, such as increasing overhead and regulatory concerns. Furthermore, demonstrating meaningful use criteria for electronic health records is also creating additional financial and administrative pressures. Many small group practices simply do not have the resources to adequately respond to these demands. In order to cut costs, cardiology private practices have been decreasing staffing, reducing services, and/or limiting new Medicare patients (ACC 2010). With these pressures, cardiologists may not have any choice but to seek hospital integration.

Pediatric Market Challenges

Beyond the alignment drivers enumerated in Figure 1, there are additional factors driving physician/hospital alignment in pediatrics. Foremost, the financial pressures on physician practices are more severe, as pediatric specialists rely more heavily on government-based payors, such as Medicaid. Unemployment has softened insurance membership, and a slowed recovery, combined with the expansion of Medicaid eligibility requirements and the use of exchanges, is expected to continue to lead to growth in Medicaid and governmental payor membership. These macroeconomic forces are anticipated to add financial pressure on pediatric medical groups. The economic impact is less income, as noted in a recent study that illustrated pediatric specialists earn 65% of the income of adult specialists (ECG 2010). Not surprisingly, our nation has physician shortages across pediatric specialists. The increased competition for pediatric specialists has resulted in many children's hospitals pursuing alignment strategies to ensure that their clinical programs and services are maintained. Pediatric care delivery is also gaining more interest from delivery systems, as it offers unique services to the market and may result in a more favorable negotiating position with payors. All of these forces are driving greater financial and operational alignment between children's hospitals and physicians.

Pursuit of Greater Alignment With Children's Hospitals

Children's hospitals understand the need for critical pediatric subspecialty and surgical programs to support missions and recognize that without financial support to physicians, it is difficult to retain and recruit pediatric subspecialists. Consequently, hospitals are increasingly seeking greater financial and operational alignment in order to recruit physicians, meet regulatory concerns related to hospital payments to physicians, respond to a growing number of physicians who are not interested in the challenges and risks of managing a private practice, and ensure that value is received for increasing physician support.

While children's hospitals may be categorized under various organizational models, such as freestanding hospitals, hospitals within hospitals, or components of academic medical centers, there are basically two types of integration vehicles: employment or affiliation (Roorda 2008). The integration vehicle may be restricted

Footnote 2. The PSA structure is synonymous with the medical foundation model used in several states, including California and Texas, due to restrictions on the corporate practice of medicine.

Alignment Driver	Description
Physician Shortages	Physician supply is not keeping pace with demand, creating physician shortages in many specialties.
Recruitment Risks	Medical groups and independent physicians are unable and/or unwilling to recruit to the levels that hospitals and/or communities need.
Practice Economics	Physicians are facing income pressures, as costs have significantly outpaced reimbursement over the last several years.
Administrative Burden	The burden of operating a practice in an environment with heightened administrative requirements is forcing physicians to spend more time on non-patient care activities.
Patient Access	Increasingly, physicians are closing their practices to new patients, refusing specific insurance plans, or pursuing concierge medicine, which further restricts patient access to select physicians.
Increased Scrutiny on Quality	Payors and employers are demanding transparency and added scrutiny on quality and utilization management.
Payment Reform	New payment models, such as bundled payments, require defined funds flow arrangements among hospitals and select physicians.

Figure 1. Alignment Drivers.

based on the organizational model or state corporate practice of medicine laws.

There are many options for physician/hospital integration (Figure 2) (Bhatt and Welter 2009), which range from lower cost and integration (e.g., medical director) to higher cost and integration (e.g., an employed multispecialty medical group).

While many of these relationships are traditional employment arrangements, there are alternative alignment vehicles that can better meet the respective goals of the parties. One such model is the PSA structure, also referred to as a medical foundation model, which is used in many states that have restrictions on the corporate practice of medicine.

Medical Foundation Model (PSA)

The medical foundation model is a unique nonprofit corporation (usually a subsidiary of the hospital) that does not employ physicians, but instead contracts with them to provide professional services to foundation patients (California Health and Safety Code, Section 1206 n.d.). The model is commonly used in California and Texas due to statutes that prohibit hospital employment of physicians.

The PSA model exists as a relationship between the foundation board and the medical group, as illustrated in Figure 3. The foundation is linked to the medical group via a PSA. This agreement defines the details of the relationship between the parties and states the specific terms of how they will operate in alignment. It also defines terms related to joint governance, funds flow, organizational structure, and operations. Essentially, the foundation board oversees the business side, while the medical group governs physicians and care coordination. Payor contracts are held by the medical foundation; therefore, this entity assumes reimbursement risk and may compensate physicians under various performance systems. The medical group retains control over physician affairs, including peer review, hiring and firing, and compensation. In summary, the structure enables the parties to manage the operational activities that are within their respective expertise and forms joint oversight for setting the strategic direction.

Several California children's hospitals already utilize the foundation model in order to align with physicians, and the benefits of this

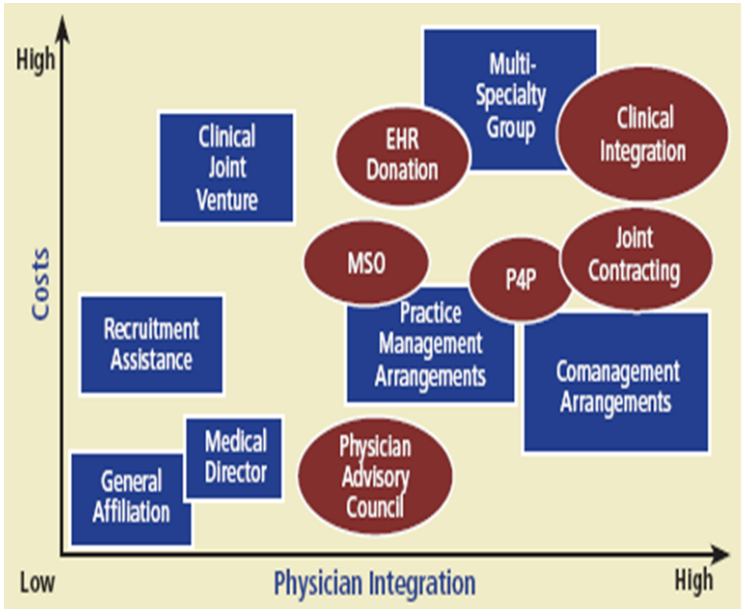

Figure 2. Physician/Hospital Integration Options.

structure compared to direct employment have increased its adoption in other states. Key benefits of the PSA model are outlined below.

- The medical foundation model transfers the risk of financial loss, with regard to collections and costs of overhead, from the physicians to the medical foundation or hospital owner.
- The entity also bears the responsibility of managing infrastructure, such as support staff and cost of IT implementation.
- This model is a vehicle by which physicians can be recruited and paid predictable market rate salaries.
- The foundation is required to perform medical research and provide educational services for its patients.
- Full integration is part of a sustainable long-term strategy that results in a stronger market presence.
- Compared to joint ventures, which can be short-lived, fully integrated models create a permanent partnership strategy.

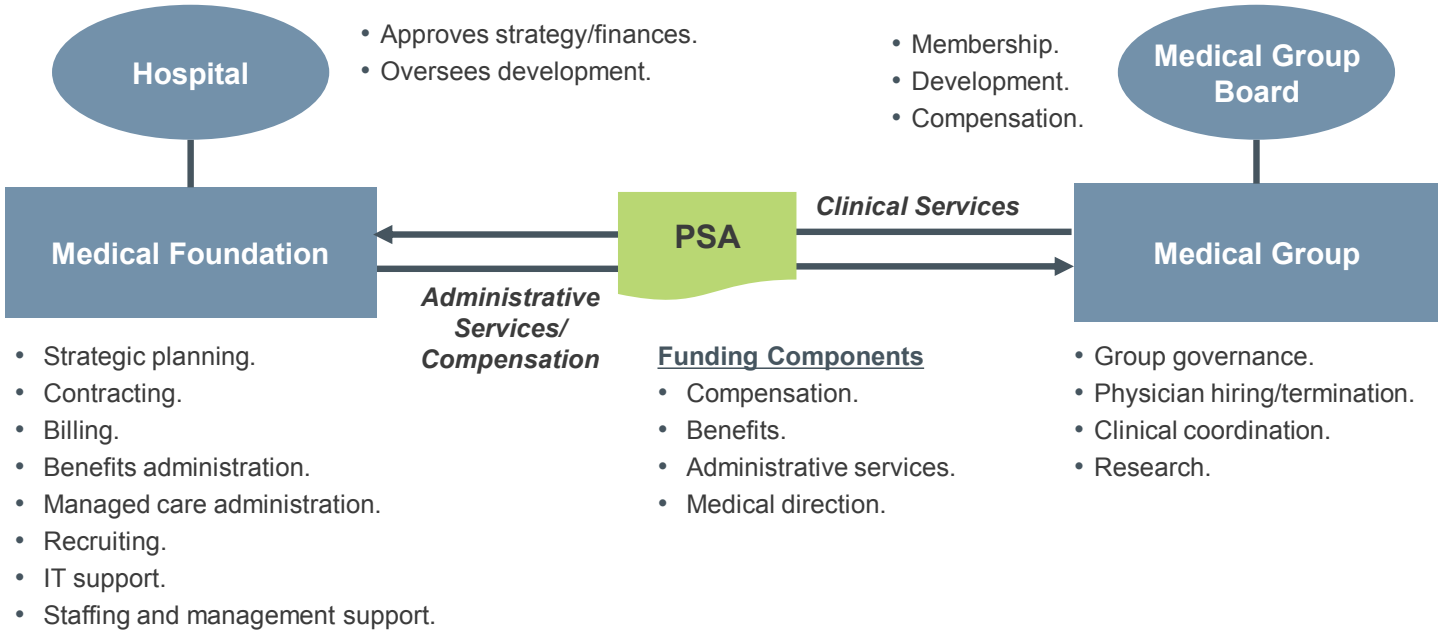

Figure 3. Medical Foundation (PSA) Structure.

As with any alignment structure, drawbacks do exist. One is that the PSA model may present limitations on the percentage of physician members that can be on the foundation's board of directors. This causes some loss of autonomy for the contracted physicians. There is also the possibility of a backlash from physicians who are not in the foundation medical group. The foundation may also be seen as a competitive threat to other physicians, health systems, and payors. Other potential barriers to success include significant cultural differences and lack of trust between physician groups and hospital organizations. Fundamentally, physician groups and hospitals have entirely distinct business models. Hospitals are used to amassing and preserving capital through low-volume, high-dollar transactions, and, in addition, they have a service mission to the community. Therefore, hospitals are used to operational and strategic control. Because of the tax code, physicians are discouraged from amassing capital. Most physicians perform high-volume, low-dollar transactions, which allows them to exercise significant control over revenue management. Likewise, physicians feel they should have strategic control over the enterprise.

There are critical components necessary for successful physician/hospital integration, as discussed by Robert Fraschetti, former President and CEO of St. Jude Medical Center, Fullerton, California (Fraschetti and Sugarman 2009). All parties must understand that success depends on cooperation and interdependence. Trust takes time to develop between the hospital and physicians. There must be recognition and respect of institutional cultural differences. Accountability and transparency are essential to maintain performance. Shared governance and management structure are also essential. To summarize, the physician group focuses on recruiting and clinical and compensation issues, while the foundation board controls finance, contracting, and operations. The foundation pays an aggregate amount to the group for serving its patients, and the medical group determines how to divide compensation among its members.

Conclusion – Critical Components of Pediatric Physician/Hospital Alignment

In the pediatric environment, physician/hospital alignment will be essential to long-term success. While children's hospitals that have integrated physician organizations are better able to meet the challenges of the current pediatric environment, the ability to maximize the benefits of the relationship will depend upon accord in leadership, strategic alignment, organization of research and education programs, and financial integration (Roorda 2008).

Regardless of the specific organization models in place, effective physician/hospital alignment must address four key areas (Roorda 2008):

- Leadership – A critical component of a successful relationship is the overlap and alignment of leadership. In particular, leadership roles that are aligned within the hospital, physician group practice, and medical school lead to positive and productive interactions and day-to-day functioning in support of common goals. Often, the structure is composed of a single individual who has leadership positions in each organization.
- Strategic Alignment – The strategic integration between children's hospitals and physicians can be measured by the degree to which these entities have joint and/or integrated planning processes surrounding the medical staff and key programs. Organizations that are tightly and strategically integrated have structured processes in place to determine the size and mix of specialties needed on the medical staff, as well as strategic program growth.
- Organization of Research and Teaching Programs – Research and medical education programs are areas of overlap that are increasingly important alignment vehicles for hospitals and physicians. As children's hospitals seek "top tier" status among peers, the strength of these programs is reliant on the ability to attract the best faculty and provide the optimal environment for research and teaching, in conjunction with clinical care.
- Financial Integration – Integration of finances means more than just providing resources. Rather, optimal integration will align incentives with organizational goals, including quality, access, program growth, and financial success. The financial integration between the children's hospital, medical school, and group practice can be measured by the degree to which these entities are linked in relation to their funds flow.

Bibliography

- American College of Cardiology. "Is This the End of Private Practice?" CardioSurve Newsletter, August 2010, p. 2.
- Anderson, M. Sue. "Developing Employed Cardiovascular Physician Practices." Strategies for Superior Cardiovascular Service Line Performance. HealthLeaders Media, 2010.
- Bhatt, Purvi B., and Terri Welter. "Hospital/Physician Alignment: The PHO Model." ECG Diagnostic, November 2009, www.ecgmc.com (accessed February 14, 2010).
- California Health and Safety Code, Section 1206 n.d.
- ECG Management Consultants, Inc. Provider Compensation, Production, and Benefits Survey, year 2010 based on 2009 data.
- Feldstein, Paul J. Health Policy Issues: An Economic Perspective. Chicago: Health Administration Press, 2007.
- Fraschetti, Robert J., and Michael Sugarman, M.D. "Successful Hospital-Physician Integration." Trustee, July/August 2009, pp. 11-17.
- Patient Protection and Affordable Care Act. H.R. 3509, 2010.
- Porter, Michael E. and Elizabeth Olmsted Teisberg. Redefining Health Care: Creating Value-Based Competition on Results. Boston: Harvard Business Press, 2006.
- Roorda, Kenneth. "Physician/Hospital Relationships in Pediatrics." Executive Briefing, May 2008. www.ecgmc.com.

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Corresponding Author

Michael A. Rebolledo, MD, MBA
Assistant Clinical Professor
Department of Pediatrics
School of Medicine, UC Irvine
Medical Director, Echocardiography,
Children's Hospital of Orange County
455 S. Main St.
Orange, CA 92868 USA
Phone: 714-221-5500; Fax: 714-221-5515

mrebolledo@choc.org

Darin E. Libby, MHA
Senior Manager
Healthcare Practice
ECG Management Consultants, Inc.
11512 El Camino Real, Suite 215
San Diego, CA 92130 USA
Phone: 858-436-3220; Fax: 858-436-3221

dlibby@ecgmc.com

Medical News, Products & Information

Request for Research Applications on Pediatric Cardiomyopathy

The Children's Cardiomyopathy Foundation (CCF) is pleased to announce the availability of one-year research grants for studies focused on pediatric cardiomyopathy. The purpose of CCF's Annual Research Grant Program is to advance knowledge of the basic mechanism of the disease and to develop more accurate diagnostic methods and improved therapies for children affected with cardiomyopathy. Visit www.childrenscardiomyopathy.org (click on Research/Grants & Awards) for guidelines and to view past grant awards.

Request for research applications on pediatric Cardiomyopathy may include: Dilated, Hypertrophic, Restrictive, Left Ventricular Non-Compaction or Arrhythmogenic Right Ventricular Cardiomyopathy.

Opportunity: The Children's Cardiomyopathy Foundation (CCF) is inviting investigator-initiated research proposals for innovative basic, clinical, population, or translational studies related to the cause, diagnosis, or treatment of primary cardiomyopathy in children under the age of 18 years. CCF's grant program is designed to provide seed funding to investigators for the testing of initial hypotheses and collecting of preliminary data to help secure long-term funding by the NIH and/or other major granting institutions.

Eligibility: The principal investigator must hold an MD, PhD or equivalent degree and reside in the United States or Canada. The investigator must have a faculty appointment at an accredited US or Canadian institution and have the proven ability to pursue independent research as evidenced by publications in peer-review journals.

Funding: Funding is available in the range of US $25-$50,000 for one year of total direct costs. Following the completion of the proposed study, a second year of funding may be an option for relevant study extensions.

Application Process: CCF grant guidelines and application forms are downloadable at www.childrenscardiomyopathy.org/site/grants.php. The 2011 deadline for application submission is Friday, September 2, 2011 with final award decisions to be made by January 2012.

Selection Process: Grant award decisions are made through a careful peer-review process led by CCF's Medical Advisors and reviewed by CCF's Board of Directors. Scientific excellence and relevance to primary forms of pediatric cardiomyopathy are the main criteria for selecting research projects to support.

Research Sheds Light on Aortic Aneurysm Growth, Treatment in Marfan Syndrome

The Johns Hopkins researchers who first showed that the commonly used blood pressure drug losartan may help prevent life-threatening aneurysms of the aorta in patients with Marfan Syndrome have now discovered new clues about the precise mechanism behind the drug's protective effects.

The team's findings not only answer many lingering questions — including how exactly the drug works and whether other classes of blood-pressure medication may work as well as or better than losartan — but also identify new targets for treating Marfan and other connective-tissue disorders.

In two separate papers published in the April 15th issue of *Science,* the researchers showed that losartan neutralizes a rogue protein, and in doing so, halts the dangerous ballooning of the heart's main blood vessel, the aorta.

"Our research has decoded the exact cascade of events triggered by the genetic glitch in Marfan that culminates in weakening of the aorta, its gradual enlargement and tearing," says senior investigator Harry "Hal" Dietz, MD, a cardiologist at Johns Hopkins Children's Center, professor in the McKusick-Nathans Institute of Genetic Medicine at Hopkins and director of the William S. Smilow Center for Marfan Research.

"Understanding the cellular cascade leading up to Marfan's most serious complication will allow us to design therapies that precision-target each step in this harmful sequence of events," Dietz adds.

Dietz's research has previously shown that the dangerous stretching of the aorta in those born with the genetic disorder stems from the excessive activity of a protein called TGF-beta, believed to cause damage by setting off aberrant signals inside cells that make up blood vessels. The new research, conducted in mice that were genetically engineered to develop Marfan, identifies one of these signals as a critical communication channel that sets off a dangerous cross-talk between TGF-beta and a protein called ERK. TGF-beta activates ERK, which causes the aorta to stretch and grow aneurysms, the researchers found.

The research further shows that two other proteins, AT1 and AT2, play opposing roles in the cross-talk between TGF-beta and ERK, and that turning one off while keeping the other intact is critical in preventing aneurysms. Researchers have long suspected that AT1 can cause damage to the aorta by activating TGF-beta, but AT2's role has remained unclear — until now.

To explain the role of AT2 in aneurysm formation, the researchers treated mice with Marfan with either losartan, a known inhibitor of AT1, or Enalapril, a drug that shuts off both AT1 and AT2. The aortas of mice treated with losartan stopped growing in the area where aneurysms tend to form. Mice treated with enalapril, however, showed barely any improvement. The discovery led researchers to conclude that blocking the AT1 alone can slow growth and avert aneurysm formation, but blocking both AT1 and AT2 would not. In other words, keeping AT2 intact halted the dangerous interplay between TGF-beta and ERK. Losartan

blocked AT1 but spared AT2, thus turning off ERK. Enalapril shut off both and had no effect on ERK.

Because TGF-beta is already a suspect in other connective-tissue diseases, these new revelations about its modus operandi may pave the way to new therapies for such disorders, the investigators say.

“Precision-targeting AT1 to shut it off, while leaving AT2 intact is the way to go,” says lead author Jennifer Pardo Habashi, MD, a cardiologist at Hopkins Children’s. “Now that we know what makes losartan so effective, we can start looking for other medications that may be even better at preventing aortic damage.”

The investigative team also tested a candidate compound that selectively blocks ERK and showed that it completely halted aneurysm growth in mice with Marfan. Yet another compound that blocks another one of TGF-beta’s communication channels, called JNK, was nearly as effective in curbing aneurysm growth.

Dietz identified the Marfan gene in the 1990s and led the scientific team that in 2006 first described losartan’s effect on the aorta.

A small Hopkins study in children has already shown that losartan can slow enlargement of the aorta over time. Based on these findings, larger clinical trials are already under way at Hopkins Children’s and other institutions.

Other Hopkins researchers involved in the two studies were Tammy Holm, Jefferson Doyle, Djahida Bedja, YiChun Chen, Christel van Erp, Hamza Aziz, Mark Lindsay, David Kim, Daniel Judge, Alexandra Modiri, Florian Schoenhoff and Ronald Cohn. Co-investigators from other institutions included Bart Loeys of Ghent University in Belgium, and Craig Thomas, Samarjit Patnaik, and Juan Marugan, of the National Institutes of Health.

The research was funded by the National Institutes of Health, the Howard Hughes Medical Institute, the Smilow Center for Marfan Research at Hopkins and The National Marfan Foundation.

New Patient Guidelines for Heart Devices

A series of new guidelines for cardiac specialists has been developed to determine when heart failure patients should receive a mechanical heart-pumping device.

"The new guidelines will likely affect who is referred for a mechanical circulatory support device, and how early in the process a physician would consider implanting a left ventricular assist device," says Jeffrey A. Morgan, MD, Associate Director of Mechanical Circulatory Support at Henry Ford Hospital. "These guidelines have the ability to change clinical practice patterns for patients with advanced heart failure."

Dr. Morgan presented the guidelines, April 16th at the *International Society of Heart and Lung Transplantation (ISHLT)* annual meeting in San Diego.

The left ventricular assist device (LVAD) is a battery-operated pumping device, surgically implanted to help a weakened heart pump blood. Last year, approximately 2500 LVADs were implanted nationally, which is used chiefly for patients waiting for a heart transplant due to the chronic donor shortage. In other cases, it is used for long-term support in patients who are not eligible for a heart transplant.

Dr. Morgan played a leadership role in the formation of the ISHLT's Mechanical Circulatory Support Council that authored the guidelines, due to the high-quality, high-volume LVAD implant program at Henry Ford. The program has a growing national reputation in clinical, academic and research areas.

From March 2006 through March 2011, eighty-five patients with chronic heart failure underwent implantation of an LVAD at Henry Ford, and the program continues to have strong growth. Dr. Robert J. Brewer is the Surgical Director of the Mechanical Circulatory Support Program, and Dr. Celeste Williams is the Medical Director of the program.

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- 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.
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CONGENITAL CARDIOLOGY TODAY

Headquarters

824 Elmcroft Blvd.

Rockville, MD 20850

USA

Publishing Management:

Tony Carlson, Founder & Senior Editor

TCarlsonmd@gmail.com

Richard Koulbanis, Publisher & Editor-in-Chief

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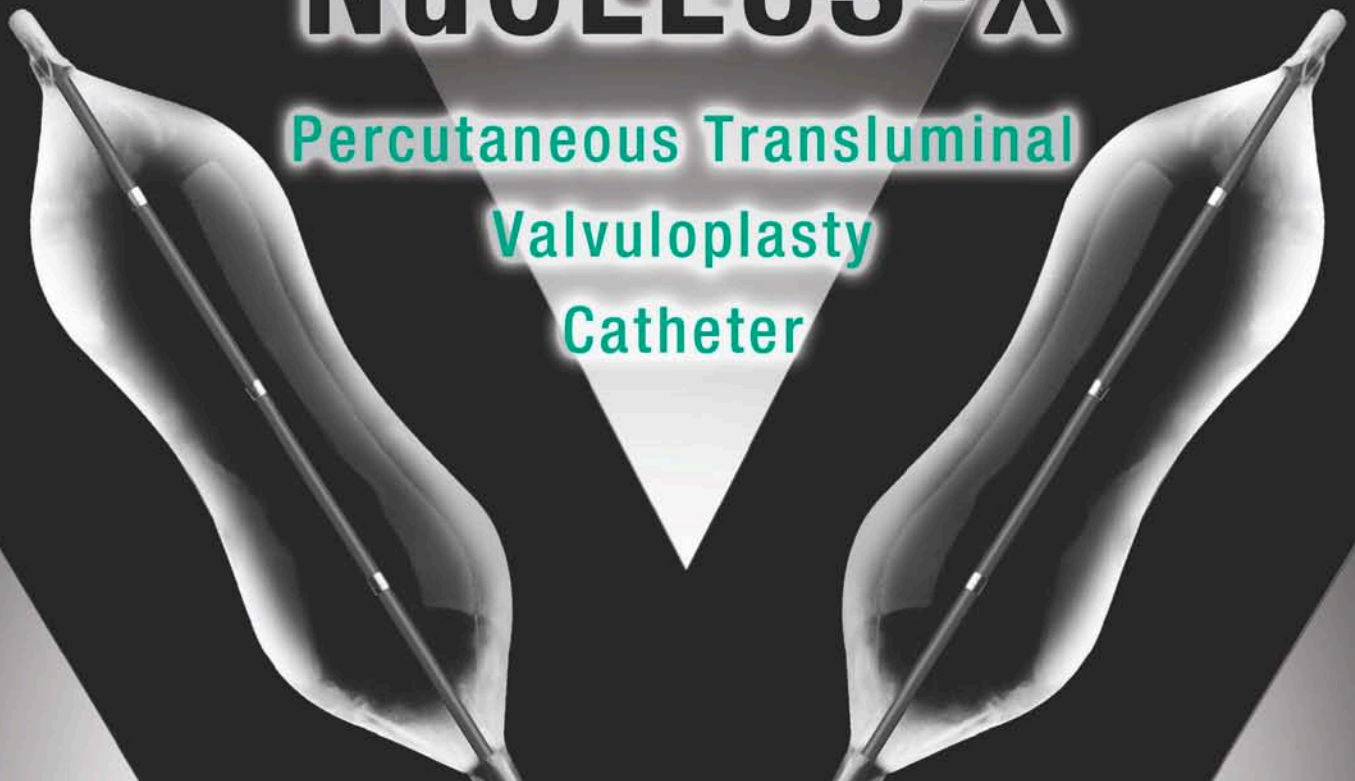

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