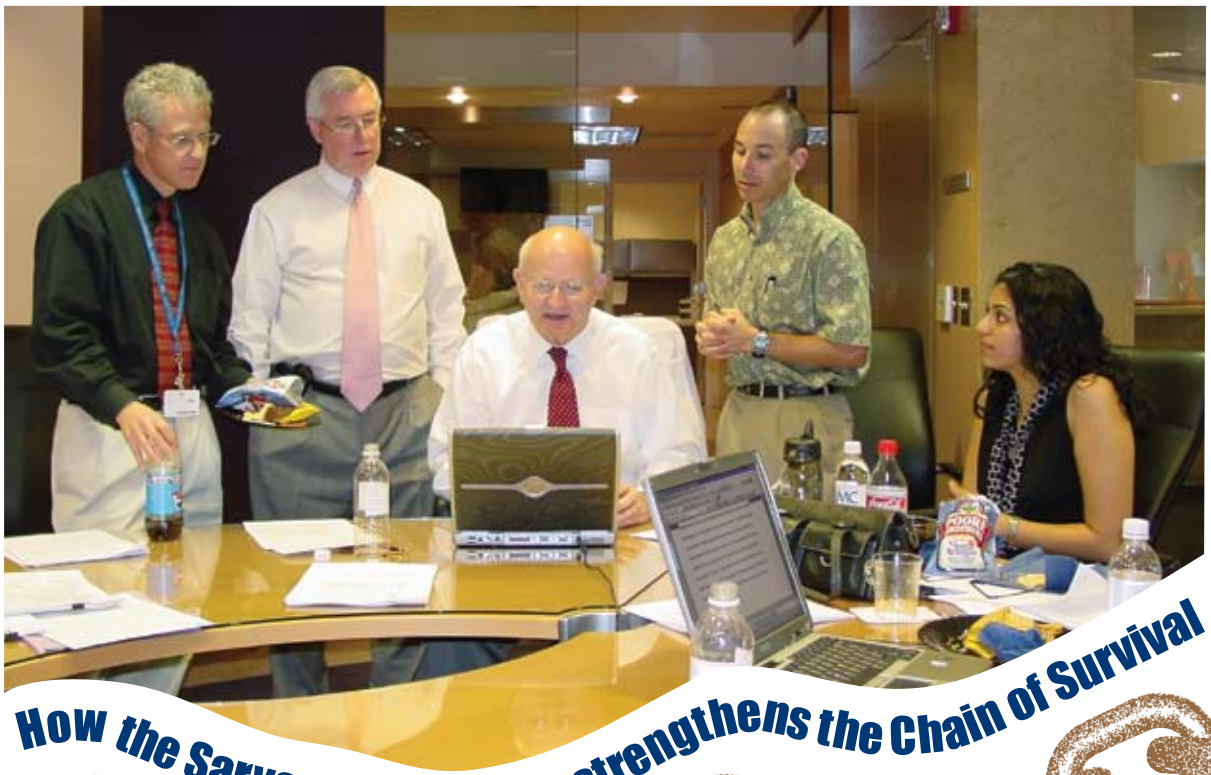
# Sarver Heart Center

**A publication from The University of Arizona College of Medicine** *Newsletter Issue 52 • Fall 2008*


## Restarting the Heart



## How the Sarver Heart Center strengthens the Chain of Survival

On April 1, the American Heart Association released an official statement encouraging bystanders who witness a cardiac arrest to help the victim by calling 9-1-1 and starting chest compressions without mouth-to-mouth breathing. The University of Arizona Sarver Heart Center has advocated this new approach for years, calling it "The New CPR" or "Continuous-Chest-Compression CPR." Recognizing cardiac arrest, alerting the emergency medical services and starting CPR are only the first links in the whole "chain of survival" of patients with cardiac arrest. However, a chain is only as strong as its weakest link. Changing the first links is not enough. To make a substantial difference in survival rates, the chain of survival has to be reinforced throughout its length. The doctors and researchers at the Sarver Heart Center have developed new approaches and introduced advances to make the remaining links as strong as the ones at the beginning. All these improvements focus on keeping the heart and the brain alive, and therefore collectively are referred to as Cardiocerebral Resuscitation. This newsletter follows the chain of survival and highlights some of the advances we have made. Most individuals die of cardiovascular disease and many – almost 1,000 each day in the United States alone – die of unexpected cardiac arrest. Despite periodic changes to CPR guidelines, the chances of surviving a cardiac arrest have remained very low for decades. Recognizing the substantial toll out-of-hospital cardiac arrest takes on our society, Arizona Gov. Janet Napolitano declared out-of-hospital cardiac arrest a public health crisis. This made it possible for the Arizona Department of Health Services Bureau of Emergency Medical Services and Trauma System to collect accurate statewide information on this public health issue. Crucial to this success has been the commitment of Bentley J. Bobrow, MD, the Bureau's medical director, and Lani L. Clark, BS, its data coordinator and educator. Both are members of the Sarver Heart Center Resuscitation Research Group and have

# *Out-of-hospital cardiac arrest is a major problem in the industrialized world.*

*This newsletter highlights the "chain of survival," a series of life-saving improvements made possible by friends and advocates of the Sarver Heart Center and our dedicated members.*

Martha Lochert

*Based on our years of research we developed a new approach to the management of patients with out-of-hospital cardiac arrest that dramatically increased survival.*

*Dr. Ben Bobrow, head of Emergency Medical Services at the Arizona Department of Health Services, recently reported that there are more than 200 cardiac arrest survivors in Arizona who may owe their survival to the improvements made by the Sarver Heart Center Resuscitation Research Group. Can you imagine the countless families spared the devastation of losing a loved one to sudden cardiac death if these changes were adopted worldwide? That is why we are embarking on a mission to change the way the world responds to this health crisis.*

*Medical advances, especially in treating cardiovascular disease, do not come easy, fast or without significant financial support. Without the support of those like you, our progress would not be nearly as great. Private funding has helped to speed up the advances we've made. Without your help, our Cardiocerebral Resuscitation initiative would not have developed as quickly or as successfully as it has.*

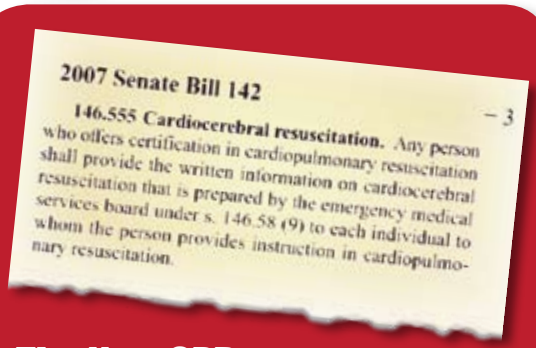
*You can support this initiative not only through your gifts but also through your willingness to learn and advocate the new CPR. You may very well save a life!*

*Thank you for believing, as I do, in our vision of a future free of heart disease and stroke.*

Gordon A. Ewy, MD
*Director, UA Sarver Heart Center*

set up a statewide program that serves as a hub for the collection and dissemination of information on out-of-hospital cardiac arrest. This program (called SHARE, for "Save Hearts in Arizona Registry and Education") is the only such program in the nation.

Out-of-hospital cardiac arrest is a global problem. The world is watching the Sarver Heart Center Resuscitation Research Group and takes great interest in what we do and how we do it. Our goal is to provide a working model that offers practical solutions to sudden cardiac arrest that can be applied worldwide. ♥



**2007 Senate Bill 142**

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**146.555 Cardiocerebral resuscitation.** Any person who offers certification in cardiopulmonary resuscitation shall provide the written information on cardiocerebral resuscitation that is prepared by the emergency medical services board under s. 146.58 (9) to each individual to whom the person provides instruction in cardiopulmonary resuscitation.

## The New CPR: It's not just a good idea— it's the Law

Wisconsin Sen. Tim Carpenter was able to pass a law requiring that any person seeking to become certified in CPR be given written information about Compression-Only CPR. The bill passed without objection in both the Senate and the Assembly and was signed into law on March 18, 2008. Read on to learn how Wisconsin became one of the first states to increase survival rates three-fold by doing it the "Arizona way".

The UA Sarver Heart Center Newsletter is published three times a year in Spring, Fall and Winter. News reporters are welcome to quote from newsletter articles and are asked to provide credit. Correspondence or inquiries should be addressed to: UA Sarver Heart Center, Public Affairs, PO Box 245046, Tucson, AZ, 85724-5046. All contents © 2008 Arizona Board of Regents. The University of Arizona is an EEO/AA - M/W/D/V Employer. Please visit the UA Sarver Heart Center online: www.heart.arizona.edu

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# 1 Recognize cardiac arrest and call 9-1-1

Anyone who witnesses an unexpected collapse in a person who is unresponsive is urged to immediately start the "chain of survival." Fortunately, one does not have to be a trained health-care professional to recognize cardiac arrest. If you see someone collapse suddenly, for no apparent reason, shake the person and shout, "Are you OK?" If unresponsive, do not try to check for a pulse, but check for breathing. If the person is not breathing at all, if they are gasping or breathing in a way that appears more like snoring (see *Gasping: What is it?* at the end of this article), you can be sure they are in cardiac arrest. Calling 9-1-1 is critically important because a person in cardiac arrest cannot be saved by chest compressions alone–yet chest compressions are critical to keep the individual alive until the heart can be shocked back into normal function.

*Lights – camera – action! Members of Tucson's Catalina Foothills High School Drama Club show how to perform the New CPR in a video to be distributed to schools throughout Arizona.*

# 2 'Staying Alive: Your Hands—Their Heart'

The best CPR protocol is useless if people hesitate to use it. Lack of bystander CPR still is the biggest hurdle toward overcoming the dishearteningly low chances of survival after cardiac arrest. To increase bystander willingness to perform CPR, the Sarver Heart Center has advocated Chest-Compression-Only CPR, an approach that is easier to learn, perform and remember than conventional CPR, which requires mouth-to-mouth breathing. Our initial concept was that Chest-Compression-Only CPR was better than calling 9-1-1 and doing nothing. Then Karl B. Kern, MD, in cooperation with researchers in Great Britain, discovered that individuals newly certified in CPR interrupted chest compressions, on average, for 16 seconds to deliver the "two quick mouth-to-mouth ventilations" recommended at the time. With this knowledge, SHC researchers demonstrated in 2002 that single rescuer Chest-Compression-Only CPR actually was better than chest compressions interrupted for mouth-to-mouth ventilations.

Sarver Heart Center members were delighted when the American Heart Association officially endorsed the use of our Continuous-Chest-Compression CPR under the name of "Hands-only CPR." The American Red Cross quickly followed suit, endorsing what they call "Compression-only CPR." In spite of the different monikers, we are talking about the same thing: Place your hands on the center of the chest; press fast, press hard, don't stop to breathe for the person. Stop only if you need to rest, but keep interruptions to a minimum.

In a joint effort with the Arizona Department of Health Services, the Sarver Heart Center is rolling out a statewide campaign to teach Chest-Compression-Only CPR to Arizonans. Each middle school and every high school in the state will receive a free informational package containing a video, written instructional materials and an electronic training device. In the video, cardiac arrest survivor Brian Duffield, who collapsed in the shower after a swim workout at The University of Arizona's Hillenbrand Pool (newsletter No. 49/Fall 2007), tells the story of his survival and urges the viewers to be trained in compression-only CPR and be ready to use it. "Remember," Duffield says, "when someone is in cardiac arrest, bystander CPR is their only chance of survival–your hands are their heart." The campaign was made possible through funding from the Arizona Legislature and is implemented through the SHARE program. Besides offering education about how to perform Compression-Only CPR, the SHARE program encourages lay responders to use Automated External Defibrillators (AEDs) if available.

# 3 A New Protocol for Paramedics and Firefighters

In addition to a simplified CPR protocol to increase bystander CPR, the Sarver Heart Center Resuscitation Research Group has developed a significantly modified protocol for firefighters and paramedics coming to the rescue of a cardiac arrest victim. This is the third link in our chain of survival.

In 2003, the Sarver Heart Center entered into a collaboration with Terry Valenzuela, MD, and Tucson Fire Department Chief Dan Newburn to implement the first version of the new protocol in Tucson. A year later, Michael Kellum, MD, an emergency physician at Mercy Health System in Janesville, Wis., came to the Sarver Heart Center to learn the new CPR. Under his leadership, fire departments in two rural Wisconsin counties were introduced to an updated version of Cardiocerebral Resuscitation.

In 2005, the new Cardiocerebral Resuscitation protocol was adopted by some of the emergency medical services in the Phoenix metropolitan area. This project is a collaboration between the Arizona Department of Health Services and the Sarver Heart Center, under the auspices of Bentley Bobrow, MD, medical director of emergency medical services for the Arizona Department of Health Services. At press time, the number of fire departments in Arizona that have abandoned the AHA guidelines in favor of Cardiocerebral Resuscitation was 71 and it keeps growing.

Dr. Bobrow and his colleagues at the Sarver Heart Center analyzed survival data from before and after firefighters and paramedics adopted the new resuscitation protocol. In March, the Sarver Heart Center Resuscitation Research Group published the findings with the new protocol in the prestigious *Journal of the American Medical Association* (JAMA). The study analyzed the outcomes of 886 cardiac arrests that occurred outside a hospital setting. When the researchers looked at the subgroup of patients with the best odds of survival, those with witnessed cardiac arrest and whose heart was in a "shockable" rhythm, they found that survival rates improved from 5 to 18 percent after paramedics started using an approach guided by Cardiocerebral Resuscitation. This important study was authored by Bentley J. Bobrow, MD, Lani L. Clark, Gordon A. Ewy, MD, Vatsal Chikani, MPH, Arthur B. Sanders, MD, Robert A. Berg, MD, Peter B. Richman, MD and Karl B. Kern, MD. Recently, the team analyzed additional data and discovered something even more exciting: In the subset of patients who had a witnessed arrest and a shockable rhythm and who actually received all aspects of Cardiocerebral Resuscitation, the survival improved to 38 percent! These results have been submitted for publication.

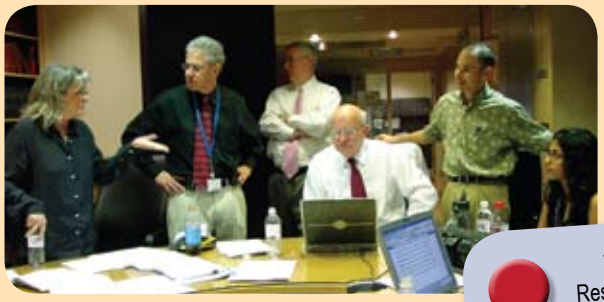
Soon after the promising results from emergency medical services in Arizona were published, Wisconsin study leader Dr. Kellum published the outcomes collected over three years in Wisconsin in this year's *Annals of Emergency Medicine*. According to Dr. Kellum, "The project was undertaken because the existing guidelines for care of (cardiac arrest) patients … had not substantially improved survival rates … during nearly four decades." In line with the improvements observed in Arizona,

# 4 Cardiac Arrest Centers

Once a cardiac arrest patient has received CPR through bystanders and a modified resuscitation protocol through the paramedics, it is vital to ensure the best possible treatment once he or she reaches a hospital. In a unique statewide effort to enhance survival of patients with out-of-hospital cardiac arrest, Bentley Bobrow, MD is leading an effort to establish cardiac arrest centers in Arizona. Patterned after the "Trauma Center" designations for hospitals, the goal is to ensure that resuscitated patients receive specialized treatment that will increase further their chance of survival. Trauma Centers, now well established, have been shown to increase the survival rates of trauma victims because they offer the appropriate physicians, expertise and equipment to meet the requirement for this designation. University Medical Center is the only hospital in Tucson with Cardiac Arrest Center status. Ambulance crews have the opportunity to bypass "regular" hospitals and take the patient directly to the closest cardiac arrest center.

Arizona is the first state to establish certified cardiac arrest centers that specifically cater to patients with out-of-hospital cardiac arrest. The Arizona Department of Health Services has begun designating appropriate hospitals as cardiac arrest centers. Cardiac arrest centers must be able to admit heart patients 24 hours a day, 7 days a week and provide immediate access to a catheterization lab to open up blocked coronaries. They also provide therapeutic mild hypothermia to survivors of cardiac arrest that initially are in coma. Such patients undergo therapeutic hypothermia - total body cooling - for 24 hours, a procedure shown to limit brain damage after cardiac arrest.

"If we lower the temperature of a cardiac arrest patient by just a few degrees," Dr. Bobrow said in a recent television interview, "it helps preserve their neurological system. In other words, they don't suffer brain damage from their cardiac arrest."



The Sarver Heart Center Resuscitation Research Group brings together experts from different fields. Here, data for a scientific publication are being discussed by (from left) SHARE Coordinator Lani Clark, BS, Pediatrician Robert Berg, MD, Chairman of cardiology Karl B. Kern, MD, Sarver Heart Center Director Gordon A. Ewy, MD, Mayo Clinic Emergency Physician Bentley Bobrow, MD, and Mayo Clinic Statistician Vatsal Chikani, MPH. Not pictured are group members Arthur B. Sanders, MD, Marc Berg, MD, Ron Hilwig, DVM and Charles Otto, MD.

Kellum reported that neurologically intact survival rates in cardiac arrest patients with a shockable heart rhythm increased from 15 to 39 percent when the new protocol was introduced. Dr. Ewy was a co-author of this publication. Thus, independent studies from both Arizona and Wisconsin found a dramatic and almost identical increase in survival in the same subset of patients with out-of-hospital cardiac arrests when treated with the optimal paramedic/firefighter portion of Cardiocerebral Resuscitation.

The Sarver Heart Center researchers encourage all emergency medical providers to institute Cardiocerebral Resuscitation. “Our state has shown that emergency medical systems can make inexpensive, simple changes to their protocol that will dramatically improve survival,” says Dr. Bobrow. “This was truly a collaboration among public health, emergency medical providers and higher education.”

# Still a long way to go

Change is difficult, especially for an approach like CPR, which is characterized by “standards” and “guidelines” that have been accepted for decades. Speaking for the Sarver Heart Center Resuscitation Research Group, Drs. Ewy and Kern have stated, “We think we are approaching the ‘tipping point’ where our recommendations will be accepted, but we have a long way to go.” For example, Hands-only CPR is recommend by the American Heart Association for lay individuals only. For trained individuals who think they can interrupt chest compressions for minimal periods, 30 compressions interrupted by two ventilations are still recommended. Research conducted at the Center has found that interruptions of chest compressions for mouth-to-mouth breathing are excessive no matter who is providing bystander CPR. Furthermore, the International Liaison Committee on Resuscitation (ILCOR) still recommends compressions and mouth-to-mouth ventilations, so it is obvious that the Sarver Heart Center still has a long way to go to convince large parts of the medical community of the benefits of Cardiocerebral Resuscitation. As part of this effort, members of the Sarver Heart Center Resuscitation Research Group are spreading the word among medical professionals and the public. They are busy writing review articles for as many journals as possible; they accept invitations to present their findings at medical schools, post-graduate seminars and international conferences. They use any method of communication possible to get their research findings in the public domain so the world can make informed decisions. The Sarver Heart Center Resuscitation Research Group is committed to continued research and education as they know that their changes will save lives. Even though a lot of work remains to be done, new discoveries made by the Sarver Heart Center Resuscitation Research Group suggest that survival rates can be increased even more. ♥

# Gasping: What is it and how do I recognize it?

One of our latest discoveries is that subjects with cardiac arrest seem to breathe normally for about one minute after the collapse, after which many begin a snoring-like breathing that is referred to as gasping. It is critically important to recognize that snoring-like breathing may continue for three to five minutes. If gasping is mistaken for “breathing” the initiation of bystander resuscitation is delayed and the patient stands less chance of survival. “Reviews of conversations between callers and emergency dispatchers indicate that the caller often says the person has collapsed but is breathing,” says Sarver Heart Center Resuscitation Researcher and SHARE coordinator Lani Clark, “only to return to the phone shortly thereafter, reporting the patient has stopped breathing!” Continuous chest compressions, if initiated promptly, will provide enough circulation so that the individual often will continue to gasp and one does not have to be concerned about breathing for the patient. “Gasping is not only an indication to start bystander CPR but also a sign of adequate chest compressions that must be continued,” says Gordon A. Ewy, MD. ♥

**“Staying Alive:” Compression-Only CPR online:**
**http://handsonlycpr.eisenberginc.com/fun_stuff.html • www.azshare.gov • http://www.heart.arizona.edu**

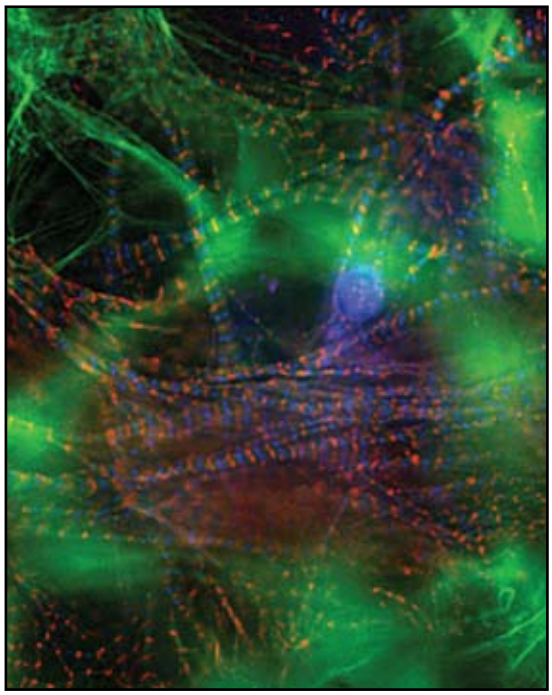
# An Ounce of Research - Worth a Pound of Cure

***Philanthropy enables Sarver Heart Center researchers to make headway in the prevention of sudden cardiac death***

While a major focus of this issue is on resuscitation of patients with out-of-hospital cardiac arrest, equally important is our research into new and promising ways of preventing cardiac death. Many of these projects are supported through research grants and endowments created by private supporters. The grants are awarded to Sarver Heart Center researchers on a competitive basis and have fueled the investigative spirit of many research teams.

According to the Sudden Cardiac Death Foundation, 400,000 to 460,000 people die of unexpected sudden cardiac death each year in an emergency department or before reaching a hospital. This is equivalent to the population of Cleveland, Ohio, or almost half of the city of Tucson dying suddenly.

It is becoming increasingly clear that many causes of sudden cardiac arrest are inherited. Several projects at the Sarver Heart Center are investigating the factors that predispose individuals to sudden cardiac arrest and are looking for ways to identify those at risk, so that preventive measures can be taken. Electrocardiograms or genetic testing can identify some familial risk factors and anyone with a history of sudden death in their family should be evaluated by a cardiologist and an electrophysiologist.



*Art from the heart: Researchers in the lab of Carol Gregorio, PhD use molecular techniques to make the internal structures of heart muscle cells visible under a microscope. By studying the architecture of individual muscle fibers (striped lines), the scientists can analyze the effect of mutations affecting heart function. Photo courtesy of Carol Gregorio, PhD.*

The dedicated board members of the **Steven M. Gootter Foundation** (www.stevenmgootterfoundation.org) have worked tirelessly not only to further public awareness of sudden cardiac death, but also have raised significant resources for research at the Sarver Heart Center. Through their gifts, five investigator awards have been made to teams whose work shows great promise in the prevention of sudden cardiac death. Additionally, others like Mr. William Griffin (The Peter Ott, MD Endowed Chair of Electrophysiology), the Flinn Foundation and the American Heart Association have created endowed faculty positions that provide resources to further our progress toward understanding this sudden and deadly killer.

In 2006, **Anke Zieseniss, PhD**, a postdoctoral fellow in the Molecular Cardiovascular Research Program, was selected as one of the Gootter Investigators. She is working together with other scientists in the lab of **Carol Gregorio, PhD**, to decipher the molecular mechanisms by which genetic mutations in heart muscle proteins lead to hypertrophic cardiomyopathy (HCM) or dilated cardiomyopathy (DCM), two major hereditary conditions that frequently result in sudden cardiac death. The researchers focus on identifying the components and molecular mechanisms regulating the internal architecture of muscle cells, including heart muscle cells, during normal development and disease. Dr. Gregorio's team has gained important insights into the biochemical machinery that controls how certain proteins inside the cells line up to accomplish an amazing feat of biology: to form heart muscle cells capable of contracting in a highly orderly fashion. The findings could lead to strategies for repairing mutated heart tissue and spare the individuals from sudden cardiac death later in life.

As cardiac electrophysiologists, **Peter Ott, MD**, and **Julia Indik, MD, PhD**, evaluate patients and determine if they are at risk of sudden cardiac death. They also evaluate those who were fortunate enough to have survived a cardiac arrest. Such patients likely require an implantable cardioverter-defibrillator (ICD) to save them from death in the event of a future cardiac arrest. Both physicians implant such devices on a regular basis. They run a busy patient clinic, but because of resources made available by the Peter Ott, MD, Endowed Chair and the Flinn Foundation/ AHA Endowed Chair, they are able to pursue educational and research interests as well. For example, Dr. Indik uses advanced computer techniques to identify different waveforms of ventricular fibrillation. Her findings will be used to program future Automated External Defibrillators (AEDs) to better coordinate their function with the actions of lay responders. Future generations of "smart" AEDS may be able to instruct users to either shock first and then deliver chest compressions, or to perform chest compressions before having the AED shock the patient. Additionally, Dr. Ott is involved in clinical trials that study the use of ICDs and to better predict who needs to be implanted with such a device. Both physicians also regularly give lectures to physician groups and lay people.

With significant support from the Steven M. Gootter Foundation, **Vincent L. Sorrell, MD**, holder of the Allan C. Hudson & Helen Lovaas Endowed Chair of Cardiovascular Imaging, is spearheading the use of advanced magnetic resonance imaging (Cardiac MRI) to screen and identify individuals at risk for cardiac arrest. Presently, the majority of individuals who are at increased risk of sudden death are those whose heart

muscle was damaged in a heart attack. These patients are easy to recognize and many of them have an internal defibrillator implanted. However, only a fraction of these patients is at high risk for sudden death, while the majority of patients do not need the extremely expensive devices. Dr. Sorrell's project allows him to detect small scars in the heart that are likely to precipitate deadly arrhythmias. For this ambitious project, Dr. Sorrell has assembled a team of experts from different disciplines. While he uses advanced imaging techniques to focus on the phenotypic level, in other words, morphological traits that predispose individuals to sudden cardiac death, Sarver Heart Center colleague **Shu Fen Wung, PhD**, gathers blood samples from the patients and tests them for certain genetic traits that can be linked to the risk of sudden cardiac death. To complement the interdisciplinary team, **Maria Altbach, PhD**, also a member of the Sarver Heart Center, specializes in tweaking the imagery to obtain the best possible results and make these kinds of studies possible.

Congenital heart disease is of concern to Sarver Heart Center members and many families such as the Gieszl family in Phoenix. After they lost their young son, Billy, after a short battle with heart disease, the Gieszl family created a fund that provides a research award to study this very issue. Fortunately, thanks to our pediatric cardiologists and surgeons, many children with congenital heart defects now are surviving to adulthood, creating a special need to care for such patients. To meet this growing need, **Dr. Sorrell**, as a recent recipient of the Gieszl Award, developed a multispecialty "Congenital Heart Disease in Adults" clinic. Patients are seen by Dr. Sorrell and pediatric cardiologists **Daniela Lax, MD** and **Scott Klewer, MD**. This approach makes it possible for adult and pediatric patients to receive excellent care in a multidisciplinary environment. For more information on the congenital heart disease clinic and to make an appointment, call Tara Brinton at (520) 626-2763.

**Frank I. Marcus, MD**, who held the Flinn/AHA Endowed Chair for Electrophysiology for more than 20 years, is a world authority on a disorder called ARVC/D (arrhythmogenic right ventricular cardiomyopathy/dysplasia). This disease is a significant cause of sudden death in young individuals. If caught early, the appropriate treatment, including placement of an implantable cardioverter-defibrillator, can prevent premature death. Recently, Dr. Marcus authored a book on ARVC/D with colleagues in Italy, which is considered the world's standard medical reference on the subject. The work helps physicians recognize the risks of sudden cardiac death.

# In memoriam, the Honorable John F. Molloy

John Molloy, a former chief judge of the Arizona Court of Appeals, author, and long-time Sarver Heart Center Advisory Board member, passed away July 12, 2008.

Mr. Molloy was instrumental in shaping the Sarver Heart Center and among the first donors to step forward to provide a physical home for what at the time was a "UA Center of Excellence without walls."

*The late John F. Molloy with his wife, Bobbi.*

Mr. Molloy was born in 1917 in Yuma, Ariz. His father, Thomas D. Molloy, served as Yuma County Attorney in the early days of Arizona statehood. After graduating from The University of Arizona in 1939, he served as a naval fighter pilot in World War II. Returning to Tucson, he completed his law degree in 1946. Over the next several decades, Mr. Molloy would earn the respect of his colleagues, own a successful law practice and serve as president of the largest law firm in Southern Arizona. He had a reputation for being very opinionated, especially if he disagreed with a decision of the higher courts.

On any given day, and on more than one occasion, Mr. Molloy would exclaim "Life is good!" and he meant it. With a twinkle in his eye, he would squeeze the hand of his wife, Bobbi, grin from ear to ear and proudly tell of his family's latest accomplishment or give his opinion on the state of affairs in our legal system.

In 2004, he authored *The Fraternity: Lawyers and Judges in Collusion*, a book that was received very well by critics, but perhaps less well by the legal community. Putting his experience and opinions to use, the book openly criticized the legal system. The controversy landed the judge on the news-talk radio circuit. "I remember talking to John and Bobbi one day when his cell phone rang," says Sarver Heart Center Director Gordon Ewy, MD. "He turned to me and said that he had to take the call–it was a radio station and they were going live in 30 seconds!"

Mr. Molloy served on many community boards in Tucson, but, according to his wife, few gave him as much pleasure as the Sarver Heart Center. "John always wanted to be at the board meetings, even when he was very sick," says his wife, Bobbi Boyer Lefferts Molloy. "He was fascinated with the work of the Center and was very proud of his involvement."

"John was a member of our tennis group," recalls Jack G. Copeland, MD, co-director of the Sarver Heart Center and friend of Mr. Molloy. "He was a passionate man who loved life and lived life fully. This image of John lives in my mind. What a great role model for younger people. What a great guy!"

John summed himself up best–in his will he wrote: "I leave this world, extremely grateful for the life that has come to me – wonderful ancestry, powerful and intriguing adventures, six wonderful children, and in my latter/last years, a gorgeous, wonderful wife – Bobbi. God has been very, very good."

We will miss his enthusiasm, friendship, and generous spirit.

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## Spreading the Word about the Artificial Heart

Sarver Heart Center doctors and scientists have a busy travel schedule and are always on the move to discuss their latest findings with colleagues from all over the world. When it comes to artificial heart devices and related technology, The University of Arizona Sarver Heart Center and the Marshall Foundation Artificial Heart Program at University Medical Center are among the world's leading authorities. This past May, Marvin Slepian, MD, co-founder of Total-Artificial-Heart manufacturer SynCardia, and Paul Nolan, PharmD, internationally renowned expert in the field of coagulation (the study and prevention of blood-clotting), attended the First International Interdisciplinary Conference on Bleeding and Thrombosis in Mechanical Circulatory Support in Vienna, Austria, where they presented new ways to prevent blood clotting in mechanical circulatory devices.

Earlier, Dr. Slepian presented the Total Artificial Heart technology developed in Tucson as a visiting professor at Case Western Reserve University, Brigham and Women's Hospital (Harvard), and Dartmouth Medical School. During Grand Rounds, he gave presentations and taught medical students, residents and fellows about the advantages of this life-saving device. ♥

*Join us for*

**The Heart of the Matter -**
**What Women Need to Know About Heart Disease**

The UA Sarver Heart Center Women's Heart Health Education Committee is hosting a luncheon specifically geared toward, but not only for, women.

A panel of experts from the Sarver Heart Center will give presentations on topics such as risk recognition and prevention, nutrition, exercise and the kinds of questions every woman should ask her doctor. The event will offer plenty of opportunity for questions and answers.

**Oct. 18, 2008, 11:30 a.m. – 2 p.m.**
Skyline Country Club
5200 E. Saint Andrews Drive
Tucson, AZ 85718-1717

Admission is $30 and includes a heart-healthy lunch. For reservations or more information, please contact the Sarver Heart Center Office of Public Education at slennox@shc.arizona.edu or (520) 626-3766.