Cardiac rehabilitation is a medically supervised program that helps people recover from heart disease and other heart related conditions. It typically consists of four main components: medical evaluation, physical activity, lifestyle education, and psychosocial support.

During supervised exercise programs in which patients build strength and endurance by exercising on equipment like treadmills, bicycles, lycers, cross trainers, and rowers, electrocardiogram (EKG) monitoring is often used to evaluate heart rhythm changes and heart rate response to exercise. Registered dieticians play a vital role as well, offering guidance about diet and nutrition to help participants shed excess weight and learn to make healthier food choices.

Although exercise is the cornerstone of cardiac rehabilitation programs, getting back to an active, productive life after a cardiac event requires much more than just resuming regular physical activity. “Since patients may often experience depression or anxiety, lose touch with their social support systems, and perhaps even have to stop working for a period of time after their cardiac event, cardiac rehabilitation programs provide counseling as well as vocational and occupational therapy that provide healthy ways to cope,” said Beverly Press, director of cardiac rehabilitation at Suburban Hospital in Bethesda, Maryland. Located just outside Washington, DC, Suburban Hospital’s cardiac rehabilitation program currently consists of roughly 600 participants, and the hospital processes. Life is precious, and it is comforting to know, that we have the benefit of dedicated and highly trained first responders at the ready — 24 hours per day, 365 days a year,” Schriever said.

These outstanding police officers in Attleboro are not alone in the fight against cardiac arrest. All across the country, police officers, firefighters, EMS staff, and other emergency responders are instrumental in saving lives from cardiac arrest every day. If you want to honor an SCA Hero in your community, the Sudden Cardiac Arrest Association is encouraging local public safety agencies to incorporate the SCA-specific force leadership.

SCAA is encouraging local public safety agencies to incorporate the SCA-specific award in their employee recognition programs. The award is available at a nominal cost of $5 each to cover production and shipping/handling costs. SCAA also routinely highlights AED saves on the SCA Heroes section of the website. Here, you can also find ordering information for the SCAA First Responder pins.
In the last newsletter, I began a discussion on the recent advancements in post-resuscitation care, focusing primarily on therapeutic hypothermia. This issue’s column continues with a fuller presentation on other aspects of care that are considered beneficial. Since the advent of CPR, most physicians and researchers directed their efforts at restarting the heart and then providing general supportive care. This was akin to how we treated heart attacks before the availability of clot busters like tissue plasminogen activator (tPA) and the concept of emergency angioplasty, and how we treated strokes before using advanced imaging and intravenous and intra-arterial clot busters. For the most part it was a watch-and-wait approach, and victims who did not regain consciousness in the first 24 hours were considered doomed and had support withdrawn.

Now there is a different reality. Restarting the heart is just the first step. Aggressive post-resuscitation care is beginning to yield previously unimaginable results. The goal is to limit damage to the heart, brain, and other vital organs that can occur from the brief period of no flow or low blood flow. The low flow state initiates a cascade of metabolic and inflammatory responses, which are ultimately detrimental to cellular function and tissue survival. The re-initiation of normal blood flow and delivery of oxygen can interact with these response cascades to lead to greater cell damage.

Post-resuscitation care comprises many elements. The most well known is hypothermia, which we discussed in depth in the last newsletter. However, all the components are important for optimal neurological and cardiac recovery. These include:

- Hypothermia (if unresponsive)
- Maintenance of adequate perfusion (this means assuring adequate circulation to the brain and other vital organs, including the heart itself; this may require IV fluids and medications)
- Stabilization of cardiac rhythm
- Early cardiac catheterization (to determine need for opening blocked coronary arteries by angioplasty and stenting or by coronary bypass surgery)
- Maintaining blood glucose in normal range (if too low, damage results from inadequate energy to drive cell function; too high a level triggers a hypermetabolic state that produces byproducts toxic to brain cells and causes other metabolic disruptions in the body)
- Standard critical and cardiac care
- Electrophysiology consultation (for consideration of ICD placement or other anti-arrhythmic therapy)
- Rehabilitation (both physical and cognitive)

The key to the provision of optimal resuscitation care is physician and hospital dedication to a planned and systematic approach, often referred to as protocolized care. Local experts relying on the best available scientific evidence, and in consideration of any existing national guidelines, establish a standardized approach to care of these patients. This assures that every patient receives the same level of care and — similar to doing a pre-flight checklist — that all relevant treatments and testing are performed for every patient.

A clinician or group of clinicians who have a focused interest and dedication to caring for persons resuscitated from sudden cardiac arrest is essential for leadership and maintaining commitment to the effort. A multi-disciplinary team including prehospital/EMS providers, emergency physicians, critical care and pulmonary specialists, cardiologists and electrophysiologists, and rehabilitation and psychological practitioners must be involved. And there must be institutional commitment to provide administrative and operational support to assure care is provided seamlessly as the patient progresses from the emergency department to ICU to floor to rehab.

Accompanying this column, you can read about some of the work my colleagues at the University of Pittsburgh Medical Center (UPMC) have implemented as part of a dedicated and comprehensive post-resuscitation care program. But there are many other hospitals implementing similar programs. When a patient suffers SCA, family members do not have time to do research and find the best hospital for treatment. Therefore, it is important that local EMS agencies work closely with the local hospital systems to know what facilities provide specialized care in the treatment of cardiac arrest survivors. The revolution in post-cardiac arrest care, and the dramatic improvements in neurologically intact survival that have been achieved since the introduction of CPR and early defibrillation should be available to all patients.

Once this therapy is initiated, the PCAS physician is notified by UPMC Medical Command — similar to the activation system for trauma patients. When the patient arrives, the PCAS physician assists the emergency department, and ICU team with patient care and ensures that post-arrest care is customized to the patient’s needs. In patients who regain consciousness, the PCAS physician screens for cognitive injury and ensures that appropriate secondary prevention measures, such as an implantable cardioverter defibrillator (ICD), are provided. When cognitive injuries that limit a patient's ability to multi-task and form new memories are identified, the PCAS physicians help the rehabilitation service create a care plan addressing these unique concerns.

Since 2007, the PCAS has treated more than 180 patients. Within this group, comatose patients who suffer cardiac arrest due to ventricular fibrillation (VF) have a 57 percent chance of a good outcome if they receive hypothermia. A good outcome is defined as a patient returning home or an acute rehabilitation facility. In contrast, those who do not receive hypothermia only have an 8 percent chance of a similar outcome. The PCAS has also demonstrated that patients receiving cardiac catheterization are twice as likely to enjoy a positive outcome. This data is changing the practice and treatment for critically ill patients and permit rapid implementation of new evidence-based therapies.

SCAA Launches Three New Chapters

Granite State Chapter
Leader: Dr. Paul Sansone
paul.sansone@dartmouth.org
The Granite State Chapter, headed by Dr. Paul Sansone of the Dartmouth-Hitchcock Medical Center’s Department of Anesthesiology, is ready to start leading the way in New Hampshire. Dr. Sansone lost his 33-year-old mother when he was only five years old — a victim of sudden cardiac arrest. Today, as a doctor, Sansone still hasn’t escaped family cardiac issues. It was only two years ago when his daughter collapsed in the driveway, and paramedics were unable to save her. It was later discovered that she had long QT syndrome, a genetic heart disorder. As a corollary of this discovery, Dr. Sansone found that he was at risk as well and possibly save a life.

Seven Rivers Chapter
Leader: Dr. Cherri Olson
cherri.cherry@mayo.edu
Dr. Cherri Olson, an SCA survivor and family physician, chairs the Seven Rivers Chapter of SCA covering western Wisconsin, Southeastern Minnesota, and Northeastern Iowa. The group’s mission is to educate the public on the importance of early defibrillation and access to AEDs. They want to support SCA survivors and their families and advocate for community access to AEDs. The chapter’s membership includes survivors, medical professionals, fire and police department employees, and friends and families. Based in La Crosse, Wisconsin, the chapter’s goal is to focus its work on improving access to AEDs in regional schools and help develop readiness for emergency response in schools. They also want to work on athlete screening for heart disease and to increase the number of people in various communities in the region who are trained in CPR and AED use.

Michigan Chapter
Leader: Tom Spring
Tom Spring, an exercise physiologist out of Royal Oak, Michigan, brings a strong background in both cardiovascular medical professionals and volunteers who are eager to help spread the word about sudden cardiac arrest. Working out of Beaumont Hospital near Detroit, Spring and the Michigan Chapter look to unite patients, the medical community, and other advocates to represent the great state of Michigan.
Chapter and Affiliate News

Cape Cod & Islands Affiliate
SCAA’s Cape Cod and the Islands Affiliate held its first Heart-to-Heart Raffle during the month of February to recognize American Heart Month. Proceeds were used to raise awareness about SCA, often confused with a heart attack, as well as the importance of learning CPR and how to operate an automated external defibrillator (AED). The winners, Sue Routhier, Holly Furnham, and Carolyn Young walked away with a basket full of heart-healthy goodies including a bottle of red wine, box of dark chocolates, gift certificates donated by Hanlon’s Shore, and various other heart-healthy items.

Eastern Pennsylvania Chapter
Launched in February, the Eastern Pennsylvania Chapter is already getting its hands dirty. Chapter president James Weber was quoted in a January edition of the Lancaster New Era saying that within the next three years the association hopes to teach at least 15 percent of Manheim Township’s residents how to perform CPR and use defibrillators. The chapter is applying for a grant that will allow it to place 15 or more defibrillators in “at-risk places,” such as stores, throughout Manheim Township. The chapter is happy to report that thanks to donations, they began installing life-saving cardiac defibrillators at public gathering spots in the township. The first was installed in a popular grocery store in March, where several employees were also trained how to use the device. Weber said more than 20 of the units, at a cost of more than $2,000 each, will be installed during coming months in various locations like stores, businesses, and churches.

Fredericksburg Chapter
The Fredericksburg, VA Chapter has been busy participating in a number of community health fairs around the region, and also co-hosted a critical care nursing conference on sudden cardiac arrest that was held on April 3. SCAA Chairman Bob Schriever was the luncheon speaker at the conference, and urged the nurses in attendance to become advocates to help educate others in their respective communities about sudden cardiac arrest. In February, chapter leader Mary Lou Hollingshead and SCAA executive director Chris Chiames were the guests on an hour-long program on WFVA news talk radio that was dedicated to the subject of cardiac arrest awareness, education, emergency response, and prevention.

Garden State Chapter
The Garden State Chapter recently announced it has selected The Valley Hospital as its chapter headquarters. SCAA Executive Director Chris Chiames was on-hand to thank the hospital for supporting sudden cardiac arrest awareness initiatives and to present an AED donated by Cardiac Science.

“SCAA’s Cape Cod and the Islands Affiliate held its first Heart-to-Heart Raffle during the month of February to recognize American Heart Month. Proceeds were used to raise awareness about SCA, often confused with a heart attack, as well as the importance of learning CPR and how to operate an automated external defibrillator (AED). The winners, Sue Routhier, Holly Furnham, and Carolyn Young walked away with a basket full of heart-healthy goodies including a bottle of red wine, box of dark chocolates, gift certificates donated by Hanlon’s Shore, and various other heart-healthy items."

Granite State Chapter
Dr. Paul Sansone, leader of the Granite State Chapter of SCAA, and his wife Mary created a television program that aims to make the public aware of a disease that has followed Sansone’s family for generations — congenital long QT syndrome. The program, which aired in March on New Hampshire Public Television, featured the Sansone family speaking about the generic heart disorder, which remained a mysterious killer in their lives until recently. Two years ago their daughter fainted at school and a pediatric cardiologist diagnosed her with long QT. Since then, other family members have been diagnosed with the disorder, as well. The program was both insightful and uplifting, and it was a perfect demonstration of one of the many ways to raise awareness about long QT and sudden cardiac arrest.

Kansas City Chapter
More than three years since his miraculous save, Pat Emmett’s story still manages to make headlines. Emmett is the leader of SCAA’s Kansas City Chapter and the Heart of America Sudden Cardiac Arrest Survivors Network. In the February 23, 2009 edition of the Kansas City Star, Emmett’s story was profiled along with his new devotion to the prevention of sudden cardiac arrest — the very thing that almost took his life three years ago. The article also invited the public to a successful Heart of America Sudden Cardiac Arrest Survivors Network meeting that took place that evening that helped boost SCA awareness in the community.

Minnesota Affiliate
In January several SCAA Minnesota Affiliate members shared SCA survival stories and educated veteran firefighters and emergency workers at the Fridley Fire Department. Survivor stories were also shared at a mandatory CPR/AED refresher course. Later that month, Wendell Mogren, Ray Eyler, Lori Mullenbach, Jeff Thorpe, and Gene Johnson presented a CPR/AED course to 7th and 8th graders at St. John’s School in Excelsior, Minnesota. As a result, the school children will do a fundraising project to assist in the purchase of AEDs for the school.

Northern New Jersey Chapter
The SCAA Northern New Jersey Chapter has announced plans to launch its Community and School Based CPR Training and Automatic External Defibrillator Public Access Program. The goal of the current project is to partner with local school systems as well as police and fire departments to assess school and community need and then to help implement public access AED and CPR training programs. Stay tuned for details!

South Florida Chapter
In February, the Rotary Club of Weston, Florida kicked off an educational campaign called “The Golden Minute,” teaming up with the Cleveland Clinic and the SCAA South Florida Chapter. Weston is famous for passing the first ordinance in the country requiring every public building be supplied with an AED. Two hundred of these units can be found throughout the city. The campaign is a four-month series of events aimed at educating the public about sudden cardiac arrest, AEDs, and CPR. The first event was held at the Cypress Bay High School in Weston, where students watched video clips of SCA survival stories.

SCAA Sponsors
(as of April 2, 2009)

Platinum
Medtronic
Boston Scientific
St. Jude Medical Foundation
Gold
Continental Airlines
US Airways
Silver
Biotronik
Cambridge Heart
CSVR
Cambridge Heart
Bronze
Pilot X Health
Laerdal
Zoll
Corporate Friend

If you are interested in becoming an SCAA sponsor, please refer to our website, www.suddencardiacarrest.org or email us at info@suddencardiacarrest.org.
It was her first day back to work at the Department of Labor after Christmas vacation in 2003. After returning from lunch, Jacquelyn Carter of Laurel, Maryland, who was 60 years old at the time, made what she thought was going to be a quick stop at the restroom. Beyond those details, Carter — like most sudden cardiac arrest (SCA) survivors — doesn’t remember much about her SCA. “My coworker has since told me that one minute we were talking and the next moment she suddenly heard a loud ‘thud,’ and there I was … passed out in the restroom.”

A native Washingtonian, Carter knows the city like the back of her hand. Yet that day she wasn’t aware of one small bit of power (AED) device that would eventually play a crucial role in saving her life. Fortunately, her coworker knew that an automated external defibrillator (AED) was installed nearby in the Labor Department’s Health Unit, and as she called out for help, she specifically instructed bystanders to retrieve the AED.

After CPR was performed and several shocks were administered by the AED, Carter regained consciousness and began breathing again. By that time, paramedics had arrived and she was immediately transferred to George Washington University hospital. Days later she was released from the hospital with an ICD and a new lease on life.

“Today, I’m functioning as I normally would; enjoying my family and friends, playing cards, following a regular exercise program, and gardening. I just feel great!”

As is also common with other SCA survivor experiences, Carter had no prior signs of heart problems. In the days leading up to her SCA, she helped her mother complete some household chores. She lightheartedly recalls, “My mother later scolded me because I hung some drapes for her, and she thought that physical exertion may have brought on my SCA.”

While she may not know what exactly triggered her event, Carter tends to focus on the positive outcome. “My mother still had a daughter, my daughter still has a mother, and my coworkers have become educated on the existence and importance of AEDs.”

Now retired, Carter recently received a new ICD. “I tell my friends, getting the ICD was a piece of cake, and because of it, there’s nothing I can’t do.”

Save the Date: June 9, 2009
SCAA will be hosting a Healthy Heart Expo, June 9, 2009, at the Cannon Caucus Room in Washington, DC. More than a dozen corporate and non-profit exhibitors will showcase the latest advancements, treatments, and initiatives in cardiac care. The event is part of SCAA’s advocacy efforts to increase awareness of sudden cardiac arrest among members of Congress and their staffs.