Two choices for CAD: stents and bypass surgery

We’re fortunate at Washington Hospital Center. We have world-class percutaneous and surgical management. You can get a fine result either way.

—Stuart Seides, MD, interventional cardiologist

There’s a place for stenting and a place for surgery. The crossover is where the debate is. Medical treatment for CAD eventually will put us both out of business.

—Paul Corso, MD, cardiac surgeon

For treating coronary artery disease (CAD), Washington Hospital Center specialists have two excellent choices—stents and bypass surgery. Cardiologists and cardiac surgeons agree there’s a place for each option and a wide middle ground where the case can be made for either option. Hospital Center cardiac experts also agree on two more important facts:

The Hospital Center is a national referral center for both procedures, with highly experienced interventional cardiologists and cardiac surgeons who are leaders in their fields. “Here at the Hospital Center, both specialties have benefited from a healthy competition. As cardiologists have advanced their techniques, we have kept pace,” says Paul Corso, MD, chief of cardiac surgery.

Second, Hospital Center cardiologists and surgeons have a long history of working together, often consulting to devise the best treatment plan for individual patients. “It’s a rare case where there would be a strong difference of opinion about the best treatment choice. That speaks to the collegiality and collaborative relationships here,” says Stuart Seides, MD, associate director of cardiology.

The case for stents

Background

Cardiologists have used stents to open blocked coronary arteries since 1992. Hospital Center cardiologists have been at the forefront of testing the newest techniques and host an annual international conference on interventional procedures. Hospital Center cardiologists annually place more than 7,000 stents, among the highest volume in the nation.

Bare-metal stents have shown a high incidence of restenosis because as the tissue heals postintervention, scarring can occur. Since 2003, cardiologists have used drug-eluting stents to prevent scar tissue growth, reducing restenosis from 20 percent to 30 percent to single digits. At the Hospital Center, 75 percent of the stents used are drug-eluting.

continued on page 2
Indications
If a patient needs to have blocked coronary arteries opened, stenting is a viable option. “When we repair with stents, we’re trying to reconstruct the artery,” Dr. Seides says. “When surgeons bypass the obstruction, they’re building a new artery. The choice is whether to repair the road or build a new road.”

“When considering repair, the cardiologist determines if the blockage is fixable and the risk of fixing it,” Dr. Seides continues. “The ideal case for stenting is a single, focal blockage in one coronary artery that doesn’t involve a branch point. The ideal case for surgery is when there are multiple blockages in multiple arteries, including branch points.”

But there’s a vast middle ground, when either technique is reasonable and doable. Then other factors are taken into consideration. “Medical co-morbidities can make surgery riskier,” Dr. Seides says. On the other hand, “You have to consider whether the patient can tolerate the long-term antiplatelet therapy that’s necessary with stenting. You can certainly have patients whose anatomies are similar but who benefit from different approaches,” he says.

“The decision about whether to use a bare-metal stent or drug-eluting stent depends on the length of the lesion and the diameter of the clogged artery. Generally speaking, longer lesions in small caliber arteries call for drug-eluting stents.”

Outcomes
“Stents offer impressive results without the risks associated with surgery,” Dr. Seides says. “With drug-eluting stents, the incidence of recurrence is very low. We don’t have a lot of patients who fail stenting.” And for patients who experience in-stent restenosis, intracoronary brachytherapy is a valuable treatment tool.

The case for bypass surgery
Background
Coronary artery bypass surgery has been the gold-standard treatment for patients with CAD since the early 1970s. At first, it was a risky procedure, but refinements have made the surgery routine. Hospital Center cardiac surgeons perform among the nation’s highest volumes of bypass surgery with excellent results. They’ve also been at the forefront of developing new techniques and trained surgeons around the world.

It used to be that bypass grafts, using saphenous veins, lasted for 15 years. Today, surgeons routinely use mammary arteries as the bypass graft. “Atherosclerosis doesn’t recur in mammary artery grafts,” Dr. Corso says. “Ninety-eight percent of our cases are arterial; 30 percent are bilateral mammarys.”

In addition, the surgery has become less invasive and traumatic. Currently, most bypass surgeries are performed through small incisions, which reduce complications and speed recovery. Also, bypass patients are candidates for beating-heart surgery, in which surgeons bypass arteries without subjecting the patient to cardiopulmonary bypass. This type of surgery also reduces complications and speeds recovery. Last year, Hospital Center cardiac surgeons used beating-heart procedures in more than half of patients who underwent open-heart surgery.

Indications
Patients with a coronary blockage sufficient to produce symptoms is a candidate for bypass surgery. “But for patients with a single focal lesion, it’s probably preferable to place a stent,” Dr. Corso says. “You don’t want to put a patient through surgery unless it’s necessary.”

Stent case study

Problem patient
A 48-year-old man presented to a hospital emergency room complaining of chest pain. The EKG showed very mild nonspecific changes, leading to a preliminary diagnosis of mild heart damage. The patient was flown to Washington Hospital Center for further evaluation.

Physician action plan
A cardiac catheterization showed severe but focal blockages in the left anterior descending and left circumflex arteries. The arteries had diameters greater than 4 mm. The cardiologist placed stents in both areas, choosing bare-metal stents due to the arterial dimensions, which reduces the likelihood of restenosis. The patient was placed on long-term anti-coagulant and antiplatelet therapy to reduce the risk of thrombosis.

Outcome
The patient had an excellent result and was discharged from the hospital within 48 hours. He returned to work quickly.

Bypass surgery case study

Problem patient
A 55-year-old male presented to his physician’s office, complaining of chest pain and dyspnea on exertion. A cardiac catheterization confirmed a total blockage of the left anterior descending artery, and a lesion in another vessel. He was referred to a cardiac surgeon for evaluation.

Physician action plan
The patient was in good health and was relatively young. Because the LAD tends to reocclude at other points, the patient still would be dependent on his collaterals to maintain cardiac sufficiency. The risk of surgery was low, so the decision was made to surgically revascularize the blocked arteries.

Outcome
The patient did well and was discharged from the hospital after five days.

Dr. Corso says surgery is the better alternative for patients with lesions in the left anterior descending and left main arteries. He also advocates for surgery when multiple lesions are in multiple arteries or lesions are in branch points.

But stents are the treatment of choice when patients are at high risk for surgery, due to comorbidities. Stents also may provide a temporary solution for patients who experience acute MI. “Putting in a stent is quicker, and there’s less trauma,” he says. “We could operate later when the patient is more stable.”

Still, he cautions against excessive use of stents. “Over-aggressive stenting causes harm, especially when there are recurrent interventions. When surgery is necessary, your hands are tied. You encounter stent after stent, and there may be only 1 cm where you can put the graft.”

Outcomes
Bypass surgery has 40 years of outcome data to fall back on. “Long-term results are better for surgery with regard to mortality, cost and revascularization,” Dr. Corso says. “Cardiologists work in the diseased portion of the artery. We stay away from the diseased portion. By bypassing the vessel, we can treat the existing disease and prevent future disease. If you use mammary arteries, treat with statins to get the LDL down to 70 and prescribe aspirin—that’s as close to a cure as you can get.”
News on drug-eluting stents

An FDA panel met in early December to discuss recent controversy about the risks associated with drug-eluting stents (DES). Several studies reported that DES may be associated with an increased risk for late thrombosis and death. The panel concluded that:

• DES are safe in patients for whom they were originally intended—patients with stable or unstable angina with one or two lesions.

• The safety of DES hasn’t been established in higher-risk patients—patients with acute MI, multivessel disease, repeat blockages or restenosis.

• Cardiologists should adhere to American Heart Association and American College of Cardiology recommendations that all patients—on- and off-label—take Plavix and aspirin for at least one year to offset the risk of thrombosis.

As a result, DES manufacturers will put warnings on labels about the potential risks associated with off-label use in higher-risk patients, along with antiplatelet recommendations.

Ron Waksman, MD, an interventional cardiologist at Washington Hospital Center and leading researcher of stent technologies, presented Hospital Center data on some 7,000 patients to the panel. “We have a very robust database that we monitor annually. Our data shows that when you use DES on-label, they are safe.”

The benefits still outweigh the risks in patients who meet the criteria listed on the label, Dr. Waksman says. “We have assurances that we’re using the right devices in the right patients with the right safety measures.

“But the safety hasn’t been established for higher-risk patients. You can still use DES, but you should share information about the increased risks with your patient,” says Dr. Waksman. “And you have to make sure that the patient will adhere to long-term antiplatelet therapy.”

Dr. Waksman and other Hospital Center researchers are continuing studies into stent safety. They’re also developing new technologies, such as biodegradable stents.

A link to vessel disease

What endothelial function can reveal

Until about 25 years ago, doctors thought the endothelium was merely a passive layer of tissue that separated arterial walls from blood flow. But ongoing research has uncovered a wealth of information about this innermost layer of cells, showing that it’s key in regulating the biology of blood vessels.

“We know now that the function of the endothelium becomes abnormal in some conditions,” says Julio Panza, MD, director of endothelial function studies for the Cardiovascular Research Institute and director of the coronary care unit at Washington Hospital Center. A leader in the field of endothelial dysfunction, Dr. Panza has published extensively on the subject, including co-editing the book, “Endothelium, Nitric Oxide and Atherosclerosis.” He has an extensive background as a researcher and was a principal investigator on multiple investigations while at the National Institutes of Health.

“The endothelium is a link between risk factors and the development of vessel disease,” Dr. Panza says. “It’s one of the first processes in the development of atherosclerosis. Also, in patients with atherosclerosis, the degree of endothelial dysfunction correlates with the patient’s prognosis.”

There’s hope that endothelial function could one day become an important screening tool for patients at risk for atherosclerosis. It also could be used to mark a patient’s response to therapy.

However, Dr. Panza isn’t recommending that community cardiologists test endothelial function yet. “The testing of endothelial function hasn’t yet been demonstrated to impact medical care or influence treatment,” he says. “We haven’t reached the point at which it should be tested in every patient at risk for or with atherosclerosis.”

Tests for the endothelium

An array of noninvasive and invasive tests can determine the endothelium’s health. Multiple tests can be used to evaluate different endothelial functions.

Most important, medications—statins and ACE inhibitors—known to positively affect outcomes are also known to positively affect endothelial function. Dr. Panza and other researchers are looking for more medications that may repair damaged endothelial cells.

“We’ve been interested in the potential effects of a family of drugs useful in the treatment of diabetes,” Dr. Panza says. His team recently published an article about one of these drugs—pioglitazone. The study concluded that, in patients who don’t have diabetes but have cardiovascular risk factors, pioglitazone treatment enhances insulin sensitivity, decreases C-reactive protein and improves endothelial vasodilator function. These effects don’t appear to be closely related, suggesting that pioglitazone may have beneficial vascular properties independent of its effect on insulin sensitivity and inflammation.

For more information about endothelial research, call (202) 877-9090.
Your heart in motion

Cardiac MRI provides an inside look

If a picture is worth a thousand words, how many words is a movie worth? Quite simply, a movie of the heart can provide an extraordinary amount of information.

Cardiac MRI is an invaluable, noninvasive tool for evaluating patients with diagnoses that remain elusive after conventional testing. Further, it doesn’t expose patients to radiation.

Washington Hospital Center has offered cardiac MRI for six years and performs nearly 1,400 cardiac MRIs each year. It requires an advanced MRI machine, sophisticated cardiac software, experienced technologists to perform the imaging and specialists who can interpret the results.

Experience counts

With expertise and advanced technology, the Hospital Center has become a national referral center for cardiac MRI. Tony Fuizs, MD, a cardiologist with subspecialty training from the National Institutes of Health (NIH) in cardiac MRI, is director of cardiac MRI at the Hospital Center. He trains cardiologists from every part of the world in the art of cardiac MRI and is conducting several multicenter and institutional research projects, doing advanced 3T imaging projects with the NIH and collaborating with Hopkins on a project that looks at predictors of sudden death.

“Cardiac MRI is the only thing I do,” he says. “I’ve seen a lot of cases, a lot of different conditions.” For example, he’s diagnosed two cases of coronary sinus atrial septal defect, an unusual condition that many cardiologists rarely encounter.

“Cardiac MRI is a great tool that provides answers to several questions,” says John J. Kennedy, MD, a cardiologist in Annapolis. He has sent several patients to the Hospital Center for cardiac MRI. One patient had a rare intra-cardiac tumor—a hemangiopericytoma. After surgery to resect the tumor at the Hospital Center, Dr. Kennedy says, “We were following the patient with echo and CT scans to detect recurrence. We sent him to the Hospital Center for cardiac MRI, and it picked up tumor recurrence earlier and more clearly than the other imaging tests. Neither modality is as helpful as MRI in tracking.”

Benefits of cardiac MRI

The bottom-line benefit of cardiac MRI is that it provides high-resolution, 3-D moving images of cardiac function without the limitations of echocardiography, Dr. Fuizs says. It’s particularly helpful in determining myocardial viability.

“We can actually measure the velocity,” Dr. Fuizs explains. “This can’t be done easily with other noninvasive techniques. Cardiac MRI is like a movie of a beating heart, with a view of any plane and any location.” The test can be performed with or without gadolinium-based contrast.

The Hospital Center also offers noninvasive high-resolution (64-slice) cardiac CT, which is an invaluable tool for imaging the interior of coronary arteries. But the CT is a static image—“What you see is what you get,” Dr. Fuizs says.

By contrast, cardiac MRI serves up 30 or more images. “On the fly, we can change areas of focus. It images the squeezing function of the heart chambers, and we can actually measure chamber volumes.”

Typically, patients have had a comprehensive cardiac workup already, but the exact mechanism of dysfunction hasn’t been determined. “Sometimes, the reason the patient is sent to us is not what we find,” Dr. Fuizs notes.

Dr. Fuizs works closely with other Hospital Center specialists. Radiologists sometimes collaborate to interpret complex images. Cardiac surgeons also consult with him before surgery. “Surgeons often come to our department to look at a patient’s pictures. When they go into the operating room, they know what they’ll see. That piece can be the most important part.”

To determine whether a patient is a good candidate for cardiac MRI, call (202) 877-9232. To schedule an appointment for a cardiac MRI, call (202) 877-2437.

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### Indications for cardiac MRI

(from the Journal of the American College of Cardiology)

- evaluation of chest pain—intermediate pre-test probability of CAD; ECG uninterpretable or patient unable to exercise
- evaluation of intra- and extra-cardiac structures
- evaluation of ventricular and valvular function
- evaluation of myocardial scar and viability

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### Cardiac MRI case study

**Problem patient**

A 38-year-old person with diabetes presented to a community hospital with cardiac symptoms and was diagnosed with heart failure and atrial fibrillation. The patient had surgery for a congenital heart defect as a young child but remembered no details.

**Physician action plan**

The patient was sent to Washington Hospital Center for cardiac catheterization, which showed severe obstruction of the left anterior descending artery. A subsequent cardiac MRI provided information about myocardial viability and the type of defect. Results showed the defect was adequately repaired and that it had no relation to the current cardiomyopathy. Further, no significant heart damage resulted.

**Outcome**

The patient underwent stenting and has done extremely well.
Managing claudication and PAD

Intermittent claudication is one of those conditions that can present a treatment quandary. Claudication itself is a benign symptom, but it’s linked to the more pervasive presentation of peripheral artery disease (PAD). How should the symptom and disease be monitored, and when and how should it be treated?

A widespread condition among the aging population, PAD affects 8 to 12 million Americans. But only 10 percent of patients present with the classic symptoms of intermittent claudication, the pain associated with walking. “This is an under-recognized condition,” says Nelson Bernardo, MD, a cardiologist and associate director of the peripheral vascular lab at Washington Hospital Center.

Intermittent claudication often is the first sign of PAD. Beyond that, it’s a harbinger of more extensive cardiovascular disease. Dr. Bernardo points to a 30 percent mortality rate in five years from heart disease or stroke. Another 50 percent will have a nonfatal cardiovascular or cerebrovascular event.

“T he presence of PAD tells you that atherosclerotic disease is present,” Dr. Bernardo says. “Claudication won’t kill you, but the atherosclerotic process will.”

That’s why it’s important to recognize and treat atherosclerotic risk factors. Smoking leads to a threefold increase and more severe disease; hypertension and hypercholesterolemia also are significant risk factors. People with diabetes, particularly women, have a fourfold increased risk of developing PAD.

**Best practices**

At the Hospital Center, specialists performed 1,614 diagnostic and 1,325 interventional procedures for PAD in fiscal year 2006. A team of specialists has identified best practices for patient evaluation.

**ABI.** In addition to a medical history and physical, the ankle-brachial index (ABI) measurement is an important diagnostic tool for all patients over age 70 and all patients over age 50 who smoke or have diminished mobility.

Generally speaking, an ABI of less than 0.90 indicates PAD. But ABI measurements can be misleading, particularly among people with diabetes. For patients who are symptomatic but have borderline ABI scores, exercise followed by a repeat ABI can offer a more definitive result. “When real disease is present, we see a drop in ABI that can indicate the extent of the disease,” Dr. Bernardo explains.

**Imaging tests.** The Hospital Center cardiologists now are routinely ordering CT angiography or MR arteriography, which offers detailed visualization of arteries. A peripheral angiogram is indicated if results from noninvasive tests are inconclusive. These tests have largely replaced duplex ultrasound scans for the evaluation of PAD.

**Lifestyle modification and medical management.** The goals for treatment of intermittent claudication are to improve function and walking distance to prevent disease progression. Secondarily, the goal is to prevent cardiovascular complications. To that end, a combination of lifestyle modification and medical management is indicated:

- Antiplatelet agents: aspirin (75 to 325 mg/day) and clopidogrel/Plavix (75 mg/day)
- Antiangiogulant therapy when indicated
- ACE inhibitors (orARBs ifACE-I isn’t tolerated)
- Blood pressure control: less than 140/90 or 130/80 in DM
- Beta blockers (especially post-MI or with low LVEF)
- Cholesterol management: lower LDL to less than 70 mg/dL
- Cigarette smoking cessation
- Diabetes: improved glycemic control; HbA1c less than 7 percent
- Diet: improved eating habits and weight control
- Exercise: 30+ minutes of moderate exercise, on most days
- Education

In addition, cilostazol reduces pain from walking.

**Endovascular treatment and surgery.** More aggressive treatment may be indicated for patients at risk for losing a limb and for patients whose claudication seriously impacts their quality of life. “The gold standard of treatment is the one with the best expected outcome, longest durability and lowest morbidity,” says Cameron Akbari, MD, a vascular surgeon and director of the vascular diagnostic lab. “All treatments strive for that.”

The indications for endovascular treatment and surgery are similar, Dr. Akbari continues. “We’re making headway with endovascular techniques,” he says. “Patients have fewer complications, such as infection and edema, and faster recovery.”

Endovascular techniques and surgery are effective in eradicating symptoms. But endovascular intervention has lower morbidity and mortality, with less time in the hospital. Endovascular modalities include balloons, stents and lasers, depending on the extent and placement of the blockage. Hospital Center researchers now are writing a protocol to study intra-arterial brachytherapy for PAD patients. Drug-eluting stents aren’t yet available for PAD.

However, both Dr. Bernardo and Dr. Akbari agree that endovascular approaches may not provide a permanent result. Lesions tend to be longer, and the disease can present diffusely, which presents a treatment challenge.

Balloon angioplasty is the best alternative in vessels below the knee because movement puts stress on stents. But stents may be the best choice in vessels of the upper leg or abdomen. With endovascular approaches, there’s a 90 percent immediate success rate but no hard data on long-term success.

Patients with severely limiting claudication or who are at risk for losing a limb may be candidates for surgical intervention. Bypass surgery using the saphenous vein is the preferred surgical option in about 80 percent of patients who need surgery. “In 75 percent of patients, the grafts are still open at five years,” Dr. Akbari says. Endarterectomy is an option for patients with short-segment atherosclerotic lesions.

“We always evaluate the risks and benefits,” Dr. Bernardo concludes. “Each case is different.”
Expecting Success
Program improves outcomes for cardiac patients

Quality-improvement projects are a way of life in hospitals today. But Washington Hospital Center has taken a giant step forward in its efforts to improve outcomes for cardiac patients. The Hospital Center won a prestigious Robert Wood Johnson Foundation grant that aims to improve outcomes for patients at highest risk for readmission. “We want to exceed the established JCAHO benchmarks for evidence-based care,” says Elizabeth Wykpisz, vice president of Washington Heart and Vascular Services, and program director for the inpatient part of the grant. Janis Orlowski, MD, medical director, is the physician champion, and Jacqueline Ennis, PhD, vice president of outcomes measurement, is the program director for the outpatient part of the grant.

The grant’s goals
Called the Expecting Success: Excellence in Cardiac Care Program, the $290,000 grant is funding efforts to improve outcomes for patients at highest risk for readmission. “We want to exceed the established JCAHO benchmarks for evidence-based care,” says Elizabeth Wykpisz, vice president of Washington Heart and Vascular Services, and program director for the inpatient part of the grant.

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With input from many disciplines, a set of quick-and-easy admissions orders has been devised that details necessary steps for care. “This effort took teamwork. Administration, nursing, pharmacy, social work, information systems and cardiology have all played a crucial role in the orders’ development,” Dr. Cooke emphasizes. The orders are connected to an electronic transcription system to reduce transcription errors.

Expecting Success also has a strong educational component, emphasizing the importance of diet, fluid intake and exercise after discharge. “We’ve created an electronic discharge tool that reinforces care requirements,” Dr. Cooke says.

The outpatient portion of Expecting Success is especially critical to the program’s success. The Hospital Center has hired two coordinators who go to patients’ homes postdischarge to identify barriers to compliance. “What we’re trying to do is put in place systems that help patients succeed,” Dr. Cooke says.

The coordinators provide physicians with another set of eyes in the community. “They can see how their patients actually live and cope with heart failure,” says Bob Jones, RN, community demonstration project manager.

Jones and Elizabeth Daly, case manager, congestive HF, currently are following 26 patients post-discharge. “We educate patients, enroll them in the program, assess what their needs are and develop a plan to improve their care,” Daly says.

The caseworkers have accomplished such tasks as enrolling patients in prescription drug-assistance programs and intervening with Medicaid. They also provide valuable insight about what factors may be leading to higher readmission rates. “For example, we’ve found that patients may not have air conditioning or they’re eating canned foods higher in sodium,” Jones notes.

Another important aspect of the outpatient portion of Expecting Success is a partnership with Unity Health Care, a consortium of outpatient clinics throughout the District. The Hospital Center and Unity are sharing electronic records to coordinate care and are developing a standardized medication formulary.

“Our intent is to provide equal access in care to all our patients,” Wykpisz concludes. “It’s the right thing to do.”

AMI Core Measures
aspirin at arrival
aspirin prescribed at discharge
ACEI or ARB for LVSD
adult smoking-cessation advice/counseling
beta blocker at arrival
beta blocker prescribed at discharge
inpatient mortality
all-or-none bundle

HF Core Measures
all discharge instructions
evaluation of LVS function
ACEI or ARB for LVSD
adult smoking-cessation advice/counseling
all-or-none bundle
Heart failure (HF) is a leading cause of hospital admissions and an important cause of morbidity and mortality. A rapid assay for B-type natriuretic peptide (BNP) helps physicians diagnose left ventricular failure and provides a reliable indicator of long-term prognosis for HF patients.

The BNP assay measures a hormone secreted by the heart in response to ventricular stretch, explains Monica Shah, MD, an HF and transplant cardiologist and director of HF Clinical Research at Washington Hospital Center. “BNP provides another piece of the puzzle as we assess heart failure patients,” she says. “The blood test can be performed in most labs, using whole blood or serum samples and employing ELISA methods for photometric readout.”

BNP indicators
The BNP test has two primary indications—diagnostic and prognostic. It’s clearly called for in the Emergency Department when the physician has a suspicion of HF but no definitive signs or symptoms on clinical assessment. “Laboratory assays for heart failure are very useful, since the history and physical exam often mimic other diseases,” Dr. Shah says. “For example, it can help distinguish between heart failure and dyspnea due to other causes.”

For patients with diagnosed HF, BNP also provides a good indication of their prognosis. “The higher the BNP level, the higher the rehospitalization rate and the higher the mortality rate,” Dr. Shah says. “For heart failure patients who are admitted to the hospital, BNP is the one of the most powerful predictors of how they’ll do.”

But Dr. Shah cautions against placing too much importance on a patient’s BNP level. “You can’t just take the BNP value alone,” she says. “You have to view it in the clinical context of the patient.”

A BNP level can be elevated even when the patient may not have HF. For example, BNP levels can be elevated in pulmonary embolism, pulmonary hypertension, renal failure, cirrhosis and conditions common in intensive care units. BNP levels also are higher in women and the elderly, and lower in obese patients. Also, patients with advanced, long-standing HF may have elevated BNP levels, but may not be fluid overloaded.

Dr. Shah emphasizes that BNP testing should be part of an HF workup, but the diagnosis of HF shouldn’t be made solely on a BNP level. “History and physical exam are the most important tools in the clinical assessment of a patient; there’s no question,” she says. Other useful diagnostic tools include basic lab work, chest X-ray, EKG and echocardiography.

The STARBRITE trial
Dr. Shah was the principal investigator of the STARBRITE trial, which was a multicenter study evaluating the safety and efficacy of using BNP levels to guide HF therapy in the outpatient setting. The study was funded by the American Heart Association (AHA) and the American College of Cardiology. In STARBRITE, 130 patients with advanced HF and systolic dysfunction were randomized to outpatient therapy guided by BNP levels versus therapy guided by clinical assessment alone.

The primary endpoint of the study was the number of days alive and out of the hospital 90 days after the first clinic visit. Dr. Shah presented the results of STARBRITE at the AHA’s 2006 Scientific Sessions. The study showed that in patients who were treated according to BNP levels, there was a greater use of ACE inhibitors and less use of diuretics, compared to patients who received therapy based on clinical assessment alone. There was no statistical difference in hospitalization and mortality.

“Using BNP levels to monitor heart failure therapy is currently a big question,” Dr. Shah says. “BNP is a very well established tool for diagnosis, especially in the Emergency Department. It also is well established as a tool to determine prognosis. However, STARBRITE was a pilot study and we’re still learning about its role in guiding heart failure therapy. In order to definitively answer this question, we need an adequately powered, large-scale randomized trial.”

For more information about BNP testing and HF, call Dr. Shah, Section of HF and Cardiac Transplantation, at (202) 877-8085 or (202) 877-4698.

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<th>What BNP levels indicate</th>
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Washington Hospital Center *Cardiovascular Physician* is a publication of Washington Heart and Vascular Institute at Washington Hospital Center, which provides comprehensive cardiovascular services. It is a forum to share clinical, research and teaching information in cardiology, cardiac surgery and vascular care as well as current activities at Washington Hospital Center. The newsletter is published by Dowden Health Media for Washington Heart and Vascular Institute at Washington Hospital Center and the editorial services division of Public Affairs and Marketing.

We welcome your comments. Please submit your comments to Elizabeth Wykpisz, vice president, Washington Heart and Vascular Institute, at (202) 877-3095 or at elizabeth.wykpisz@medstar.net. Visit the hospital’s Web page at [www.WHCenter.org](http://www.WHCenter.org).

### WASHINGTON HEART AND VASCULAR INSTITUTE

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To contact Washington Heart and Vascular Institute, call (202) 877-WHVI (9484) or visit [www.WHCenter.org](http://www.WHCenter.org).

### UPCOMING EVENTS AT WASHINGTON HOSPITAL CENTER

**Pain Management: Strategies for Improving Patient Care Outcomes**

- **April 19**
  - True Auditorium
  - Lee Ann Rhodes, MD, Activity Director
  - 6 AMA PRA Category 1 Credits™
  - For more information, call Pat Mosby at (202) 877-7538 or e-mail patricia.a.mosby@medstar.net.

**Clinical Updates: Practice Improvements for 2007**

- **April 28**
  - Multidisciplinary CME Conference, Saturday, April 28
  - Holiday Inn Select, Solomon’s Island, MD
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  - For complimentary registration, call Ramona Finch at (202) 877-8206 or e-mail ramona.finch@medstar.net or register online at [www.CME.SITELMS.org](http://www.CME.SITELMS.org).

**Pain Management: Strategies for Improving Patient Care Outcomes**

True Auditorium

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