Health Care Visions News
From The Cardiovascular Specialists

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ADAPTING A VASCULAR IMAGING ROOM TO DIAGNOSTIC CARDIAC CATHETERIZATION

Marsha Knapik

Reynolds Memorial Hospital, a 107 bed acute care community hospital located in Glen Dale, West Virginia, implemented low risk diagnostic cardiac catheterization services, appropriately enough, on Valentines Day, 2007. Health Care Visions, Ltd. was honored to be a part of the program planning and implementation process which included the adaptation of an existing vascular imaging suite to include cardiac catheterization services. This project did involve the conversion of an unused nursing unit to provide for pre and post catheterization patient care.

Reynolds Memorial Hospital's vascular imaging suite, located in the Radiology Department, was redesigned to accommodate a control room, space for additional storage and relocation of imaging equipment control panels/ cupboards from inside the room to an adjacent area. Hospital facilities management, Radiology, the cardiologist, equipment vendors (imaging and hemodynamic monitoring) and nursing input all contributed to the planning and design for this area.

The control room was placed at the "foot" of the table to allow visualization of the entire field when the case is in progress without obstruction by monitors or personnel. This control room accommodates the hemodynamic monitoring and documentation system as well as additional remote monitors for the imaging. This allows for personnel in that area to have complete awareness of catheter and wire placement and imaging at all times during the procedure. Additional counter space was allocated as well as wall cabinets installed for catheter and other equipment storage. An adjacent "pass through" corridor was closed to permit the procedure room size to be expanded and allow for additional floor space. Existing imaging equipment (table and C-arm) and overhead lighting were not repositioned, however, additional cardiac arrest "call" buttons were installed. Renovations to the existing room, after state approval of the plans, occurred over a period of twelve weeks. Once completed, an additional two to three weeks were allotted for hemodynamic monitoring installation, room cleaning and stocking of supplies, staff education and vendor training.

In addition to the revisions to the imaging room to accommodate cardiac catheterization procedures, space was required to provide pre and post care to the cardiac catheterization patients. The hospital had a small nursing unit that was being used to accommodate on call rooms for hospital personnel. Four rooms from this unit were reallocated to the cardiac catheterization program. Minor room renovations were completed and monitors were installed. A central monitoring station and a hospital information systems terminal were installed at the existing nursing

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Adapting a Vascular Imaging Room

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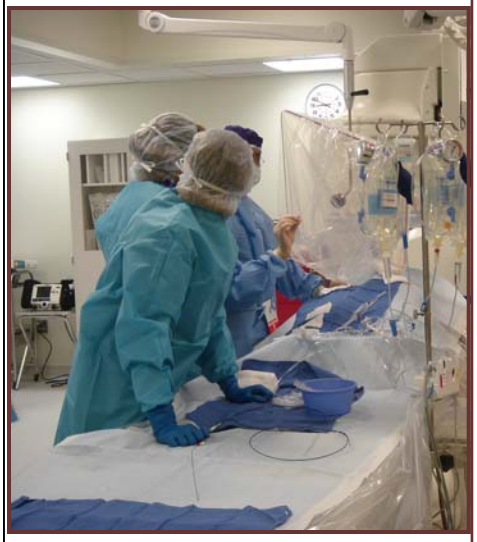
station. The unit had existing clean and soiled utility rooms,



nurse and cardiac arrest call systems and a medication room available. All equipment in the areas was assessed for replacement, functionality updates and need. All call systems were tested. Two additional rooms were allotted for a patient pre admission testing/ education area and for a manager's office.

Program planning was spearheaded by Carol Miller, CNO and much of the project work organized through Mary Sue Rodriguez, RN, MSN, Patient Care Educator/Staff Development Coordinator. The project adhered to requirements of the Certificate of Need issued for the project by the state of West Virginia.

The primary cardiologist performing procedures at Reynolds Memorial Hospital is Dr. Madhu Dharawat, who eagerly participated in the program planning and development.

On February 9th 2007, a dry run was completed that involved two mock patient scenarios. Hospital employees volunteered to portray the patients with Melissa Marco of Marketing portraying an outpatient diagnostic catheterization patient and Jay Prager, COO portraying

an inpatient having a cardiac catheterization that required intra-aortic balloon pump insertion and urgent transfer once "severe disease" was identified on the diagnostic catheterization. The Glen Dale Tri-State Ambulance service graciously participated in the emergency transfer portion of the dry run to allow for testing of the emergency transfer system. Based on the exceptional performance during the dry run, Reynolds Memorial Hospital was deemed "ready to go" for their first "real" cases the next week. With February being "heart month" and no day in February more close to the heart than Valentines Day, February 14th was selected for the first cases. Two cases were performed that day with excellent patient outcomes. Reynolds Memorial Hospital is already well on its way to performing the required number of diagnostic procedures required by state CON and hopes to exceed that number in the upcoming years.

Use of existing space and equipment allowed the hospital to implement a quality cardiac catheterization program in a timely and cost efficient manner. It was Health Care Visions, Ltd.'s pleasure to be involved with such a hard working group of individuals who were determined to make the implementation process succeed.

Congratulations to all involved!

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Send their email address to: hcv@hcvconsult.com

Message From The President

Barb Sallo

It seems that more and more frequently we see articles on ***Paying for Performance (P4P)*** but will this concept really affect hospitals' and physicians' financial future over the long run?

Over the past two years, the Centers for Medicare & Medicaid services paid out over $17 million to more than 230 hospitals. CMS has reported that the participating hospitals have improved by 11.8% on their adherence to evidence-based protocols in five clinical areas. Initially, a three year effort in late February CMS extended the project through 2010.

Paying for Performance
Medicare has paid out more than $17 million in bonuses during the first two years of the project.

	Year 1*	Year 2*
AMI	$1.75	$1.70
CABG	$2.08	$1.88
Heart Failure	$1.82	$1.74
Pneumonia	$1.14	$1.07
Hip & Knee	$2.06	$2.29
Total	**$8.85**	**$8.68**

*In millions
Source: CMS, 2007

Is this the solution to patient care improvement? An article in the February issue of the *New England Journal of Medicine* reported that improvements at hospitals in the CMS project were only slightly better than at hospitals doing standard public reporting—ranging from 2.6 % to 4.1%. Peter Lindenauer, MD, the study's lead researcher says more research is needed before pay for performance is expanded.

Some changes are to be expected since Congress, in the 2005 Deficit Reduction Act, told CMS to develop a plan for "value-based" purchasing that could be widely adopted by fiscal 2009.

If the hospital P4P processes are complicated, the physician model doesn't seem to have a chance to succeed. An article in the *New England Journal of Medicine* on March 15th reported that Medicare beneficiaries' care is spread over so many physicians that determining which physician should qualify for additional payment is a moving target. A Medicare patient seen by the typical physician in the nationally representative study was treated by seven different doctors in four different medical practices in a given year.

Hospitals and physicians practicing quality, patient focused care will "go with the flow" and ones that need a little nudging can expect to get it—exactly what is anyone's guess.

Cardiac CTA in Brief

Rose Czarnecki

Computed tomography (CT) is continually changing; new technology is being introduced every 12 to 18 months. CT technology has evolved from the single-slice spiral introduced in the 1970's to the 4, 16 and 64-slice to the 128-slice, 256-slice and the dual source CT scanners introduced over the past several years. Along with this technology evolution came an expanded list of uses for CT. The advent of the 64 slice scanner made cardiac CT a viable clinical tool.

A quality cardiac CT scan not only depends on the technology used but also on the information generated from the study. Therefore, patient selection and preparation as well as scan acquisition, post-processing of scan data, image interpretation and a complete report are all the necessary components of a successful scan.

Patients who are most likely to benefit from cardiac CT are those with atypical symptoms and face immediate risk for coronary artery disease. For the best image quality, the patient needs to have a heart rate of 65 bpm or less and may require medication, such as a beta blocker, to slow their heart rate . If the patient is in atrial fibrillation, bigeminy, trigeminy or has a high grade heart block they may not be a candidate for cardiac CT. Hypersensitivity to iodinated contrast agents is also a contraindication for the exam. Patients must also be able to hold their breath for at least 15 seconds. The breath-hold time may be shorter depending on the type of scanner being used.

The exam is done by placing the patient in the supine position on the table with three ECG leads attached to the chest area. Intravenous access is necessary to ensure easy injection of the contrast agent. Patient education should include the sensations they may experience from the injection of the contrast and the purpose of the breath-holds. The scan can take anywhere from 10 to 60 minutes to complete. There is no special patient care post scan. Test interpretation can be completed in as little as 5 minutes.

Radiation exposure from cardiac CT can be concerning. The effective radiation dose associated with coronary CT is relatively high. There are many different dose reduction strategies. The most common is ECG-controlled dose modulation, a technique in which x-ray tube output is 100% during diastole but only 20% during systole. The result is a reduction in radiation of 30% to 50%. It is important that automatic dose reduction technology be available in the scanner rather than relying on the operator to provide dose reduction.

There are separate competency standards for physicians performing cardiac CT. The American College of Cardiology Foundation/American Heart Association clinical competency statement published in 2005 requires the physician to have 150 supervised cases. These include 50 cases in which a physician is directly involved in scanning to establish skill in interpreting a coronary artery CT scan. An interim statement published in 2005 by the American College of Radiology requires board-certified radiologists perform 75 supervised scans to achieve competence. The difference in these two training requirements takes into consideration that radiologists have training in thoracic CT interpretation during their residencies.

The prospects for reimbursement for coronary CT improved dramatically in 2006. About 75% of the country sees some Medicare reimbursement for the procedure. By 2008, nationwide reimbursement for this procedure will probably emerge. In 2006, Category I CPT codes did not exist, however, Category III T-Codes were used to track the procedures. These codes do not have a set dollar amount attached to them, but most local Medicare carriers provide some reimbursement. Every state is different; therefore, each facility wishing to perform cardiac CT should contact their local Medicare intermediary to determine specific coverage available.

Women and Heart Disease

Cyndi Havrilak

Good news is worth passing on, awareness that heart disease is the #1 killer of women has nearly doubled since 1997[1]. In the article "National Study of Women's Awareness, Preventive Action, and Barriers to Cardiovascular Health" findings of the awareness survey that replicated the methods and sampling in the previous AHA surveys were detailed. In 1997, the rate of awareness that cardiovascular disease (CVD) was the leading cause of death was only 30%; in 2005 the rate nearly doubled to 55%. However, a significantly greater percentage: 62% of whites compared to 38% blacks and Hispanics, are aware of this. The majority of the women surveyed (81%) reported they had seen, heard or read information about heart disease in the past 12 months.

Women reported the awareness of perceived risk of heart disease was associated with actions to lower their personal risk. Reported actions to lower personal risk:

- had annual check up
- more physical activity
- avoided unhealthy foods
- quit smoking
- lost weight

The self-reported barriers to CVD health:

- too much confusion in the media
- the feeling that God or a higher power determines health
- family obligations and other people to take care of
- did not perceive themselves to be at risk
- did not want to change lifestyle

It is obvious that the campaigns focused on getting the message out that women are dying from heart disease have been successful, but heightened efforts directed towards minorities are still needed.

The American Heart Association (AHA) updated their Evidence-Based Guidelines for Cardiovascular Disease Prevention in Women for 2007. As cardiology focused professionals we should be aware of these revisions. The updates are a summary of numerous clinical trial data since 2003 that were generalized to women. The recommendations to prevent CVD in women, except for the use of aspirin for primary prevention of heart disease, do not differ from those of men. To note also, these guidelines are not to be universally applied to all women.

The use of angiotensin-converting enzyme inhibitors and angiotensin receptor blockers for blood pressure control are contraindicated in women contemplating pregnancy or in those who are pregnant. The guidelines do emphasize the importance of assessing and stratifying into high, intermediate, lower or optimal categories of risk for CVD for a female. Ongoing research is thought to be needed to identify the medical events in a woman's lifespan that may predispose the woman to a higher risk and what preventive interventions are effective during the critical episodes.

The clinical recommendations are classified using the same method as past guidelines by their strength of importance, the amount of evidence that supports the recommendation and how it applies to women. The classification for the guideline is listed on the following pages.

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[1]Mosca, Lori MD, Mochari, Heidi MPH, RD, Christian, Allison EdD, et. al; National Study of Women's Awareness, Preventive Action, and Barriers to Cardiovascular Health. *Circulation.* 2006; 113:525-534.

Women and Heart Disease
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Strength of Recommendation	
Classification	
Class I	Intervention is useful and effective
Class IIa	Weight of evidence/opinion is in favor of usefulness/efficacy
Class IIb	Usefulness/efficacy is less well established by evidence/opinion
Class III	Intervention is not useful/effective and may be harmful
Level of Evidence	
A	Sufficient evidence from multiple randomized trails
B	Limited evidence from single randomized trial or other nonrandomized trial or studies
C	Based on expert opinion, case studies, or standard of care
Generalizability Index	
1	Very likely that results generalize to women
2	Somewhat likely that results generalize to women
3	Unlikely that results generalize to women
0	Unable to project whether results generalize to women

Clinical Recommendations are listed in the following table:

		Classifications
Lifestyle Interventions		
Cigarette Smoking	Encourage women not to smoke and to avoid environmental tobacco	Class I, Level B, GI=1
Physical Activity	Encourage women to accumulate a minimum of 30 minutes of moderate-intensity physical activity (e.g., brisk walking) on most, and preferably all days of the week	Class I, Level B, GI=1
Cardiac Rehabilitation	Women with a recent acute event should participate in a comprehensive risk-reduction regimen	Class I, Level B, GI=2
Heart-Healthy Diet	Encourage an overall healthy eating pattern, low-fat, low in saturated fat. Limit saturated fat intake to <10% of calories, limit cholesterol intake to <300mg/d, and limit intake of trans fatty acids	Class I, Level B, GI=1
Weight Maintenance/ Reduction	Encourage weight maintenance/reduction through an appropriate balance of physical activity, caloric intake, and formal behavioral programs when indicated to maintain/achieve a BMI between 18.5 and 24.9 kg/m2 and a waist circumference <35in.	Class I, Level B, GI=1
Psychosocial Factors	Women with CVD should be evaluated for depression and referred/ treated when indicated	Class IIa, Level B, GI=2
Omega 3 Fatty Acids	As an adjunct to diet, omega 3 fatty-acid supplementation may be considered in high-risk women	Class IIb, Level B, GI=2
Folic Acid	As an adjunct to diet, folic acid supplementation may be considered in high-risk, women, (except after revascularization procedure) if a higher-than-normal level of homocysteine has been detected	Class IIb, Level B, GI=2

Women and Heart Disease
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		Classifications
Major risk factor interventions		
Blood Pressure Lifestyle	Encourage an optimal blood pressure of <120/80 mm Hg through lifestyle approaches	Class I, Level B, GI=1
Blood Pressure Drugs	Pharmacotherapy is indicated when blood pressure is >140/90 mm Hg or even lower blood pressure in the setting of blood pressure-related target-organ damage or diabetes. Thiazide diuretics should be part of the drug regimen for most patients unless contraindicated.	Class I, Level A, GI=1
Lipid, Lipoproteins	Optimal level of lipids and lipoproteins in women are LDL-C<100mg/dL, HDL-C>50mg/dL, triglycerides<150 mg/dl, and non-HDL-C(total cholesterol minus HDL cholesterol) <130 mg/dL and should be encouraged through lifestyle approaches	Class I, Level B, GI=1
Lipids Diet Therapy	In high-risk women or when LDL-C is elevated, saturated fat intake should be reduced to <7% of calories, cholesterol to <200mg/d, and trans fatty acid intake should be reduced	Class I, Level B, GI=1
Lipids Pharmacotherapy High Risk	Initiate LDL-C-lowering therapy (preferably a statin) simultaneously with lifestyle therapy in high-risk women with LDL-C≥100mg/dL and	Class I, Level A, GI=1
	Initiate statin therapy in high-risk women with an LDL-C <100 mg/dL unless contraindicated	Class I, Level B, GI=1
	Initiate niacin or fibrate therapy when HDL-C is low, or non-HDL-C elevated in high-risk women.	Class I, Level B, GI=1
Lipids Pharmacotherapy Intermediate Risk	Initiate LDL-C-lowering therapy (preferably a statin) if LDL-C≥130mg/dL or lifestyle therapy or	Class I, Level A, GI=1
	Niacin or fibrate therapy when HDL-C is low, or non-HDL-C elevated after LDL-C goal is reached	Class I, Level B, GI=1
Lipids Pharmacotherapy Lower Risk	Consider LDL-C-lowering therapy in low-risk women with 0 or 1 risk factor when LDL-C level is ≥190mg/dL or if multiple risk factors are present when LDL is ≥ 160 mg/dL or	Class IIa, Level B, GI=1
	Niacin or fibrate therapy when HDL-C is low, or non-HDL-C elevated after LDL-C goal is reached	Class IIa, Level B, GI=1
Diabetes	Lifestyle and pharmacotherapy should be used to achieve near normal HbA1C (<7%) in women with diabetes	Class I, Level B, GI=1
Preventive drug interventions		
Aspirin High Risk	Aspirin therapy (75 to 162 mg), or clopidogrel if patient is intolerant to aspirin, should be used in high-risk women unless contraindicated	Class I, Level A, GI=1
Aspirin Intermediate Risk	Aspirin therapy (75 to 162 mg), in intermediate–risk women as long as blood pressure is controlled and benefit is likely to outweigh risk of gastrointestinal side effects	Class IIa, Level B, GI=2
B-Blockers	B-Blockers should be used indefinitely in all women who have had a MI or who have chronic ischemic syndromes unless contraindicated	Class I, Level A, GI=1
ACE Inhibitors	ACE inhibitors should be used (unless contraindicated) in high-risk women	Class I, Level A, GI=1
ARBs	ARBs should be used in high-risk women with clinical evidence of heart failure or an ejection fraction <40% who are intolerant of ACE inhibitors	Class I, Level B, GI=1

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Atrial fibrillation/stroke prevention		
Warfarin Atrial Fibrillation	Among women with chronic or paroxysmal atrial fibrillation, warfarin should be used to maintain the INR at 2.0 to 3.0 unless they are considered to be at low risk for stroke (<1%/y) or high risk of bleeding.	Class I, Level A, GI=1
Aspirin Atrial Fibrillation	Aspirin (325 mg) should be used in women with chronic or paroxysmal atrial fibrillation with a contraindication to warfarin or at low risk for stroke (<1%/y)	Class I, Level A, GI=1
Class III interventions		
Hormone Therapy	Combined estrogen plus progestin hormone therapy should not be initiated to prevent CVD in postmenopausal women	Class III, Level A
	Combined estrogen plus progestin hormone therapy should not be continued to prevent CVD in postmenopausal women	Class III, Level A
	Other forms of menopausal hormone therapy (e.g., unopposed estrogen) should not be initiated or continued to prevent CVD in postmenopausal women pending the results of ongoing trials	Class III, Level C
Antioxidant Supplements	Antioxidant vitamin supplements should not be used to prevent CVD pending the results of ongoing trials	Class III, Level A, GI=1
Aspirin Lower Risk	Routine use of aspirin in lower-risk women is not recommended pending the results of ongoing trials	Class III, Level B, GI=2

Both of these recent articles provide the current data and research related to women and heart disease. The hard work directed at increasing awareness and prevention is making a difference but ongoing efforts are needed until heart disease is no longer the #1 killer of women.

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