CONFERENCE REPORT

Chronic stable angina: Addressing the needs of patients through risk reduction, education and support

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Chronic stable angina (CSA) is one of the most common symptoms experienced by persons with heart disease. CSA is defined by the physical symptoms resulting from blockage of blood flow through the coronary arteries. Anginal symptoms generally occur as a result of increased demands for blood flow, such as with physical activity, eating a large meal, emotional upset or exposure to cold weather. Symptoms vary widely and can include discomfort in the chest, arms, back and jaw, shortness of breath and a sense of increased fatigue. Many patients with chronic stable angina do not describe their symptoms as “pain” but have a sense of burning, tightness, pressure or heaviness in the chest and upper body. Chronic stable angina is usually relieved by stopping the activity that precipitated the symptoms, by resting, and by the use of Nitroglycerine. Anginal symptoms are called “chronic and stable” when they occur in a predictable fashion and are in response to “triggers” such as those mentioned above.

“Unstable angina” is defined as anginal symptoms that occur with less activity than usual, are more severe than usual, and are not relieved by rest and nitroglycerine. Unstable angina can also occur at rest or

during sleep. Symptoms of unstable angina require immediate medical attention. The focus of this paper will be on chronic stable angina.

Approximately 6.8 million Americans suffer from chronic stable angina with 400,000 new cases diagnosed each year. The incidence of angina increases with age and results in diminished quality of life, loss of productivity, and disability. Currently, one in 10 people over the age of 65 have chronic stable angina.^{1,2} It is estimated that by 2010, 18 percent of the population of the US population will be over the age of 65 and this will increase to 30 percent by 2025.³ It is estimated that worldwide, more than 140 million live with symptoms of angina.

Although angina affects both men and women, women experience more symptoms of angina compared to men.⁴ A recent report revealed that women with angina, who were suspected of having coronary disease, cost \$750,000 to \$1,000,000, for symptom management over their lifetime.⁵ Medical costs associated with chronic stable angina exceed 15 billion dollars per year, with indirect costs being likely as high.^{1,2}

It is well known that atherosclerosis begins early in life. Risk factors for the development of atherosclerosis include cigarette smoking, dyslipidemia, hypertension, diabetes, obesity, lack of physical activity, and a diet that is high in saturated fat and cholesterol and lacking in fruits, vegetables, whole grains and fish. Other factors, such as age and family history, chronic stress and depression also play important roles.^{1,2} The coronary risk factors act independently and synergistically and, over time, result in damage to the artery wall and the development of atherosclerosis.

Health care providers play a key role in controlling the epidemic of atherosclerosis and resultant anginal symptoms. Responsibilities include health education, counseling, and treatment of cardiovascular and lifestyle risk factors. In addition, providers play an important role by living “healthy lifestyles” themselves.

Pathophysiology

Atherosclerosis begins with damage to endothelial cells that line the artery wall. Healthy endothelial cells are generally impermeable to cholesterol and other damaging substances in the blood and protect the artery against the development of atherosclerosis. Healthy endothelial cells release nitric oxide (NO) that allow the artery to relax and increase blood flow in response to a demand such as physical activity. Damage to the endothelium results in reduced ability of the endothelial cells to release NO and increased permeability to circulating proteins and cholesterol.⁶

Increased permeability results in the formation of atherosclerotic plaque. Plaques are prone to tear or “rupture,” releasing plaque contents into the blood stream, prompting a blood clot to form. Plaque rupture and clot formation can lead to unstable angina, acute myocardial infarction, and cardiac death.^{1,6} Risk factors for atherosclerosis also lead to stroke and peripheral arterial disease.¹ Additional consequences of atherosclerosis

are congestive heart failure, arrhythmias, unstable angina, and chronic stable angina.¹

As described above, uncontrolled risk factors result in endothelial dysfunction, and an accumulation of lipids and other cells in the sub-intimal space of the artery wall. This can lead to myocardial ischemia, unstable angina, myocardial infarction or sudden cardiac death.^{1,6} Ischemia is the term that describes both physical symptoms of angina as well as changes in the electrocardiogram that indicates lack of blood flow to heart muscle tissue. Ischemic symptoms are primarily related to an increase in myocardial oxygen demand coupled with a decrease in blood flow and, thus, decreased oxygen supply. Increased demand occurs regularly throughout the day such as with physical activity, emotional upset, eating large meals, and exposure to cold. Additionally, poorly controlled risk factors, such as hypertension that increases myocardial oxygen demand, can lead to ischemia and anginal symptoms.¹

Prevention of atherosclerosis relies heavily on intensive management of the cardiac risk factors including medical therapies and lifestyle change. For persons with chronic stable angina, these interventions are particularly important in reducing potential life-threatening vascular events.¹

Treatment for chronic stable angina

Medical therapies for angina date back to the 1880s when nitrates were first discovered. In the late 1950s, beta blockers were found to be effective in relieving symptoms of angina. Beta-blockers act by decreasing heart rate and blood pressure, thus decreasing myocardial oxygen demand and anginal symptoms.¹ In 1969, coronary artery bypass surgery became available, and in 1975, calcium channel blockers showed promise in relieving anginal symptoms. Bypass surgery improves blood flow directly to the myocardium while calcium channel blockers decrease peripheral

vascular resistance thus decreasing myocardial oxygen demand. Calcium channel blockers are also effective in reducing spasm of the coronary arteries by causing coronary artery relaxation and vasodilatation, thereby decreasing anginal symptoms.¹

In the late 1970s, percutaneous coronary interventions (PCI) such as balloon angioplasty became widely used to improve symptoms by mechanically opening blocked vessels. In the 1990s the use of stents to maintain open arteries following balloon angioplasty became state-of-the-art. These therapies rely on the same basic principal of providing the myocardium with additional blood flow, and thus oxygen, to meet myocardial oxygen demands.

Recently, a new medication, ranolazine, a late sodium channel blocker, became available for treatment of anginal symptoms. Late sodium channel blockers do not rely on reducing heart rate and blood pressure to reduce symptoms. Late sodium channel blockers interfere with late sodium release resulting in a decrease in calcium uptake in the myocardial cell. This results in improving myocardial cell relaxation and ultimately improves relaxation during diastole. This cascade of events reduces anginal symptoms.^{7,8}

Medical and surgical therapies, coupled with intensive risk factor management, provide patients with effective ways to reduce or prevent symptoms and stabilize or reduce atherosclerotic burden. Intensive risk factor management is aimed at eliminating the underlying cause of the symptoms – atherosclerosis.

Other non-pharmacologic, non-lifestyle, and non-surgical therapies to improve anginal symptoms include spinal cord stimulation, and enhanced external counterpulsation (EECP). Spinal cord stimulation is generally reserved for patients who have received maximal surgical and medical therapy and have refractory angina.¹ EECP is an interesting and novel treatment. EECP uses a series of cuffs wrapped around both legs to deliver compressed air that is synchronized to the cardiac cycle. During diastole, in-

creased blood flow is propelled to the heart resulting in increased arterial pressure and improved blood flow through the coronary arteries. EECP is a relatively time-consuming therapy, requiring 1 to 2 hours/day, 5 to 6 days/week, with a minimum total of 35 hours defining a full course of treatment. It's been shown to be well tolerated, relatively safe, and effective in reducing anginal symptoms. More research needs to be done with this therapy. EECP may be of benefit to a population of patients with optimal revascularization and maximal medical therapy with continued symptoms of angina.¹

Treatment goals

Treatment goals for patients with coronary artery disease should include improving longevity as well as quality of life (QOL). Strategies to improve longevity include reducing disease progression, preventing new events, preventing readmission to the hospital, and reducing mortality. Helping patients “feel better” also requires improving health status by diminishing symptoms, improving functional capacity, and improving quality of life through emotional support and education.

The mnemonic A, B, C, D and E is often used as a way to prompt the recollection of important therapies for persons with chronic stable angina.¹

A	B	C	D	E
Aspirin (anti-thrombotic) & Antianginal therapies	Beta blockers & Blood pressure	Cigarette smoking & Cholesterol	Diet & Diabetes	Education & Exercise

Pharmacological Therapy

Nitrates are an important pharmacotherapy in the management of anginal symptoms. They come in short- and long-acting forms. They act by reducing peripheral vascular resistance and myocardial oxygen demand. For the immediate relief of angina, nitro-

glycerin in sublingual or spray form should be used. Long-acting nitroglycerin preparations can be taken prophylactically before exercise or in advance of other situations known to regularly precipitate anginal symptoms. The longer acting forms can be taken orally, by patch or paste at regular intervals throughout the day to prevent anginal symptoms.¹

In the absence of contraindications, patients with atherosclerosis should take daily aspirin (antithrombotic agents) to reduce the risk of thrombus formation.¹ Beta-blockers, that decrease myocardial oxygen demand, are the drug of choice for managing ischemic cardiac disease.^{1,9} Calcium channel blockers reduce peripheral vascular resistance and thus lower blood pressure. By this mechanism, they are effective in reducing the workload on the heart and thus reduce angina symptoms. Calcium channel blockers or long-acting nitrates may be combined with beta-blockers if anginal symptoms continue or if beta blockers are contraindicated or not tolerated.¹ Late sodium channel blockers interfere with late sodium release and thus decrease calcium uptake in the myocardial cell. This results in improving myocardial cell relaxation and improves relaxation during diastole. This cascade of events reduces angina symptoms. Late sodium channel blockers have been shown to be safe and reduce anginal symptoms and are indicated as first line therapy for chronic stable angina.^{7,8}

Risk factor reduction

Reduction or modification of cardiac risk factors is key in the prevention of angina by treating the underlying cause – atherosclerosis. Dietary modifications and the use of lipid-lowering medications benefit patients with coronary artery disease including those with chronic stable angina. Lipid-lowering agents, such as an HmG Co-A Reductase inhibitor [statin], should be prescribed even if low-density lipoprotein (LDL) cholesterol is only mildly elevated (e.g. ≥ 100

mg/dL and ≤ 130 mg/dL). Treatment of hypercholesterolemia begins with dietary modification, physical activity, and achievement of ideal body weight. The primary goal of lipid management is to reduce LDL cholesterol to less than 100 mg/dL. Current research suggests that an LDL cholesterol of less than 70mg/dL, for high risk persons with coronary artery disease, may be more effective in preventing recurrent myocardial infarction.^{1,10,11}

Hypertension places patients at high risk for cardiovascular events thus, all patients benefit from normalization of blood pressure. If lifestyle modifications (diet, stress management, and exercise) do not lower blood pressure sufficiently, anti-hypertensive medications are recommended. For those patients with hypertension, the goal is to reduce blood pressure to less than 140/90 mm Hg. If diabetes, heart failure, or renal insufficiency are present, lower blood pressure goals are recommended.^{1,11} Lower blood pressure protects the heart and kidneys against further damage. Renin inhibitors such as Angiotensin Converting Enzyme (ACE) Inhibitors, Angiotensin Reuptake Blockers are recommended for patients with coronary artery disease who also have diabetes or left ventricular systolic dysfunction. This class of medication has been shown to protect the heart and kidneys by lowering blood pressure and by other physiologic mechanisms.^{1,11}

Smoking cessation will further reduce the incidence of coronary disease events and protect patients from increasing symptoms of angina. For smokers, the goal is complete cessation of all tobacco including avoiding second-hand smoke.^{1,11}

Normalizing Hemoglobin A1c will also help to reduce risk of future coronary events. Whether strict glycemic control in patients with diabetes reduces the risk of coronary events is not clear.^{1,11} However, improved blood glucose control will provide benefits for minimizing microvascular complications. Careful

TABLE 1. The Seattle Angina Questionnaire

19-item, self-administered questionnaire measuring five dimensions of coronary artery disease: Physical limitation (PL), anginal frequency (AF), treatment satisfaction (TS), and disease perception (DP)

SAQ scores range from 0 to 100, with higher scores indicating better levels of functioning

Worse Functioning ← 0	50	Better Functioning → 100
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Anginal stability (AS)

SAQ score of 50 indicates no change in anginal symptoms over the preceding month; scores below 50 indicate worsening symptoms, while scores above 50 indicate improvement

More Frequent Angina ← 0	50	Less Frequent Angina → 100
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Ref: Spertus JA, Winder JA, Dewhurst TA, et al. Development and evaluation of the Seattle Angina Questionnaire: a new functional status measure for coronary artery disease. *J Am Coll Cardiol.* 1995;25:333-341.

management of diabetes is crucial for patients who also have chronic stable angina.

Heart healthy nutrition is the cornerstone of all therapies for persons with coronary artery disease. Nutrition affects all of the risk factors especially lipid levels, blood pressure, blood glucose, weight and overall health. Obesity increases myocardial oxygen demand thus, weight reduction is important for overweight patients with chronic stable angina. Diet and exercise combined have been shown to be effective in helping patients lose and maintain weight loss when compared to either strategy alone.¹¹

Regular physical activity is important for persons with coronary artery disease including those with angina. For persons with angina, a medical evaluation, including an exercise stress test is generally indicated prior to starting a regular physical activity program. A cardiac rehabilitation program is recommended for persons with angina if one is available.^{1,11} For those who exercise unsupervised, careful instructions should be provided with regular monitoring. Instructions should include information about:

1. Heart rate and perceived exertion guidelines (including the type, intensity and frequency of exercise)
2. Muscle strengthening, warm up and cool down exercises
3. Warning signs of over exertion
4. Signs and symptoms of unstable angina
5. Understanding of the effect of medications on exercise performance
6. Exercise and inclement weather
7. The effect of illness and stress on anginal symptoms
8. Eating plus exercise and anginal symptoms¹²

The psychological impact of living with chronic stable angina

The Seattle Angina Questionnaire (SAQ), a disease specific questionnaire that measures five dimensions of QOL related to anginal symptoms, provides important information for persons with angina. The SAQ is a self-administered questionnaire that scores physical limitations, anginal frequency, anginal stability, treatment satisfaction, and disease perception. Scores range from 0-100, with higher scores indicating better

levels of functioning and QOL.¹³ (See Table1) In a study that evaluated the prevalence of angina in six VA General Internal Medical Clinics, anginal symptoms were reported in 5906 outpatient visits. Using the SAQ to measure quality of life, patients who reported daily angina had very limited quality of life, scoring about 32 on the SAQ. Those who had weekly angina had somewhat improved quality of life, yet still scored below 50. Patients with monthly angina scored 62, and patients who had angina less than once a month scored 82, indicating a relatively good QOL. This study also found a significant decrease in survival in patients scoring low in measures of physical limitation, angina frequency, angina stability and QOL. Severe physical limitation and angina frequency were significant predictors of one-year mortality.¹⁴

In another important study, anginal symptoms were evaluated in patients randomized to receive optimal revascularization.¹⁵ In this study, 1205 patients with stable angina, unstable angina, or silent ischemia were randomly assigned to undergo stent implantation or bypass surgery for relief of ischemic symptoms. Twelve months after revascularization, approximately 20% of patients continued to have angina with 60% to 80% of these patients still taking anti-anginal medications.

Patient education and self care

Patient education and self care are important for all patients with a chronic illness such as coronary artery disease. In order to evaluate the importance of self-care and education, a study was undertaken to determine the extent that chronic illnesses and disease severity affected patient's satisfaction with their health care provider.¹⁶ Patients in this study had ischemic heart disease, obstructive lung disease, or diabetes. The authors concluded that patient education and coping skills were more strongly associated with satisfaction with health care providers than with disease

severity. Self-management was felt to be important in improving both satisfaction as well as quality of care.¹⁶ The use of "integrative rehabilitation" in patients with angina has also been studied.¹⁷ The treatment was carried out in an ambulatory setting. Patients with chronic stable angina were provided integrative rehabilitation consisting of acupuncture and a self-care program including acupressure, Chinese health philosophy, stress management techniques and lifestyle adjustments. They found that integrated rehabilitation in patients with severe angina resulted in adding quality years to patient's lives. The program was also found to be cost effective.¹⁷

There is clear evidence that patients with stable angina experience significant limitations resulting in a need to adjust their lifestyle. They reported indignation, a sense of caution, and a fear of the unknown. Patients report needing to make adjustments in their lifestyles because of these limitations. They want access to information sources and a better understanding of their disease in order to make adjustments in their lives. They expressed the need to have opportunities to discuss their disease with a specialist health care provider and felt that this was essential to their ability to manage their health.¹⁸ Thus, antianginal medical therapies remain important despite optimal revascularization.

An education and support program for patients with chronic stable angina – A nursing initiative

Get Tough on Angina (GTOA) is a public health initiative designed to increase QOL in persons with chronic stable angina. In addition, GTOA aims to increase the public's awareness of chronic stable angina and its impact on health and QOL. GTOA was developed by the Preventive Cardiovascular Nurses Association. It includes three main components:

- An educational brochure and handbook for patients and families available in English and Spanish;
- A slide and script set for a four-part educational support group to be led by health care providers. Both slide and script sets include detailed information about the educational content, class activities, and homework.
- A slide and script set for a one hour community education forum about chronic stable angina.

The GTOA program is free of charge. All of the products can be ordered by emailing the Preventive Cardiovascular Nurses Association at www.info@pcna.net.

The educational support group includes information about coronary artery disease, pathophysiology, medications and medical management, communication building, self-monitoring for symptoms, physical activity, nutrition, and medication compliance. The program emphasizes understanding and communication about feelings and emotions and provides a series of “LifeSkills” to reduce stress.¹⁹ Communication with family, friends and health care providers is emphasized. Each session shares a similar format which includes:

1. A welcome and group interaction activity;
2. Didactic education on subjects relevant to living with chronic stable angina, problem solving, stress management, and building communication skills;
3. Information about the patho-physiology and treatment of chronic stable angina, cardiovascular risk factors, and symptoms of angina;
4. Discussions regarding feelings of fear, anger, and frustration and communication skills are key components. Focusing on the psychological impact of chronic illness at the first session allows a continuation of this dialogue throughout the 4 sessions;
5. Self-management skill building. Self management in this program focuses on understanding anginal “triggers” (exercise, eating extra large meal, exposure to cold and emotional upset). Understanding the role of cardiovascular risk factors and their impact on the frequency and severity of anginal symptoms (such as elevated blood pressure and smoking) are stressed;
6. Information about sexual activity and intimacy, a subject not often discussed with health care providers begins early in the program. Sexual activity and intimacy are discussed with regard to physiological and psychological responses. The goal is to increase awareness and generate a dialogue between the participants, their partners and health care provide related to sexual concerns and problems;
7. Symptoms (including the recognition of individual differences) are discussed with the goal of having participants better able to determine stability and predictability of their symptoms – a key to their safety;
8. Communication skills are stressed to help patients deal with this chronic and often unpredictable symptoms;
9. Pharmacological therapies are reviewed along with mechanisms and potential side effects. Self care has been shown to be improved with greater understanding of risks and benefits of therapies;
10. Lifestyle factors, most importantly the coronary risk factors, are addressed to prevent further development of atherosclerosis and to improve endothelial function;
11. Nutrition, exercise, and stress management skills are woven throughout the sessions. Life Skills are taught at the end of each session and are designed to be practiced at home. The four LifeSkills taught include, Belly Breathing, Deep Muscle Relaxation, Learning to Appreciate Your Life, and Patting Yourself on the Back.²⁰

GTOA was piloted tested by nurses in 10 cities throughout the United States. Sixty-six patients participated in the ten pilot programs. Following the 4 weekly sessions, patients reported improved QOL scores as measured by the SAQ and were very satisfied with the program. Improved QOL remained at 8 weeks following the program.²¹

“*Get Tough on Angina*” is ideally suited for use in cardiac rehabilitation programs and in clinics where patients with coronary artery disease are cared for.

Conclusion

Chronic stable angina is a common symptom that is rising in incidence along with an aging population and an improved ability to prevent death from coronary atherosclerotic vascular disease. In spite of advanced medical and interventional therapies, anginal symptoms remain common and negatively affect quality of life for millions. Angina also contributes enormously to personal, societal, and financial burdens attributed to poor health. Providing patients with a program designed to improve their understanding of angina with information about effective self care is critically important. *Get Tough on Angina* is an example of an education and support program designed to achieve improved Quality of Life for persons living with chronic stable angina.

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References

1. Gibbons RJ, Abrams J, Chatterjee K, et al. ACC/AHA 2002 guideline update for the management of patients with chronic stable angina: a report of the American College of Cardiology/American Heart Association Task Force on Practice Guidelines (Committee to Update the 1999 Guidelines for the Management of Patients with Chronic Stable Angina). 2002. Available at www.acc.org/clinical/guidelines/stable/stable.pdf.
2. American Heart Association. Heart Disease and Stroke Statistics — 2006 Update. Dallas, Tex.: American Heart Association; 2006.
3. National Center for health Statistics, Centers for Disease Control and Prevention, Trends In Health and Aging. CDC.gov/nchs/sringact.htm
4. Lerner DJ, Kannel WB, Patterns of coronary heart disease morbidity and mortality in the sexes: a 26 year follow up of the Framingham population. *Am Heart J* 1986;11:383-90.
5. Shaw LJ, Merz CN, Pepine CJ, et al. Women's Ischemia Syndrome Evaluation (WISE) Investigators. The economic burden of angina in women with suspected ischemic heart disease: results from the National Institutes of Health--National Heart, Lung, and Blood Institute--sponsored Women's Ischemia Syndrome Evaluation. *Circulation*. 2006;114:894-904. Epub 2006 Aug 21.
6. Stry HC, Chandler AB, Dinsmore RE et al, Report From the Committee on Vascular Lesions of the Council on Arteriosclerosis, American Heart Association. *Circulation*. 1995;92:1355-74.
7. Nobel D, Nobel PL. Late Sodium current in the pathophysiology of cardiovascular disease; consequences of sodium-calcium overload. *Heart* 2005;92(Suppl IV):iv1-iv5.
8. Belardinelli L, Shyrook JC, Fraser H. Inhibition of the late sodium current as a potential cardioprotective principle: effects of the late sodium current inhibitor ranolazine. *Heart* 2005;92(Suppl IV):iv6-iv14.
9. Messerli FH et al. Are beta-blockers efficacious as first-line therapy for hypertension in the elderly? *JAMA* 1998;279:1903-7.
10. Grundy SM, Cleeman JI, Bairey Merz CN et al. Implications of Recent Clinical Trials for the National Cholesterol Education Program Adult Treatment Panel III Guidelines. For the Coordinating Committee of the National Cholesterol.
11. Smith SC Jr et al: AHA/ACC Scientific Statement: AHA/ACC guidelines for preventing heart attack and death in patients with atherosclerotic cardiovascular disease. *Circulation* 2001;104:1577-9 .
12. Guidelines for Cardiac Rehabilitation and Secondary Prevention Programs. Fourth Edition, AACVPR. Human Kinetics 2004.
13. Spertus JA, Winder JA, Dewhurst TA, et al. Development and evaluation of the Seattle Angina Questionnaire: a new functional status measure for coronary artery disease. *J Am Coll Cardiol* 1995;25:333-41.

14. Spertus JA, Jones P, McDonell M, Fan V, Fihn D. Health status predicts long term outcome in outpatients with coronary disease. *Circulation*. 2002;106:43-9.
15. Serruys PW, Unger F, Sousa JE, et al. Comparison of coronary-artery bypass surgery and stenting for the treatment of multivessel disease. *N Engl J Med*. 2001; 344:1117-24.
16. Fan VS, Reiber GE, Diehr P, Burman M, McDonnell MB, Fihn SD. Functional capacity and patient satisfaction: a comparison of ischemic heart disease, obstructive lung disease, and diabetes mellitus. *J Gen Intern Med* 2005;20:452-9.
17. Ballegaard S, Johannessen A, Karpatschof B, Nyboe J. Addition of acupuncture and self-care education in the treatment of patients with severe angina pectoris may be cost beneficial: an open, prospective study. *J Alter Complement Med* 1999; 5:405-13.
18. MacDermott AF. Living with angina pectoris-a phenomenological study. *Eu J Cardiovasc Nurs* 2002; Dec; 265-72.
19. LifeSkills © provide short, easy to use, self management skills for stress reduction. *Stress Free for Good: 10 Scientifically Proven Life Skills for Health and Happiness* HarperSanFrancisco-Publisher by Frederic Luskin, Ken Pelletier.
20. Berra K, Fletcher B, Miller NH Chronic Stable Angina and Cardiac Rehabilitation Improving Quality of Life. *Hong Kong Journal of Cardiology*, December 2006.
21. Author communication.

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