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A Quarterly Update
For Doctors About
Advancements at the
Guerrieri Heart &
Vascular Institute

Cardio Metabolic Syndrome: An Emerging Picture Becomes Clearer

Factors Contributing to Cardiometabolic Risk



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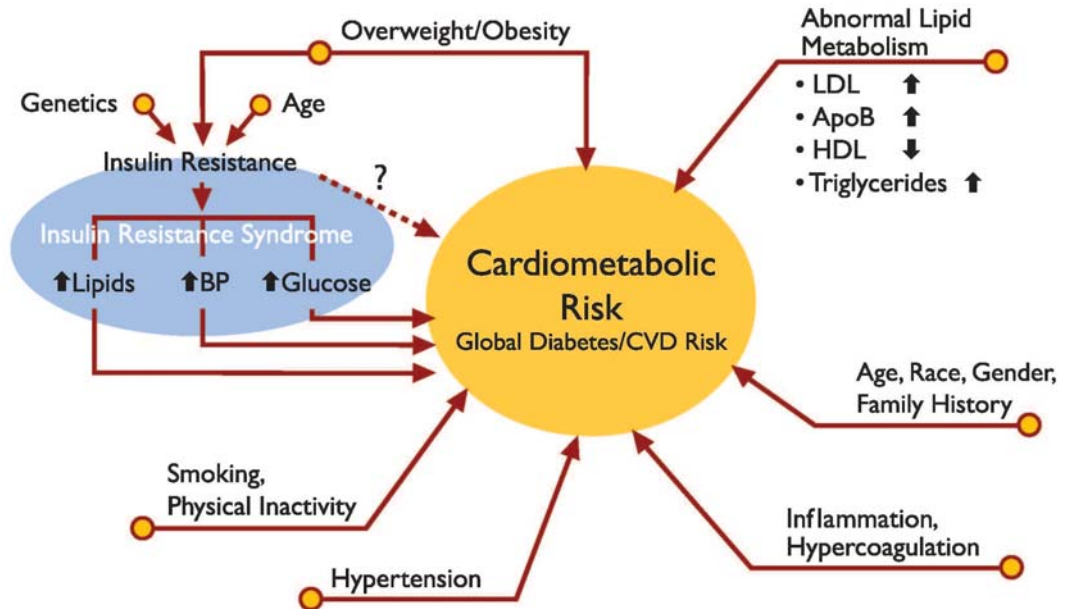
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diabetes.org/CMR

Cardio Metabolic Syndrome is an aggregate of interrelated symptoms whose presence in a group of three or more puts a patient at serious risk for developing heart disease, stroke, kidney disease, and diabetes. Disagreement exists in the medical community and the literature as to the precise definition and name of the syndrome. It has been variously known as Reaven's Syndrome, Insulin Resistance Syndrome, Syndrome X and Cardiometabolic Risks. Concurrent research efforts are attempting to resolve differences of opinion as

to the causes of Cardio Metabolic Syndrome and even whether it merits labeling as a distinct syndrome.

Criteria Used for Evaluating Patients for Cardio Metabolic Syndrome

Though opinions vary as to the precise parameters of symptoms, the American Association of Clinical Endocrinologists (AACE) has set forth these criteria without specifying what number of factors constitutes a diagnosis:

- Hypertension (≥ 130 mm Hg systolic or ≥ 85 mm Hg diastolic) or taking blood pressure medication
- Plasma triglycerides ≥ 150 mg/dL
- HDL cholesterol < 40 mg/dL in men or < 50 mg/dL in women
- BMI greater than 25

Other more general guidelines suggest the following symptoms and specify that the presence of three of the four symptoms constitutes a diagnosis:

- Waistline measurement ≥ 40 inches for men and ≥ 35 inches for women

- Blood pressure of $\geq 130/85$ mm Hg or undergoing drug therapy for high blood pressure
- Triglyceride level > 150 mg/dl
- Fasting blood glucose level > 100 mg/dl or are on glucose lowering medications
- (HDL) < 40 mg/dl (men) or < 50 mg/dl (women)

Nationally, metabolic syndrome affects nearly a quarter of people considered overweight and 60 percent of those in the obese category. Clearly, those statistics, viewed in the context of the lifestyle issues that persist in our region, are cause for concern. Their links to diabetes and heart disease compel those of us in the medical community to a greater awareness of the amalgam of symptoms as a syndrome, whatever its label, as well as earlier and more aggressive intervention and management of those symptoms.

Other AACE risk factors and symptoms:

- Family history of Type 2 diabetes, hypertension, or heart disease
- Ethnic groups subject to an increased occurrence of Type 2 diabetes, hypertension or heart disease
- Polycystic ovary syndrome
- Sedentary lifestyle
- Advancing age

Insulin Resistance: The Cornerstone of Cardio Metabolic Syndrome

Insulin resistance and metabolic syndrome are closely related, as seen in the blood glucose and diabetes family history components of metabolic syndrome symptoms. As the body's cells become increasingly resistant to the interaction with insulin, specifically the use of blood glucose by fat and muscle cells, blood glucose levels continue to rise. As the condition progresses it is either the precursor or the early stages of type 2 diabetes. In concert with the other symptoms, insulin resistance is the cornerstone of metabolic syndrome. Taken individually, the other symptoms of metabolic syndrome—obesity, lipid profiles, etc.—are also the main risk factors for insulin resistance.

In addition, the DPP study and the STOP NIDDM (Study to Prevent Non-insulin Dependent Diabetes Mellitus) trial showed that metformin and acarbose reduced the occurrence of diabetes by 31 and 25 percent respectively.

Source: *Circulation, the Journal of the American Heart Association*

u s n i g n i s o n g a i D
t n e r r u c s e i d u t S

Glucose Management and Cardiac Surgery

At the Guerrieri Heart & Vascular Institute, 40% of the inpatient population are receiving Point of Care (POC) glucose monitoring and 35% of those patients never achieve adequate glycemic control (maintaining blood glucose levels between 70-180mg/dl) while hospitalized.

Ample evidence now exists that inpatient morbidity and mortality are increased by hyperglycemia in cardiac patients. For example, in two large studies of patients undergoing cardiac surgery (N=8910 and N=2467), hyperglycemia was associated with an increased risk of deep sternal wound infections (1,2); subsequent analysis revealed a highly significant relationship (P<.001) between mortality and postoperative BG levels >175 mg/dL.(3).

Furthermore, a meta-analysis of 15 studies of patients hospitalized for acute myocardial infarction demonstrated that BG levels >110 mg/dL were associated with increases in both in hospital mortality and congestive heart failure (4).

The Diabetes Management Service (DMS) has

initiated insulin drip transition orders for all post op cardiac patients to improve glycemic control. If a post op patient is maintained on an insulin drip, regardless of having a previous diagnosis of diabetes, they will receive transition basal insulin for 1-3 days after surgery to help maintain tight glycemic control levels <180. The dose of basal insulin is determined by a new protocol being utilized that takes into account age, weight, BMI, past medical history, and IV insulin required post operatively. Patients are then managed by the DMS until discharge. Since the inception of the protocol (3 months ago), the DMS has revealed numerous patients with existing diabetes not previously diagnosed and prediabetics who might otherwise have been missed. Recognizing these problems early can lead to overall improved outcomes for both the patient and the Guerrieri Heart & Vascular Institute.

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The Cardio Metabolic Syndrome

This issue of Heart Line about Cardio Metabolic Syndrome illustrated the complex nature of the syndrome. It seems that the syndrome defies both definition and nomenclature. What is clear, however, is the great impact that this syndrome has on cardiovascular and cerebrovascular morbidity and mortality. The risk of myocardial infarction and stroke have been estimated to be between 2 – 4 times greater in those with the syndrome when compared to aged matched controls.

The syndrome, or rather its components, is not new to any of us. We have been battling this disease for ages. What is emerging is a greater appreciation for the cumulative effects of the individual components. Moreover, we are beginning to gain a greater appreciation for the disproportionate importance of insulin resistance on the overall effects of the syndrome. Insulin resistance is most often related to obesity and inactivity. The August 23, 2007 edition of the New England Journal of Medicine features an article reporting a 30-40% decrease in mortality over 7-10 years in patients who lost weight as a result of bariatric surgery versus their heavier

controls. The decrease in mortality is attributed to decrease in cardiovascular mortality. The take home point is that the leading causes of cardiovascular mortality including diabetes, dyslipidemia and hypertension, are directly attributed to weight gain and inactivity. By reversing these conditions we can greatly impact survival. At no point have we mentioned drug therapy. While medications are effective they do not address the underlying pathophysiologies of the various diseases. Our challenge, if we are to impact this syndrome, is not to just prescribe more medications to achieve nationally accepted guidelines but rather to motivate our patients to pursue a healthier, active lifestyle, to adhere to a balanced diet, to lose weight and to become active, not passive, participants in their healthcare. It is a Herculean task to be sure but one worth pursuing if we are to decrease the economic and social burden of this emerging medical monster. Clearly, throwing more money and medications at it has, in many cases been both fruitless and, ultimately, fatal.

Contributed by Robert A. Coker, DO

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Guerrieri Heart & Vascular Institute Dedicated November 5

The first week of November marked a very significant change to what Delmarva Peninsula residents have known for over three decades as the Peninsula Heart Center.



Peninsula Regional Medical Center renamed and dedicated the Peninsula Heart Center as the new Guerrieri Heart & Vascular Institute at Peninsula Regional Medical Center.

The Guerrieri Heart & Vascular Institute was made possible, in part, thanks to a \$2 million donation by the Guerrieri Family Foundation to the Medical Center's "Journey to a Legacy" capital campaign. "The entire Peninsula Regional Medical Center team extends our gratitude to the Guerrieri Family Foundation for helping to make this historical transformation possible," stated Alan Newberry, president/CEO of Peninsula Regional Medical Center. "As part of the name change, and because vascular services have always been

Peninsula Regional Medical Center, adding the vascular designation to the respected Guerrieri name more accurately reflects the full spectrum of care provided at the Institute."

While the services, physicians and staff that patients have trusted for exceptional diagnostic and surgical heart care and research since 1972 at the Peninsula Heart Center won't change, getting them more easily and conveniently to those important services will.

Peninsula Regional will provide all Guerrieri Heart & Vascular Institute patients and their families a new and dedicated entrance and atrium on the East Carroll Street side of the Medical Center campus. "In addition, families will have a comfortable waiting area where physicians can consult with them in private. A new waiting area for Cardiology Nuclear Medicine will also be available for those patients having a stress or nuclear study," added Rose Marie Patin, MSN, MPS, RN, executive director of the Guerrieri Heart & Vascular Institute.

The Guerrieri Heart & Vascular Institute and the cardiac and vascular team have performed more than 10,000 open heart surgeries and 100,000 other cardiac and vascular procedures at the Institute over the past 35 years.

NEXT ISSUE

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Peninsula Access Center Expedites Transfers & Referrals

The Peninsula Access Center (PAC) assists physicians in arranging timely referrals to the Guerrieri Heart & Vascular Institute. A dedicated staff stands ready 7 days a week, 24 hours a day to assist you in expediting and coordinating your patient's care.


By calling **1-866-614-4PAC(4722) or 410-543-4PAC(4722)** you can refer your patient to a cardiologist, cardio-thoracic or vascular surgeon and begin the seamless process of care at one of the nation's outstanding heart and vascular programs.

One call to the **Peninsula Access Center (PAC)** will provide you seamless communication to a physician of your choice or one of our many on-call specialists depending upon the need. And we can arrange for you to have access to your patient's electronic medical record through our state of the art Physician Portal.

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One Call Does It All



By calling **1-866-614-4PAC(4722) or 410-543-4PAC(4722)** you can access quality care for your patients from the region's leading team of specialists and sub-specialists.

Enclosed and pictured below is a convenient wallet sized card that provides all of the information you need to contact the Peninsula Access Center (PAC).

