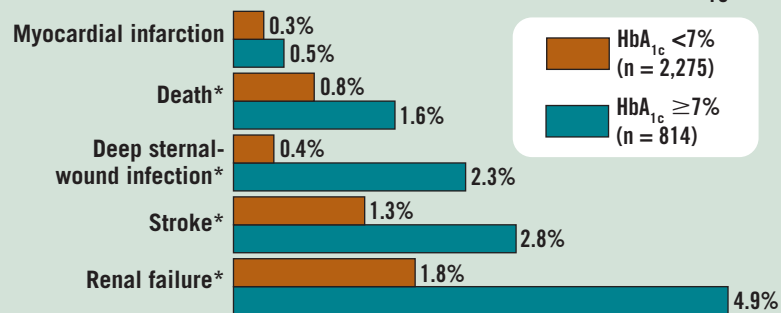


Rate of Adverse Events After CABG Linked to HbA_{1c} Levels

*Statistically significant.

Note: Adverse outcomes occurred during hospitalization after surgery.

Source: Dr. Halkos

HbA_{1c} Levels Reliably Predict Coronary Bypass OutcomesBY MITCHEL L. ZOLER
Philadelphia Bureau

WASHINGTON — Serum level of hemoglobin A_{1c} was better than diabetic status for identifying patients with the highest risk of bad outcomes following coronary artery bypass surgery, in a review of more than 3,000 patients.

“A hemoglobin A_{1c} [HbA_{1c}] level of 7%

or higher was a powerful predictor of in-hospital mortality or morbidity after elective coronary artery bypass surgery,” Dr. Michael E. Halkos said at the annual meeting of the American Association for Thoracic Surgery. Mortality and morbidity in patients with an HbA_{1c} level lower than 7% were similar to those of patients without diabetes, said Dr. Halkos, of the division of cardiothoracic surgery at Emory University, Atlanta.

These findings raise the possibility of delaying elective coronary surgery in patients with poorly controlled diabetes until their control improves and their serum level of HbA_{1c} drops, he said.

The review included 3,555 consecutive patients who underwent primary, elective coronary artery bypass graft (CABG) at the university during April 2002-June 2006. The series included 3,089 patients whose records included a measure of serum HbA_{1c} taken shortly before surgery. All patients were treated with a uniform and strict insulin-infusion regimen during the intraoperative and perioperative periods that was designed to maintain blood glucose levels at less than 120 mg/dL.

A total of 2,275 patients (74%) had a preoperative HbA_{1c} level lower than 7%, and 814 (26%) had a level of 7% or higher. In addition, 1,240 patients (40%) were diagnosed with diabetes or had a history of diabetes before surgery, and 1,849 (60%) had no history of diabetes. Among the patients with a history of diabetes, 42% were well controlled at the time of surgery, with an HbA_{1c} lower than 7%.

Surgical outcomes were assessed by the incidence of five adverse events during hospitalization following surgery: death, myocardial infarction, stroke, renal failure, and deep sternal-wound infection.

The incidence of four of these five adverse outcomes were all significantly reduced among the patients who had surgery with an HbA_{1c} level lower than 7%, compared with those whose level was 7% or higher. The only outcome that was not significantly less was myocardial infarction. (See box.)

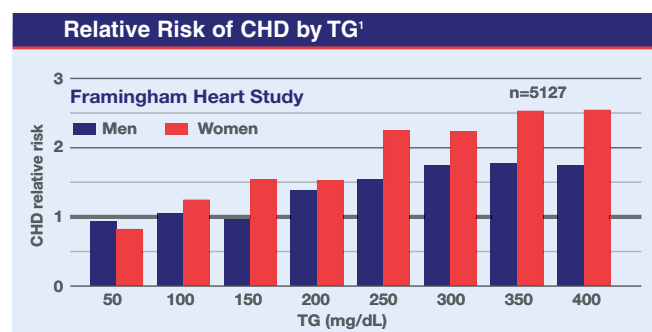
In contrast, when patients with and without a history of diabetes were compared, stroke was the only adverse outcome that was significantly more common among the patients with diabetes, Dr. Halkos said. In addition, when the incidence of adverse events was tallied only among well-controlled patients with diabetes (those with an HbA_{1c} level lower than 7%), the rates were not significantly different than the rates among the patients without diabetes.

Another analysis of the data used HbA_{1c} levels as a continuous variable, instead of a dichotomous variable with the cut point at 7%. A multivariate analysis that adjusted for baseline differences in the patients showed that every 1% increase in HbA_{1c} level was linked with a statistically significant increase in the incidence of four of the five adverse outcomes studied following CABG. The only outcome that did not show a significant relationship was stroke. ■

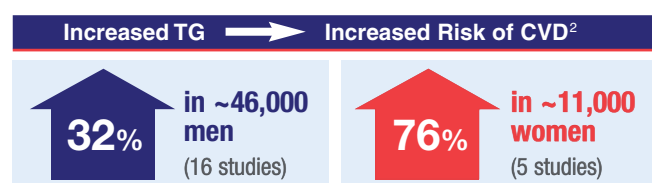
What TG means to a woman's heart

Elevated Triglycerides Make a Difference in Women's Risk of CHD

While great attention and clinical efforts have been directed toward LDL-C-lowering, the Framingham Heart Study 30-year follow-up clearly showed that elevated triglycerides (TG) are also associated with an increased relative risk of coronary heart disease (CHD) — especially in women.¹



In addition, meta-analyses demonstrated that every 1 mmol/L (89 mg/dL) increase in TG increased cardiovascular disease (CVD) risk by:²



CHD is the #1 Killer of Women

The effect of elevated TG in women is important to keep in mind in view of the fact that CHD is the single leading cause of death among American women, claiming nearly 500,000 lives each year.³ Menopausal women are particularly at risk, with CHD rates 2 to 3 times those of women the same age who are premenopausal.³

CHD Risks With Diabetes or Metabolic Syndrome* in Women: Role of TG and HDL-C

Of the estimated 16 million Americans with diabetes, more than half are women.⁴ In women, diabetes is a powerful risk factor for CHD, increasing CHD risk 3-fold to 7-fold compared to a 2-fold to 3-fold increase in men.⁵ It has also been shown that metabolic syndrome is associated with a 2-fold risk of CHD mortality in women.⁶ **It is important to note that the most common pattern of dyslipidemia in patients with type 2 diabetes is elevated TG levels and decreased HDL-C levels.⁷**

*At least 3 of the 5 criteria: abdominal obesity with waist circumference >102 cm in men and >88 cm in women; triglycerides ≥150 mg/dL; HDL-C <40 mg/dL in men and <50 mg/dL in women; blood pressure ≥130/85 mmHg; fasting glucose ≥110 mg/dL.⁸

More Aggressive Guidelines for TG and HDL-C

While LDL-C lowering is recognized as the primary lipid target to reduce CHD morbidity and mortality, it does not remove all risk.⁹ Recent data has shed more light on the role of increased TG and decreased HDL-C in CHD risk. It is critical that these lipid abnormalities be considered and managed, in addition to LDL-C. In fact, the current National Cholesterol Education Program (NCEP) guidelines recommend more aggressive TG and HDL-C target goals.⁸ The American Heart Association (AHA) and American Diabetes Association (ADA) recommend similar aggressive goals for TG (<150 mg/dL) and HDL-C (>50 mg/dL) in CVD prevention for women.^{10,11}

You Can Help Make a Difference

A majority of women are still not aware of the substantial CHD risks posed by abnormal lipid levels.¹² As a physician, you can help make a difference by raising your female patients' awareness of these issues, and by helping them achieve optimal lipid levels, as recommended by the NCEP, the AHA and the ADA.

References: 1. Castelli WP. Epidemiology of triglycerides: a view from Framingham. *Am J Cardiol.* 1992;70:3H-9H. 2. Hokanson JE, Austin MA. Plasma triglyceride level is a risk factor for cardiovascular disease independent of high-density lipoprotein cholesterol level: a meta-analysis of population-based prospective studies. *J Cardiovasc Risk.* 1996;3:213-219. 3. American Heart Association. Heart Disease and Stroke Statistics—2006 Update. Available at: <http://www.americanheart.org>. Accessed February 8, 2006. 4. Centers for Disease Control and Prevention. Office of Women's Health. Diabetes. Available at: www.cdc.gov/od/spotlight/nwhw/pubs/diabetes.htm. Accessed April 11, 2006. 5. Manson JE, Spelsberg A. Risk modification in the diabetic patient. In: Manson JE, Ricker PM, Gaziano JM, Hennekens CH, eds. *Prevention of Myocardial Infarction*. New York, NY: Oxford University Press; 1996:241-273. 6. Malik S, Wong ND, Franklin SS, et al. Impact of the metabolic syndrome on mortality from coronary heart disease, cardiovascular disease, and all causes in United States adults. *Circulation.* 2004;110:1245-1250. 7. American Diabetes Association. Management of dyslipidemia in adults with diabetes. *Diabetes Care.* 2003;26:S83-S86. 8. National Heart, Lung, and Blood Institute. *Third Report of the National Cholesterol Education Program (NCEP) Expert Panel on Detection, Evaluation, and Treatment of High Blood Cholesterol in Adults (Adult Treatment Panel III)*. Bethesda, Md: National Institutes of Health; 2002. NIH Publication 02-5215. 9. Davidson MH. Reducing residual risk for patients on statin therapy: the potential role of combination therapy. *Am J Cardiol.* 2005;96(suppl):3K-13K. 10. Mosca L, Appel LJ, Benjamin EJ, et al. AHA Guidelines. Evidence-based guidelines for cardiovascular disease prevention in women. *Circulation.* 2004;109:672-693. 11. American Diabetes Association. Standards of medical care in diabetes—2006. *Diabetes Care.* 2006;29(suppl 1):S4-S42. 12. Mosca L, Ferris A, Fabunmi R, Robertson RM. Tracking women's awareness of heart disease: an American Heart Association national study. *Circulation.* 2004;109:573-579.