Am J Cardiol (2004);94:337-9
Clinically unrecognized Q-wave myocardial infarction in patients with diabetes mellitus, systemic hypertension, and nephropathy
D. Aguilar*, et al.*
Division of Cardiology, University of Texas Health Science Center, Houston, 77030, USA. david.aguilar@uth.tmc.edu
During the Irbesartan Diabetic Nephropathy Trial, 1,387 participants with type 2 diabetes mellitus, hypertension, and nephropathy underwent serial electrocardiograms for the identification of Q-wave myocardial infarction (MI). During a mean follow-up of 2.5 years, 14 of 99 first nonfatal MIs in this group were clinically unrecognized, accounting for 14% of all first nonfatal MIs.
http://www.ncbi.nlm.nih.gov/entrez/query.fcgi?cmd=Retrieve&db=PubMed&dopt=Citation&list_uids=15276098

Circulation (2004);110:1572-8
Newly diagnosed and previously known diabetes mellitus and 1-year outcomes of acute myocardial infarction: the VALsartan In Acute myocardial iNfarcTion (VALIANT) trial
D. Aguilar*, et al.*
Cardiovascular Division, University of Texas Health Science Center, 6431 Fannin, MSB 1.246, Houston, TX 77030, USA. david.aguilar@uth.tmc.edu
BACKGROUND: A prior diagnosis of diabetes mellitus is associated with adverse outcomes after acute myocardial infarction (MI), but the risk associated with a new diagnosis of diabetes in this setting has not been well defined. METHODS AND RESULTS: We assessed the risk of death and major cardiovascular events associated with previously known and newly diagnosed diabetes by studying 14,703 patients with acute MI enrolled in the VALsartan In Acute myocardial iNfarcTion (VALIANT) trial. Patients were grouped by diabetic status: previously known diabetes (insulin use or diagnosis of diabetes before MI, n=3400, 23%); newly diagnosed diabetes (use of diabetic therapy or diabetes diagnosed at randomization [median 4.9 d after infarction], but no known diabetes at presentation, n=580, 4%); or no diabetes (n=10,719). Patients with newly diagnosed diabetes were younger and had fewer comorbid conditions than did patients with previously known diabetes. At 1 year after enrollment, patients with previously known and newly diagnosed diabetes had similarly increased adjusted risks of mortality (hazard ratio [HR] 1.43; 95% confidence interval [CI], 1.29 to 1.59 and HR, 1.50; 95% CI, 1.21 to 1.85, respectively) and cardiovascular events (HR, 1.37; 95% CI, 1.27 to 1.48 and HR, 1.34; 95% CI, 1.14 to 1.56). CONCLUSIONS: Diabetes mellitus, whether newly diagnosed or previously known, is associated with poorer long-term outcomes after MI in high-risk patients. The poor prognosis of patients with newly diagnosed diabetes, despite having baseline characteristics similar to those of patients without diabetes, supports the idea that metabolic abnormalities contribute to their adverse outcomes.
http://www.ncbi.nlm.nih.gov/entrez/query.fcgi?cmd=Retrieve&db=PubMed&dopt=Citation&list_uids=15364810

J Am Coll Cardiol (2004);43:1731-7
The pathophysiology of cigarette smoking and cardiovascular disease: an update
J. A. Ambrose and R. S. Barua

Comprehensive Cardiovascular Center, Saint Vincent Catholic Medical Centers of New York, New York, New York 10011, USA. jamambrose@yahoo.com
Cigarette smoking (CS) continues to be a major health hazard, and it contributes significantly to cardiovascular morbidity and mortality. Cigarette smoking impacts all phases of atherosclerosis from endothelial dysfunction to acute clinical events, the latter being largely thrombotic. Both active and passive (environmental) cigarette smoke exposure predispose to cardiovascular events. Whether there is a distinct direct dose-dependent correlation between cigarette smoke exposure and risk is debatable, as some recent experimental clinical studies have shown a non-linear relation to cigarette smoke exposure. The exact toxic components of cigarette smoke and the mechanisms involved in CS-related cardiovascular dysfunction are largely unknown, but CS increases inflammation, thrombosis, and oxidation of low-density lipoprotein cholesterol. Recent experimental and clinical data support the hypothesis that cigarette smoke exposure increases oxidative stress as a potential mechanism for initiating cardiovascular dysfunction.
http://www.ncbi.nlm.nih.gov/entrez/query.fcgi?cmd=Retrieve&db=PubMed&dopt=Citation&list_uids=15145091

Am J Cardiol (2004);94:1181-4
Combined effects of smoking and hypercholesterolemia on inflammatory process, thrombosis/fibrinolysis system, and forearm hyperemic response
C. Antoniades*, et al.*
Department of Cardiology, Athens University Medical School, Athens, Greece.
The combined effects of smoking and hypercholesterolemia on the inflammatory process, the thrombosis/fibrinolysis system, and forearm hyperemic response were investigated. It was shown that smokers with hypercholesterolemia (n = 25) had a reduced and delayed forearm hyperemic response compared with healthy smokers (n = 24), patients with hypercholesterolemia (n = 26), and healthy controls (n = 75; p <0.01 for all). This phenomenon was associated with a respective increase in the inflammatory process and changes in the thrombosis/fibrinolysis system.
http://www.ncbi.nlm.nih.gov/entrez/query.fcgi?cmd=Retrieve&db=PubMed&dopt=Citation&list_uids=15518617

Am J Cardiol (2004);93:1170-2
Impact of insulin-requiring diabetes mellitus on effectiveness of reperfusion and outcome of patients undergoing primary percutaneous coronary intervention for acute myocardial infarction
D. Antoniucci*, et al.*
Division of Cardiology, Careggi Hospital, Florence, Italy. carddept@tin.it
The relation between diabetes mellitus (DM) and outcome was assessed in a series of 1,061 patients with acute myocardial infarction (AMI) who underwent primary percutaneous coronary intervention (PCI). The efficacy of reperfusion was assessed by ST-segment resolution analysis. Of 1,061 patients, 166 had DM (15.6%), and 84 had insulin-requiring DM (51% of DM patients). The 6-month mortality rate was 26% in insulin-requiring DM patients, 7% in non-DM patients, and 4% in non-insulin-requiring

non-DM patients (76%; p <0.001). Multivariate analysis showed insulin-requiring DM to be independently related to the risk for death (hazard ratio 1.94, 95% confidence interval 1.17 to 3.22, p = 0.009). Insulin-requiring DM is a strong predictor of mortality in patients who undergo PCI for AMI, and this relation may be explained by a less effective myocardial reperfusion despite the mechanical restoration of normal epicardial flow in most patients.
http://www.ncbi.nlm.nih.gov/entrez/query.fcgi?cmd=Retrieve&db=PubMed&dopt=Citation&list_uids=15110216

Circulation (2004);109:III8-14
HDL cholesterol and protective factors in atherosclerosis
G. Assmann and A. M. Gotto, Jr.
Institute of Clinical Chemistry and Laboratory Medicine, Central Laboratory, Westphalian Wilhelms-University, Munster, Germany. assmann@uni-muenster.de
A low level of high-density lipoprotein cholesterol (HDL-C) is an important risk factor for cardiovascular disease. Epidemiological and clinical studies provide evidence that HDL-C levels are linked to rates of coronary events. The cardioprotective effects of HDL-C have been attributed to its role in reverse cholesterol transport, its effects on endothelial cells, and its antioxidant activity. Although some clinical trials suggest a benefit of raising HDL-C to reduce risk, further studies are needed, and HDL-C is still not considered a primary target of therapy in the National Cholesterol Education Program guidelines. However, HDL-C should be considered as part of the patient's overall profile of established risk factors in determining treatment strategies.
http://www.ncbi.nlm.nih.gov/entrez/query.fcgi?cmd=Retrieve&db=PubMed&dopt=Citation&list_uids=15198960

Circulation (2004);109:837-42
Lipoprotein-associated phospholipase A2, high-sensitivity C-reactive protein, and risk for incident coronary heart disease in middle-aged men and women in the Atherosclerosis Risk in Communities (ARIC) study
C. M. Ballantyne*, et al.*
Section of Atherosclerosis and Lipoprotein Research, Department of Medicine, Baylor College of Medicine, and Methodist DeBakey Heart Center, Houston, Tex 77030, USA. cmb@bcm.tmc.edu
BACKGROUND: Measuring C-reactive protein (CRP) has been recommended to identify patients at high risk for coronary heart disease (CHD) with low LDL cholesterol (LDL-C). Lipoprotein-associated phospholipase A2 (Lp-PLA2) is a proinflammatory enzyme associated primarily with LDL. METHODS AND RESULTS: In a prospective, case cohort study in 12 819 apparently healthy middle-aged men and women in the Atherosclerosis Risk in Communities study, the relation between Lp-PLA2, CRP, traditional risk factors, and risk for CHD events over a period of approximately 6 years was examined in a proportional hazards model, stratified by LDL-C. Lp-PLA2 and CRP levels were higher in the 608 cases than the 740 noncases. Both Lp-PLA2 and CRP were associated with incident CHD after adjustment for age, sex, and race with a hazard ratio of 1.78 for the highest tertile of Lp-PLA2 and 2.53 for the highest category of CRP versus the lowest categories. Lp-PLA2 correlated positively with LDL-C (r=0.36) and negatively with HDL-C (r=-0.33) but not with CRP (r=-0.05). In a model adjusted for

traditional risk factors including LDL-C, the association of Lp-PLA2 with CHD was attenuated and not statistically significant. For individuals with LDL-C below the median (130 mg/dL), Lp-PLA2 and CRP were both significantly and independently associated with CHD in fully adjusted models. For individuals with LDL-C <130 mg/dL, those with both Lp-PLA2 and CRP levels in the highest tertile were at the greatest risk for a CHD event. CONCLUSIONS: Lp-PLA2 and CRP may be complementary in identifying individuals at high CHD risk who have low LDL-C.
http://www.ncbi.nlm.nih.gov/entrez/query.fcgi?cmd=Retrieve&db=PubMed&dopt=Citation&list_uids=14757686

Am J Cardiol (2004);93:1030-2
Effect of carotid atherosclerosis screening on risk stratification during primary cardiovascular disease prevention
R. L. Bard*, et al.*
Division of Cardiovascular Medicine, Department of Surgery, University of Michigan, Ann Arbor, Michigan, USA.
We investigated the effect that carotid plaque area (CPA) and intima media thickness (IMT) measurements have on risk stratification in 95 patients with intermediate Framingham scores (6% to 19%). The risk status of each patient was adjusted to be low, intermediate, or high based on the results of carotid ultrasound. After carotid testing, 44% (IMT) and 45% (CPA) of the intermediate-risk patients were stratified as low risk, and 22% (IMT) and 40% (CPA) were stratified as high risk. Using the threshold values derived from our laboratory, 28% (IMT) and 45% (CPA) of patients were stratified as low risk, and 35% (IMT) and 27% (CPA) were identified as high risk. These tests adjust the risk strata of >/=63% of patients deemed as having intermediate risk by Framingham scores.
http://www.ncbi.nlm.nih.gov/entrez/query.fcgi?cmd=Retrieve&db=PubMed&dopt=Citation&list_uids=15081449

Circulation (2004);109:1536-42
Irbesartan but not amlodipine suppresses diabetes-associated atherosclerosis
R. Candido*, et al.*
Vascular Division, Baker Heart Research Institute, PO Box 6492, Melbourne 8008, Victoria, Australia.
BACKGROUND: It remains controversial whether specific blockade of the renin-angiotensin system confers superior antiatherosclerotic effects over other antihypertensive agents in diabetes. Therefore, the aim of this study was to compare equihypotensive doses of the angiotensin II subtype 1 (AT1) receptor blocker irbesartan with the calcium antagonist amlodipine on diabetes-induced plaque formation in the apolipoprotein E (apoE)-null mouse and to explore molecular and cellular mechanisms linked to vascular protection. METHODS AND RESULTS: Diabetes was induced by injection of streptozotocin in 6-week-old apoE-null mice. Diabetic animals were randomized to no treatment, irbesartan, or amlodipine for 20 weeks. Diabetes was associated with an increase in plaque area and complexity in the aorta in association with a significant increase in aortic AT1 receptor expression, cellular proliferation, collagen content, macrophage- and alpha-smooth muscle actin-positive cell infiltration, as well as an increased expression of platelet-derived growth factor-B (PDGF-B),

therapy.
http://www.ncbi.nlm.nih.gov/entrez/query.fcgi?cmd=Retrieve&db=PubMed&dopt=Citation&list_uids=14998606

J Am Coll Cardiol (2004);44:720-32
Implications of recent clinical trials for the National Cholesterol Education Program Adult Treatment Panel III Guidelines
S. M. Grundy*, et al.*
The Adult Treatment Panel III (ATP III) of the National Cholesterol Education Program issued an evidence-based set of guidelines on cholesterol management in 2001. Since the publication of ATP III, 5 major clinical trials of statin therapy with clinical end points have been published. These trials addressed issues that were not examined in previous clinical trials of cholesterol-lowering therapy. The present document reviews the results of these recent trials and assesses their implications for cholesterol management. Therapeutic lifestyle changes (TLC) remain an essential modality in clinical management. The trials confirm the benefit of cholesterol-lowering therapy in high-risk patients and support the ATP III treatment goal of low-density lipoprotein cholesterol (LDL-C) <100 mg/dL. They support the inclusion of patients with diabetes in the high-risk category and confirm the benefits of LDL-lowering therapy in these patients. They further confirm that older persons benefit from therapeutic lowering of LDL-C. The major recommendations for modifications to footnote the ATP III treatment algorithm are the following. In high-risk persons, the recommended LDL-C goal is <100 mg/dL, but when risk is very high, an LDL-C goal of <70 mg/dL is a therapeutic option, ie, a reasonable clinical strategy, on the basis of available clinical trial evidence. This therapeutic option extends also to patients at very high risk who have a baseline LDL-C < 100 mg/dL. Moreover, when a high-risk patient has high triglycerides or low high-density lipoprotein cholesterol (HDL-C), consideration can be given to combining a fibrate or nicotinic acid with an LDL-lowering drug. For moderately high-risk persons (2+ risk factors and 10-year risk 10% to 20%), the recommended LDL-C goal is <130 mg/dL, but an LDL-C goal <100 mg/dL is a therapeutic option on the basis of recent trial evidence. The latter option extends also to moderately high-risk persons with a baseline LDL-C of 100 to 129 mg/dL. When LDL-lowering drug therapy is employed in high-risk or moderately high-risk persons, it is advised that intensity of therapy be sufficient to achieve at least a 30% to 40% reduction in LDL-C levels. Moreover, any person at high risk or moderately high risk who has lifestyle-related risk factors (eg, obesity, physical inactivity, elevated triglycerides, low HDL-C, or metabolic syndrome) is a candidate for TLC to modify these risk factors regardless of LDL-C level. Finally, for people in lower-risk categories, recent clinical trials do not modify the goals and cutpoints of therapy.
http://www.ncbi.nlm.nih.gov/entrez/query.fcgi?cmd=Retrieve&db=PubMed&dopt=Citation&list_uids=15358046

Am J Cardiol (2004);93:101-3
Relation of response of subclinical atherosclerosis detected by electron beam tomography to baseline low-density lipoprotein cholesterol levels
H. S. Hecht and S. M. Harman
Beth Israel Medical Center, New York, New York 10003, USA. hhecht@aol.com

Calcified plaque progression by electron beam tomography was evaluated in 176 aggressively treated asymptomatic patients. Similar plaque progression was noted irrespective of baseline low-density lipoprotein cholesterol levels, including those with low-density lipoprotein cholesterol <100 mg/dl. These findings indicate that subclinical atherosclerosis may respond to drug therapy in a fashion parallel to that of clinical disease demonstrated in the Heart Protection Study.
http://www.ncbi.nlm.nih.gov/entrez/query.fcgi?cmd=Retrieve&db=PubMed&dopt=Citation&list_uids=14697479

J Am Coll Cardiol (2004);44:1210-4
Differential mortality risk of postprocedural creatine kinase-MB elevation following successful versus unsuccessful stent procedures
A. Jeremias*, et al.*
Harvard Clinical Research Institute, Division of Cardiology, Beth Israel Deaconess Medical Center, Boston, MA 02215, USA.
OBJECTIVES: This study was designed to evaluate the effect of periprocedural myocardial infarction (MI) on mortality according to success of the stent procedure. BACKGROUND: The mortality effect of periprocedural MI relative to successful versus unsuccessful procedures has not been examined. METHODS: All-cause mortality during the first year was evaluated prospectively among 5,850 patients from coronary stent clinical trials. Myocardial infarction was classified according to creatine kinase-MB level as type 1 (>1 but <3 times normal), type 2 (>or=3 but <or=8 times normal), or type 3 (>8 times normal or Q-wave MI). Procedures were classified as successful unless there was a final diameter stenosis >50%; final Thrombolysis In Myocardial Infarction flow grade <3; final National Heart, Lung, and Blood Institute dissection grade >or=D; repeat revascularization within 24 h; or stent thrombosis within 24 h. RESULTS: Myocardial infarction was more frequent after unsuccessful procedures (69.6% vs.

cardiovascular disease (CVD) in the past century, it remains a serious clinical and public health problem. Multivariable risk factor analysis is now commonly performed to identify high-risk candidates for CVD who need preventive measures and to seek out clues to the pathogenesis of the disease. The set of risk factors used for the former is constrained by practical considerations, and the set of risk factors used for the latter is constrained by the hypothesis being tested. This report reviews the evolution and usefulness of multivariable risk functions crafted for estimating risk of clinical manifestations of atherosclerosis and for gaining insights into their pathogenesis. Decades of evaluation of CVD risk factors by the Framingham Study led to the conclusion that CVD risk evaluation is most fruitfully appraised from the multivariable risk posed by a set of established risk factors. Such assessment is essential because risk factors seldom occur in isolation, and the risk associated with each varies widely depending on the burden of associated risk factors. About half the CVD in the general population arises from the segment with multiple marginal risk factor abnormalities. Although disease-specific profiles are available, a multivariable risk formulation for coronary disease comprised of age, sex, the total/high-density lipoprotein cholesterol ratio, systolic blood pressure, glucose intolerance, cigarette smoking, and electrocardiography-left ventricular hypertrophy is also predictive of peripheral artery disease, heart failure, and stroke because of shared risk factors. Correcting risk factors for any particular CVD has the potential to protect against > or =1 of the others. Multivariable risk stratification is now recognized as essential in efficiently identifying likely candidates for CVD and quantifying the hazard.
http://www.ncbi.nlm.nih.gov/entrez/query.fcgi?cmd=Retrieve&db=PubMed&dopt=Citation&list_uids=15215787

Circulation (2004);109:2175-80
Osteoprotegerin is a risk factor for progressive atherosclerosis and cardiovascular disease
S. Kiechl*, et al.*
Department of Neurology, University Clinic, Anichstrasse 35, A-6020 Innsbruck, Austria. Stefan.Kiechl@uibk.ac.at
BACKGROUND: Osteoprotegerin is a novel member of the tumor necrosis factor receptor superfamily and a soluble decoy receptor of the receptor activator of nuclear factor-kappaB ligand. Recent experimental research has implicated osteoprotegerin in atherogenesis, but epidemiological confirmation of this concept is sparse. METHODS AND RESULTS: As part of the prospective, population-based Bruneck Study, severity, initiation, and progression of atherosclerosis were assessed in carotid arteries. Cases of incident cardiovascular disease and vascular mortality were carefully recorded over a 10-year period (1990 to 2000). Osteoprotegerin levels were measured in samples obtained at baseline and during follow-up. Serum osteoprotegerin showed a strong association with numerous vascular risk factors, including age, diabetes, markers of systemic inflammation, chronic infection, and smoking. In multivariate analyses, osteoprotegerin was significantly related to severity and 10-year progression of carotid atherosclerosis. Furthermore, a high level of osteoprotegerin was an independent risk factor for incident cardiovascular disease (adjusted relative risk for the top versus bottom tertile group for osteoprotegerin 2.2 [1.3 to 3.8]; P=0.001) and vascular mortality (adjusted relative risk for the top versus bottom tertile group for osteoprotegerin 3.1 [1.2

to 8.2]; P=0.010) but not for mortality due to nonvascular causes. CONCLUSIONS: Osteoprotegerin is an independent risk factor for the progression of atherosclerosis and onset of cardiovascular disease.
http://www.ncbi.nlm.nih.gov/entrez/query.fcgi?cmd=Retrieve&db=PubMed&dopt=Citation&list_uids=15117849

Circulation (2004);109:706-13
Clinical importance of obesity versus the metabolic syndrome in cardiovascular risk in women: a report from the Women's Ischemia Syndrome Evaluation (WISE) study
K. E. Kip*, et al.*
Department of Epidemiology, University of Pittsburgh, Graduate School of Public Health, Pittsburgh, PA 15261, USA. kipk@edc.pitt.edu
BACKGROUND: Obesity and the metabolic syndrome frequently coexist. Both are associated with cardiovascular disease (CVD). However, the contribution of obesity to cardiovascular risk, independent of the presence of the metabolic syndrome, remains controversial. METHODS AND RESULTS: From the WISE study, 780 women referred for coronary angiography to evaluate suspected myocardial ischemia were classified by body mass index (BMI; <24.9=normal, n=184; > or =25.0 to < or =29.9=overweight, n=269; > or =30.0=obese, n=327) and presence (n=451) or absence (n=329) of the metabolic syndrome, further classified by diabetes status. Prevalence of significant angiographic coronary artery disease (CAD; > or =50% stenosis) and 3-year risk of CVD were compared by BMI and metabolic status. The metabolic syndrome and BMI were strongly associated, but only metabolic syndrome was associated with significant CAD. Similarly, unit increases in BMI (normal to overweight to obese) were not associated with 3-year risk of death (adjusted hazard ratio [HR] 0.92, 95% CI 0.59 to 1.51) or major adverse cardiovascular event (MACE: death, nonfatal myocardial infarction, stroke, congestive heart failure; adjusted HR 0.95, 95% CI 0.71 to 1.27), whereas metabolic status (normal to metabolic syndrome to diabetes) conferred an approximate 2-fold adjusted risk of death (HR 2.01, 95% CI 1.26 to 3.20) and MACE (HR 1.88, 95% CI 1.38 to 2.57). Levels of C-reactive protein (hs-CRP) were more strongly associated with metabolic syndrome than BMI but were not independently associated with 3-year risk of death or MACE. CONCLUSIONS: The metabolic syndrome but not BMI predicts future cardiovascular risk in women. Although it remains prudent to recommend weight loss in overweight and obese women, control of all modifiable risk factors in both normal and overweight persons to prevent transition to the metabolic syndrome should be considered the ultimate goal.
http://www.ncbi.nlm.nih.gov/entrez/query.fcgi?cmd=Retrieve&db=PubMed&dopt=Citation&list_uids=14970104

Circulation (2004);110:32-5
Very low levels of microalbuminuria are associated with increased risk of coronary heart disease and death independently of renal function, hypertension, and diabetes
K. Klausen*, et al.*
Copenhagen City Heart Study, Epidemiological Research Unit, Bispebjerg University Hospital, Copenhagen, Denmark.
BACKGROUND: The aim of this study was to assess the level of urinary albumin excretion (microalbuminuria), which is associated with increased risk of coronary heart

disease and death, in the population. Microalbuminuria has been suggested as an atherosclerotic risk factor. However, the lower cutoff level of urinary albumin excretion is unknown. It is also unknown whether impaired renal function confounds the association. METHODS AND RESULTS: In the Third Copenhagen City Heart Study in 1992 to 1994, 2762 men and women 30 to 70 years of age underwent a detailed cardiovascular investigation program, including a timed overnight urine sample. The participants were then followed up prospectively by registers until 1999 with respect to coronary heart disease and until 2001 with respect to death. During follow-up, 109 incident cases of coronary heart disease and 276 deaths were traced. A urinary albumin excretion above the upper quartile, ie, 4.8 microg/min, was associated with increased risk of coronary heart disease (RR, 2.0; 95% CI, 1.4 to 3.0; P<0.001) and death (RR, 1.9; 95% CI, 1.5 to 2.4; P<0.001) independently of age, sex, renal creatinine clearance, diabetes mellitus, hypertension, and plasma lipids. Lower levels of urinary albumin excretion were not associated with increased risk. CONCLUSIONS: Microalbuminuria, defined as urinary albumin excretion >4.8 microg/min (corresponding to approximately 6.4 microg/min during daytime), is a strong and independent determinant of coronary heart disease and death. Our suggestion is to redefine microalbuminuria accordingly and perform intervention studies.
http://www.ncbi.nlm.nih.gov/entrez/query.fcgi?cmd=Retrieve&db=PubMed&dopt=Citation&list_uids=15210602

Circulation (2004);110:2952-67
Clinical implications of obesity with specific focus on cardiovascular disease: a statement for professionals from the American Heart Association Council on Nutrition, Physical Activity, and Metabolism: endorsed by the American College of Cardiology Foundation
S. Klein*, et al.*
Obesity adversely affects cardiac function, increases the risk factors for coronary heart disease, and is an independent risk factor for cardiovascular disease. The risk of developing coronary heart disease is directly related to the concomitant burden of obesity-related risk factors. Modest weight loss can improve diastolic function and affect the entire cluster of coronary heart disease risk factors simultaneously. This statement from the American Heart Association Council on Nutrition, Physical Activity, and Metabolism reviews the relationship between obesity and the cardiovascular system, evaluates the effect of weight loss on coronary heart disease risk factors and coronary heart disease, and provides practical weight management treatment guidelines for cardiovascular healthcare professionals. The data demonstrate that weight loss and physical activity can prevent and treat obesity-related coronary heart disease risk factors and should be considered a primary therapy for obese patients with cardiovascular disease.
http://www.ncbi.nlm.nih.gov/entrez/query.fcgi?cmd=Retrieve&db=PubMed&dopt=Citation&list_uids=15509809

N Engl J Med (2004);350:2549-57
Absence of an effect of liposuction on insulin action and risk factors for coronary heart disease
S. Klein*, et al.*

Center for Human Nutrition, Washington University School of Medicine, St. Louis 63110, USA.
BACKGROUND: Liposuction has been proposed as a potential treatment for the metabolic complications of obesity. We evaluated the effect of large-volume abdominal liposuction on metabolic risk factors for coronary heart disease in women with abdominal obesity. METHODS: We evaluated the insulin sensitivity of liver, skeletal muscle, and adipose tissue (with a euglycemic-hyperinsulinemic clamp procedure and isotope-tracer infusions) as well as levels of inflammatory mediators and other risk factors for coronary heart disease in 15 obese women before and 10 to 12 weeks after abdominal liposuction. Eight of the women had normal glucose tolerance (mean [+/-SD] body-mass index, 35.1+/-2.4), and seven had type 2 diabetes (body-mass index, 39.9+/-5.6). RESULTS: Liposuction decreased the volume of subcutaneous abdominal adipose tissue by 44 percent in the subjects with normal glucose tolerance and 28 percent in those with diabetes; those with normal oral glucose tolerance lost 9.1+/-3.7 kg of fat (18+/-3 percent decrease in total fat, P=0.002), and those with type 2 diabetes lost 10.5+/-3.3 kg of fat (19+/-2 percent decrease in total fat, P<0.001). Liposuction did not significantly alter the insulin sensitivity of muscle, liver, or adipose tissue (assessed by the stimulation of glucose disposal, the suppression of glucose production, and the suppression of lipolysis, respectively); did not significantly alter plasma concentrations of C-reactive protein, interleukin-6, tumor necrosis factor alpha, and adiponectin; and did not significantly affect other risk factors for coronary heart disease (blood pressure and plasma glucose, insulin, and lipid concentrations) in either group. CONCLUSIONS: Abdominal liposuction does not significantly improve obesity-associated metabolic abnormalities. Decreasing adipose tissue mass alone will not achieve the metabolic benefits of weight loss.
http://www.ncbi.nlm.nih.gov/entrez/query.fcgi?cmd=Retrieve&db=PubMed&dopt=Citation&list_uids=15201411

Circulation (2004);110:II41-4
Effect of diabetes and associated conditions on long-term survival after coronary artery bypass graft surgery
B. J. Leavitt*, et al.*
Fletcher Allen Health Care, 111 Colchester Avenue, Fletcher 454, Burlington, VT 05401-1473, USA. bruce.leavitt@vtmednet.org
BACKGROUND: The effects of diabetes on short-term results of coronary artery bypass graft (CABG) surgery are known, but less is known about the long-term effects of diabetes and diabetic-related sequelae for patients undergoing this surgery. We studied the 10-year survival of nondiabetic and diabetic patients undergoing CABG surgery. METHODS AND RESULTS: A prospective regional cohort study was conducted of 36,641 consecutive isolated CABG patients in northern New England from 1992 through 2001. Patient records were linked to the National Death Index to assess mortality. There were 154,140 person-years of follow-up and 5779 deaths. Kaplan-Meier techniques were used. Survival was stratified into three categories: no diabetes, diabetes without peripheral vascular disease and renal failure, and diabetes with peripheral vascular disease and/or renal failure. The overall annual incidence rate of death was 3.7 deaths per 100 person-years. Annual incidence rates for nondiabetic subjects and diabetic subjects were similar: 3.1 deaths per 100 person-years and 4.4 deaths per 100

person-years, respectively. The annual incidence rate for diabetic subjects with renal failure, peripheral vascular disease, or both was 9.4 deaths per 100 person-years. The log-rank test showed that the survival curves were significantly different (P<0.001). CONCLUSIONS: Patients that have diabetes without the sequelae of renal failure and/or peripheral vascular disease have long-term survival similar to but slightly less than patients without diabetes who undergo CABG surgery. Survival of CABG surgery patients with diabetes is greatly affected by associated comorbidities of peripheral vascular disease and renal failure. This knowledge may help guide the patient as well as the cardiologist and cardiac surgeon in making appropriate decisions in these critically ill patients.
http://www.ncbi.nlm.nih.gov/entrez/query.fcgi?cmd=Retrieve&db=PubMed&dopt=Citation&list_uids=15364836

J Am Coll Cardiol (2004);44:541-6
Anemia is an independent predictor of mortality after percutaneous coronary intervention
P. C. Lee*, et al.*
Cardiac Catheterization Laboratory of the Cardiovascular Institute, Mount Sinai Hospital, New York, New York 10029-6574, USA.
OBJECTIVES: The aim of the present study was to assess whether anemia is a marker of increased risk during interventional procedure and poor midterm survival after percutaneous coronary intervention (PCI). BACKGROUND: Anemia is associated with increased risk of mortality in patients with heart failure and myocardial infarction (MI). METHODS: We examined the outcomes of 6,116 consecutive PCI patients based on the hemoglobin (Hb) value before the interventional procedure. Patients were divided into three groups based on the baseline Hb level (g/l): Hb <10 = severe anemia; Hb 10 to 12 = mild anemia; Hb >12 = no anemia. RESULTS: The presence of anemia is associated with higher 30-day major adverse cardiac events, post-PCI peak troponin and creatine kinase-MB fraction, and a longer length of stay. After controlling for multiple covariates, significant difference in one-year survival was noted in the anemic groups compared with no anemia group (adjusted hazard ratio for Hb 10 to 12: 1.5 [95% confidence interval 1.3 to 1.8]; for Hb <10: 1.8 [95% confidence interval 1.3 to 2.3]; p = 0.004.) This adverse effect of anemia on survival was noted in all three presenting clinical syndromes (stable angina, unstable angina, and MI). CONCLUSIONS: Anemia is an independent predictor of mortality after PCI and is associated with higher short-term adverse procedural events.
http://www.ncbi.nlm.nih.gov/entrez/query.fcgi?cmd=Retrieve&db=PubMed&dopt=Citation&list_uids=15358017

Circulation (2004);109:2524-8
Soluble CD40 ligand, soluble P-selectin, interleukin-6, and tissue factor in diabetes mellitus: relationships to cardiovascular disease and risk factor intervention
H. S. Lim*, et al.*
Haemostasis Thrombosis and Vascular Biology Unit, University Department of Medicine, City Hospital, Dudley Road, Birmingham, B18 7QH, England, UK.
BACKGROUND: High levels of the soluble fragment of CD40 ligand (sCD40L) have previously been associated with adverse cardiovascular outcomes. CD40L-CD40

interaction has been linked to the pathogenesis of atherothrombotic complications in cardiovascular disease (CVD). We sought to determine whether a "package of care" of intensified multifactorial cardiovascular risk intervention could reduce indices of platelet activation, inflammation, and coagulation in diabetes and whether patients with overt CVD would derive similar benefit compared with those without. METHODS AND RESULTS: We measured plasma sCD40L, soluble P-selectin (sP-sel, an index of platelet activation), interleukin-6 (IL-6, a proinflammatory cytokine), and tissue factor (TF, an initiator of coagulation) in 97 patients with diabetes mellitus (41 with and 56 without overt CVD) and 39 comparable healthy control subjects. Thirty-six patients with and 32 without overt CVD then participated in a package of care of cardiovascular risk intervention over a period of 1 year. Plasma levels of sCD40L (P<0.001), sP-sel (P<0.001), IL-6 (P=0.001), and TF (P<0.001) were higher in patients with diabetes than in control subjects, with TF levels highest in patients with overt CVD. Multifactorial intervention was associated with significant reductions in sCD40L in both patient groups (both P<0.001), but reductions in sP-sel and TF were seen only in patients without overt CVD. There was no significant change in IL-6 levels in both patient groups. CONCLUSIONS: Intensive multifactorial risk management can reduce high levels of sCD40L but can only partially correct abnormal platelet activation, inflammation, and coagulation in diabetes, particularly in patients with overt CVD.
http://www.ncbi.nlm.nih.gov/entrez/query.fcgi?cmd=Retrieve&db=PubMed&dopt=Citation&list_uids=15136493

Jama (2004);291:2204-11
Parental cardiovascular disease as a risk factor for cardiovascular disease in middle-aged adults: a prospective study of parents and offspring
D. M. Lloyd-Jones*, et al.*
Department of Preventive Medicine and Division of Cardiology, Feinberg School of Medicine, Northwestern University, Chicago, Ill, USA.
CONTEXT: Whether parental cardiovascular disease confers increased risk independent of other risk factors remains controversial. Prior studies relied on offspring report, without complete validation of parental events. OBJECTIVE: To determine whether parental cardiovascular disease predicts offspring events independent of traditional risk factors, using a prospective design for both parents and offspring, and uniform criteria to validate events. DESIGN: Inception cohort study. SETTING: Framingham Heart Study, a US population-based epidemiologic cohort begun in 1948 with the offspring cohort established in 1971. PARTICIPANTS: All Framingham Offspring Study participants (aged > or =30 years) who were free of cardiovascular disease and both parents in the original Framingham cohort. MAIN OUTCOME MEASURES: We examined the association of parental cardiovascular disease with 8-year risk of offspring cardiovascular disease, using pooled logistic regression. RESULTS: Among 2302 men and women (mean age, 44 years), 164 men and 79 women had cardiovascular events during follow-up. Compared with participants with no parental cardiovascular disease, those with at least 1 parent with premature cardiovascular disease (onset age <55 years in father, <65 years in mother) had greater risk for events, with age-adjusted odds ratios of 2.6 (95% confidence interval [CI], 1.7-4.1) for men and 2.3 (95% CI, 1.3-4.3) for women. Multivariable adjustment resulted in odds ratios of 2.0 (95% CI, 1.2-3.1) for men and 1.7 (95% CI, 0.9-3.1) for women.

Nonpremature parental cardiovascular disease and parental coronary disease were weaker predictors. Addition of parental information aided in discriminating event rates, notably among offspring with intermediate levels of cholesterol and blood pressure, as well as intermediate predicted multivariable risk. CONCLUSIONS: Using validated events, we found that parental cardiovascular disease independently predicted future offspring events in middle-aged adults. Addition of parental information may help clinicians and patients with primary prevention of cardiovascular disease, when treatment decisions may be difficult in patients at intermediate risk based on levels of single or multiple risk factors. These data also support further research into genetic determinants of cardiovascular risk.
http://www.ncbi.nlm.nih.gov/entrez/query.fcgi?cmd=Retrieve&db=PubMed&dopt=Citation&list_uids=15138242

Am J Cardiol (2004);94:20-4
Framingham risk score and prediction of lifetime risk for coronary heart disease
D. M. Lloyd-Jones*, et al.*
Department of Preventive Medicine and Division of Cardiology, Feinberg School of Medicine, Northwestern University, Chicago, Illinois, USA.dlj@northwestern.edu
We investigated whether the Framingham risk score, which was designed to estimate the 10-year risk of coronary heart disease (CHD), differentiates lifetime risk for CHD. All subjects in the Framingham Heart Study examined from 1971 to 1996 who were free of CHD were included. Subjects were stratified into age- and gender-specific tertiles of Framingham risk score, and lifetime risk for CHD was estimated. We followed 2,716 men and 3,500 women; 939 developed CHD and 1,363 died free of CHD. At age 40 years, in risk score tertiles 1, 2, and 3, respectively, the lifetime risks for CHD were 38.4%, 41.7%, and 50.7% for men and 12.2%, 25.4%, and 33.2% for women. At age 80 years, risks were 16.4%, 17.4%, and 38.8% for men and 12.8%, 22.4%, and 27.4% for women. The Framingham risk score stratified lifetime risk well for women at all ages. It performed less well in younger men but improved at older ages as remaining life expectancy approached 10 years. Lifetime risks contrasted sharply with shorter term risks: at age 40 years, the 10-year risks of CHD in tertiles 1, 2, and 3, respectively, were 0%, 2.2%, and 11.6% for men and 0%, 0.7%, and 2.3% for women. The Framingham 10-year CHD risk prediction model discriminated short-term risk well for men and women. However, it may not identify subjects with low short-term but high lifetime risk for CHD, likely due to changes in risk factor status over time. Further work is needed to generate multivariate risk models that can reliably predict lifetime risk for CHD.
http://www.ncbi.nlm.nih.gov/entrez/query.fcgi?cmd=Retrieve&db=PubMed&dopt=Citation&list_uids=15219502

J Am Coll Cardiol (2004);44:1945-56
Leukocyte count and coronary heart disease: implications for risk assessment
M. Madjid*, et al.*
University of Texas-Houston Health Science Center, USA.
Mohammad.Madjid@uth.tmc.edu <Mohammad.Madjid@uth.tmc.edu>
Inflammation is a key feature of atherosclerosis and its clinical manifestations. The leukocyte count is a marker of inflammation that is widely available in clinical practice. This paper reviews the available epidemiologic evidence for a relationship between the

leukocyte count and coronary heart disease (CHD). Numerous epidemiologic and clinical studies have shown leukocytosis to be an independent predictor of future cardiovascular events, both in healthy individuals free of CHD at baseline and in patients with stable angina, unstable angina, or a history of myocardial infarction. This relationship has been observed in prospective and retrospective cohort studies, as well as in case-control studies. It is strong, consistent, temporal, dose-dependent, and biologically plausible. The relationship persists after adjustment for multiple CHD risk factors, including smoking. Elevated differential cell counts, including eosinophil, neutrophil, and monocyte counts, also predict the future incidence of CHD. Leukocytosis affects CHD through multiple pathologic mechanisms that mediate inflammation, cause proteolytic and oxidative damage to the endothelial cells, plug the microvasculature, induce hypercoagulability, and promote infarct expansion. In summary, leukocytosis has been consistently shown to be an independent risk factor and prognostic indicator of future cardiovascular outcomes, regardless of disease status. The leukocyte count is inexpensive, reliable, easy to interpret, and ordered routinely in inpatient and outpatient settings. However, its diagnostic and prognostic utility in CHD is widely unappreciated. Further studies are needed to assess the true impact of leukocytosis on CHD, compare it with other inflammatory markers such as C-reactive protein and lipoprotein phospholipase A(2) levels, and promote its use in CHD prediction.
http://www.ncbi.nlm.nih.gov/entrez/query.fcgi?cmd=Retrieve&db=PubMed&dopt=Citation&list_uids=15542275

Circulation (2004);109:714-21
Metabolic syndrome modifies the cardiovascular risk associated with angiographic coronary artery disease in women: a report from the Women's Ischemia Syndrome Evaluation
O. C. Marroquin*, et al.*
Cardiovascular Institute, University of Pittsburgh, Pittsburgh, Pa, USA.
BACKGROUND: The metabolic syndrome, which is characterized by a constellation of fasting hyperglycemia, hypertriglyceridemia, low HDL cholesterol, hypertension, and/or abdominal obesity, is a risk factor for the development of coronary artery disease (CAD) and cardiovascular events. The interrelationship between metabolic status and CAD on cardiovascular risk in women is not known. METHODS AND RESULTS: We evaluated interrelationships between angiographic CAD, the metabolic syndrome, and incident cardiovascular events among 755 women from the Women's Ischemia Syndrome Evaluation (WISE) study who were referred for coronary angiography to evaluate suspected myocardial ischemia; 25% of the cohort had the metabolic syndrome at study entry. Compared with women with normal metabolic status, women with the metabolic syndrome had a significantly lower 4-year survival rate (94.3% versus 97.8%, P=0.03) and event-free survival from major adverse cardiovascular events (death, nonfatal myocardial infarction, stroke, or congestive heart failure; 87.8% versus 93.5%, P=0.003). When the subjects were stratified by the presence or absence of angiographically significant CAD at study entry, in women with angiographically significant CAD, the metabolic syndrome resulted in significantly higher risk of cardiovascular events than in women with normal metabolic status (hazard ratio 4.93, 95% CI 1.02 to 23.76; P=0.05), whereas it did not result in increased 4-year cardiovascular risk in women without

angiographically significant CAD (hazard ratio 1.41, 95% CI 0.32 to 6.32; P=0.65). CONCLUSIONS: These data suggest that in women with suspected myocardial ischemia, the metabolic syndrome modifies the cardiovascular risk associated with angiographic CAD. Specifically, the metabolic syndrome was found to be a predictor of 4-year cardiovascular risk only when associated with significant angiographic CAD.
http://www.ncbi.nlm.nih.gov/entrez/query.fcgi?cmd=Retrieve&db=PubMed&dopt=Citation&list_uids=14970105

Am Heart J (2004);147:246-52
Association of diabetes mellitus and glycemic control strategies with clinical outcomes after acute coronary syndromes
D. K. McGuire*, et al.*
Donald W. Reynolds Cardiovascular Clinical Research Center at the University of Texas-Southwestern Medical Center, Dallas, Tex, USA.
darren.mcguire@utsouthwestern.edu
BACKGROUND: Diabetes is associated with an increased risk for coronary artery disease (CAD) and its complications. The relative effect of glucose-lowering strategies of "insulin provision" versus "insulin sensitization" among patients with CAD remains unclear. METHODS: To evaluate the associations of diabetes and hypoglycemic strategies with clinical outcomes after acute coronary syndromes, we analyzed data from 15,800 patients enrolled in the SYMPHONY and 2nd SYMPHONY trials. RESULTS: Compared with nondiabetic patients, patients with diabetes (n = 3101; 19.6%) were older, more often female, more often had prior CAD, hypertension, and hyperlipidemia, and less often were current smokers. The diabetic cohort had higher 90-day unadjusted risk of the composite of death/myocardial infarction (MI)/severe recurrent ischemia (SRI), death/MI, and death alone, as well as a near doubling of 1-year mortality rates. At 1 year, diabetes was associated with significantly higher adjusted risks of death/MI/SRI (OR, 1.3 [95% confidence interval, 1.1, 1.5]) and death/MI (OR, 1.2 [1.0, 1.4]). Hypoglycemic therapy including only insulin and/or sulfonylurea (insulin-providing; n = 1473) was associated with higher 90-day death/MI/SRI compared with therapy that included only biguanide and/or thiazolidinedione therapy (insulin-sensitizing; n = 100) (12.0% vs 5.0%); (adjusted OR, 2.1 [1.2, 3.7]). CONCLUSIONS: Diabetic patients with acute coronary syndromes had worse clinical outcomes. Although the findings regarding the influence of glycemic-control strategies should be interpreted with caution because of the exploratory nature of the analyses and the relatively small sample size of the insulin-sensitizing group, the improved risk-adjusted outcomes associated with insulin-sensitizing therapy underscore the need to further evaluate treatment strategies for patients with diabetes and CAD.
http://www.ncbi.nlm.nih.gov/entrez/query.fcgi?cmd=Retrieve&db=PubMed&dopt=Citation&list_uids=14760321

Circulation (2004);109:2273-8
Impact of sirolimus-eluting stents on outcome in diabetic patients: a SIRIUS (SIRolImUS-coated Bx Velocity balloon-expandable stent in the treatment of patients with de novo coronary artery lesions) substudy
I. Moussa*, et al.*

Lenox Hill Heart and Vascular Institute and Cardiovascular Research Foundation, 130 East 77th St, 9th Floor, New York, NY 10021, USA. imoussa@lenoxhill.net
BACKGROUND: Randomized clinical trials have shown that a sirolimus-eluting stent significantly reduces restenosis after percutaneous coronary revascularization. Diabetic patients are known to have a higher risk of restenosis compared with nondiabetic patients. The purpose of this analysis was to determine the impact of sirolimus-eluting stents on outcomes of diabetic compared with nondiabetic patients. METHODS AND RESULTS: The SIRIUS (SIRolImUS-coated Bx Velocity balloon-expandable stent in the treatment of patients with de novo coronary artery lesions) trial is a randomized, double-blind study that compared sirolimus-eluting and bare metal stent implantation in 1058 patients with de novo native coronary artery lesions. Diabetes mellitus was present in 279 (26%) patients (diabetes mellitus group, 131 patients received sirolimus-eluting stents and 148 patients received bare metal stents) and was absent in 778 patients (no-diabetes mellitus group, 402 patients received sirolimus-eluting stents and 376 patients received bare metal stents). At 270 days, target lesion revascularization was reduced in diabetic patients from 22.3% with bare metal stents to 6.9% with sirolimus-eluting stents (P<0.001) and in nondiabetic patients from 14.1% to 2.99% (P<0.001), respectively. Major adverse cardiac events were reduced in diabetic patients from 25% with bare metal stents to 9.2% with sirolimus-eluting stents (P<0.001) and from 16.5% to 6.5% (P<0.001) in nondiabetic patients, respectively. CONCLUSIONS: Implantation of sirolimus-eluting stents compared with bare metal stents in de novo coronary lesions reduces major adverse cardiac events in patients with and without diabetes mellitus. However, among patients receiving sirolimus-eluting stents, there remains a trend toward a higher frequency of repeat intervention in diabetic patients compared with nondiabetic patients, particularly in the insulin-requiring patients.
http://www.ncbi.nlm.nih.gov/entrez/query.fcgi?cmd=Retrieve&db=PubMed&dopt=Citation&list_uids=15123524

Am J Cardiol (2004);94:300-5
Impact of chronic kidney disease on prognosis of patients with diabetes mellitus treated with percutaneous coronary intervention
E. Nikolsky*, et al.*
Cardiovascular Research Foundation, and Lenox Hill Heart and Vascular Institute, New York, New York, USA.
Chronic kidney disease (CKD) is a frequent complication of diabetes mellitus. However, the role of CKD in outcomes of patients with diabetes who have undergone percutaneous coronary intervention (PCI) has not been studied specifically. Therefore, we investigated the impact of CKD on prognosis of patients with diabetes who underwent PCI. Of 1,575 diabetic patients who underwent PCI, 1,046 (66%) had preserved renal function, 492 (31%) had CKD (baseline serum creatinine >1.5 mg/dl or estimated glomerular filtration rate <60 ml/min/1.73 m(2)) without dialysis, and 37 (2.3%) were dependent on dialysis. Patients with CKD versus those without CKD had more in-hospital complications, including mortality (2.6% vs 0.5%, respectively; p <0.0001), neurologic events (3.1% vs 0.6%, p = 0.0001), and gastrointestinal bleeding (2.9% vs 0.9%, p = 0.01). Contrast-induced nephropathy after PCI (increase > or =25% and/or > or =0.5 mg/dl of serum creatinine before PCI vs 48 hours after PCI) was found

in 15% of patients without CKD versus 27% of those with CKD, and de novo dialysis was instituted in 0.1% versus 3.1%, respectively. Contrast-induced nephropathy was independently predicted (all p <0.0001) by peri-PCI hypotension (odds ratio [OR] 2.62), insulin treatment (OR 1.84), and volume of contrast medium (OR 1.30). The 1-year mortality rate was strikingly higher (all p <0.0001) in patients with CKD who did not receive dialysis (16%) and those on dialysis (44%) compared with the group with preserved renal function (5%). Contrast-induced nephropathy was among the independent predictors of a 1-year mortality rate (OR 2.75, p <0.001).
http://www.ncbi.nlm.nih.gov/entrez/query.fcgi?cmd=Retrieve&db=PubMed&dopt=Citation&list_uids=15276092

Circulation (2004);109:42-6
Association of the metabolic syndrome with history of myocardial infarction and stroke in the Third National Health and Nutrition Examination Survey
J. K. Ninomiya*, et al.*
Department of Family and Preventive Medicine, University of California, San Diego, 9500 Gilman Dr, 352 SCRB, La Jolla, Calif 92093-0607, USA.
BACKGROUND: The combination of cardiovascular risk factors known as the metabolic syndrome is receiving increased attention from physicians, but data on the syndrome's association with morbidity are limited. METHODS AND RESULTS: Applying National Cholesterol Education Program Adult Treatment Panel III (NCEP-ATP III) criteria, we evaluated 10 357 NHANES III subjects for the 5 component conditions of the metabolic syndrome: insulin resistance, abdominal obesity based on waist circumference, hypertriglyceridemia, low HDL cholesterol (HDL-C), and hypertension, as well as the full syndrome, defined as at least 3 of the 5 conditions. Logistic regression was used to estimate the cross-sectional association of the syndrome and each of its 5 component conditions separately with history of myocardial infarction (MI), stroke, and either MI or stroke (MI/stroke). Models were adjusted for age, sex, race, and cigarette smoking. The metabolic syndrome was significantly related in multivariate analysis to MI (OR, 2.01; 95% CI, 1.53 to 2.64), stroke (OR, 2.16; 95% CI, 1.48 to 3.16), and MI/stroke (OR, 2.05; 95% CI, 1.64 to 2.57). The syndrome was significantly associated with MI/stroke in both women and men. Among the component conditions, insulin resistance (OR, 1.30; 95% CI, 1.03 to 1.66), low HDL-C (OR, 1.35; 95% CI, 1.05 to 1.74), hypertension (OR, 1.44; 95% CI, 1.00 to 2.08), and hypertriglyceridemia (OR, 1.66; 95% CI=1.20 to 2.30) were independently and significantly related to MI/stroke. CONCLUSIONS: These results indicate a strong, consistent relationship of the metabolic syndrome with prevalent MI and stroke.
http://www.ncbi.nlm.nih.gov/entrez/query.fcgi?cmd=Retrieve&db=PubMed&dopt=Citation&list_uids=14676144

J Am Coll Cardiol (2004);43:2142-6
Optimal low-density lipoprotein is 50 to 70 mg/dl: lower is better and physiologically normal
J. H. O'Keefe, Jr.*, et al.*
Mid America Heart Institute, Cardiovascular Consultants, Kansas City, Missouri 64111, USA. jhokeefe@cc-pc.com
The normal low-density lipoprotein (LDL) cholesterol range is 50 to 70 mg/dl for native

hunter-gatherers, healthy human neonates, free-living primates, and other wild mammals (all of whom do not develop atherosclerosis). Randomized trial data suggest atherosclerosis progression and coronary heart disease events are minimized when LDL is lowered to <70 mg/dl. No major safety concerns have surfaced in studies that lowered LDL to this range of 50 to 70 mg/dl. The current guidelines setting the target LDL at 100 to 115 mg/dl may lead to substantial undertreatment in high-risk individuals.
http://www.ncbi.nlm.nih.gov/entrez/query.fcgi?cmd=Retrieve&db=PubMed&dopt=Citation&list_uids=15172426

Circulation (2004);110:2678-86
Serum triglycerides as a risk factor for cardiovascular diseases in the Asia-Pacific region
A. Patel*, et al.*
Asia-Pacific Cohort Studies Collaboration Secretariat, The George Institute for International Health, University of Sydney, PO Box M201, Missenden Rd, Camperdown, Sydney NSW 2050, Australia. apatel@thegeorgeinstitute.org
BACKGROUND: The importance of serum triglyceride levels as a risk factor for cardiovascular diseases is uncertain. METHODS AND RESULTS: We performed an individual participant data meta-analysis of prospective studies conducted in the Asia-Pacific region. Cox models were applied to the combined data from 26 studies to estimate the overall and region-, sex-, and age-specific hazard ratios for major cardiovascular diseases by fifths of triglyceride values. During 796,671 person-years of follow-up among 96,224 individuals, 670 and 667 deaths as a result of coronary heart disease (CHD) and stroke, respectively, were recorded. After adjustment for major cardiovascular risk factors, participants grouped in the highest fifth of triglyceride levels had a 70% (95% CI, 47 to 96) greater risk of CHD death, an 80% (95% CI, 49 to 119) higher risk of fatal or nonfatal CHD, and a 50% (95% CI, 29% to 76%) increased risk of fatal or nonfatal stroke compared with those belonging to the lowest fifth. The association between triglycerides and CHD death was similar across subgroups defined by ethnicity, age, and sex. CONCLUSIONS: Serum triglycerides are an important and independent predictor of CHD and stroke risk in the Asia-Pacific region. These results may have clinical implications for cardiovascular risk prediction and the use of lipid-lowering therapy.
http://www.ncbi.nlm.nih.gov/entrez/query.fcgi?cmd=Retrieve&db=PubMed&dopt=Citation&list_uids=15492305

J Am Coll Cardiol (2004);44:997-1001
Type D personality predicts death or myocardial infarction after bare metal stent or sirolimus-eluting stent implantation: a Rapamycin-Eluting Stent Evaluated at Rotterdam Cardiology Hospital (RESEARCH) registry substudy
S. S. Pedersen*, et al.*
Department of Cardiology, Thoraxcenter, Erasmus Medical Center, Rotterdam, The Netherlands. s.s.pedersen@uvt.nl
OBJECTIVES: We investigated the effect of Type D personality on the occurrence of adverse events at nine months in patients with ischemic heart disease (IHD) after percutaneous coronary intervention (PCI) with sirolimus-eluting stents (SESs) or bare stents. Type D patients experience increased negative emotions and tend not to

express these emotions in social interactions. BACKGROUND: The SES is a new advent in interventional cardiology that reduces the restenosis rate and the risk of a major adverse cardiac event, but the SES has not been shown to confer any benefits on death or myocardial infarction (MI). METHODS: Consecutive patients with IHD (n = 875) enrolled in the Rapamycin-Eluting Stent Evaluated At Rotterdam Cardiology Hospital (RESEARCH) registry completed the Type D Personality Scale (DS14) six months after PCI. The end point was a composite of death and MI. Events occurring before administration of the DS14 were excluded from analyses. RESULTS: At nine months' follow-up, there were 20 events. Type D patients were at a cumulative increased risk of adverse outcome compared with non-Type D patients: 5.6% versus 1.3% ($p < 0.002$). Type D personality (odds ratio [OR] 5.31; 95% confidence interval [CI] 2.06 to 13.66) remained an independent predictor of adverse outcome adjusting for all other variables, including SES versus bare-stent implantation. CONCLUSIONS: Type D personality was an independent predictor of adverse events in patients optimally treated with the latest advent in interventional cardiology. The DS14 could be used as a screening instrument in routine clinical practice to optimize risk stratification in IHD patients.
http://www.ncbi.nlm.nih.gov/entrez/query.fcgi?cmd=Retrieve&db=PubMed&dopt=Citation&list_uids=15337209

Circulation (2004);110:292-300
Tissue plasminogen activator antigen and D-dimer as markers for atherothrombotic risk among healthy postmenopausal women
A. D. Pradhan*, et al.*
Division of Preventive Medicine, Brigham and Women's Hospital and Harvard Medical School, 900 Commonwealth Ave East, Boston, Mass 02215, USA.
apradhan@partners.org
BACKGROUND: Plasma markers of fibrinolytic function are associated with incident coronary events among several, but not all, prospective epidemiologic investigations of healthy individuals. Few studies have evaluated this relationship in women. In addition, although menopausal hormone therapy (HT) may alter markers of fibrinolytic function, the relevance of this effect for coronary risk assessment has not been studied. METHODS AND RESULTS: In a prospective, nested case-control study among 75 343 postmenopausal women without prior cardiovascular disease or cancer, we evaluated the relationships of elevated tissue plasminogen activator (tPA) antigen and D-dimer with subsequent first coronary heart disease events over a median period of 2.9 years. Baseline levels of both biomarkers were higher among 304 cases compared with 304 controls matched on age, smoking status, ethnicity, and length of follow-up; median values were 9.0 versus 7.4 ng/mL ($P<0.001$) for tPA antigen and 27.6 versus 23.4 ng/mL ($P=0.001$) for D-dimer. In matched-pairs analyses, the odds ratio in the highest versus lowest quartile of tPA antigen was 3.5 (95% CI, 2.1 to 5.8; P trend <0.001) and for D-dimer was 2.0 (95% CI, 1.2 to 3.2; P trend=0.005). After adjustment for lipid and nonlipid risk factors, including C-reactive protein, tPA antigen remained a significant predictor. Multivariable-adjusted associations for D-dimer, although attenuated, largely remained statistically significant. When stratified by HT, the relationship between tPA antigen and incident coronary heart disease was similar among nonusers, estrogen-only users, and current users of any HT. CONCLUSIONS: Elevated tPA antigen and, to a lesser extent, D-dimer are independently associated with incident coronary events

among postmenopausal women. In analyses stratified by HT, tPA antigen remained a consistent marker of increased coronary risk.
http://www.ncbi.nlm.nih.gov/entrez/query.fcgi?cmd=Retrieve&db=PubMed&dopt=Citation&list_uids=15238458

Am Heart J (2004);147:841-6
Obesity and the risk of death after acute myocardial infarction
J. S. Rana*, et al.*
Department of Medicine, Division of Cardiology, Boston, Mass, USA.
BACKGROUND: In the general population, obesity is associated with an increased risk of all-cause death. However, the importance of obesity in patients with established coronary heart disease is less well defined. METHODS: As part of the Determinants of Myocardial Infarction Onset Study, we performed a prospective cohort study of 1898 patients hospitalized with confirmed acute myocardial infarction between 1989 and 1994, with a median follow-up of 3.8 years. We assessed all-cause death through December 1995, using the National Death Index. We categorized patients according to WHO criteria for body mass index (BMI). We compared long-term death according to BMI (kg/m2) by using Cox proportional hazards regression. RESULTS: Of the 1898 eligible patients, 607 (32%) were normal weight (18.5 to 24.9 kg/m2), 832 (44%) were overweight (25.0 to 29.9 kg/m2), 331 (17%) were class I obese (30.0 to 34.9 kg/m2), and 128 (7%) were class II or more obese (> or =35.0 kg/m2). A total of 311 patients died during follow-up. After adjustment for potentially confounding risk factors and excluding patients with noncardiac comorbidity, the risk for death appeared to increase linearly, with increasing BMI across all categories (P for trend =.08). The relative risk of death in all obese patients (> or =30 kg/m2) was 1.46, compared with those with normal weight (95% CI, 0.98 to 2.17). CONCLUSIONS: We found that BMI appeared to have a positive, graded relation with post-myocardial infarction death. Whether weight reduction and secondary prevention strategies would reverse this effect in obese population remains to be seen.
http://www.ncbi.nlm.nih.gov/entrez/query.fcgi?cmd=Retrieve&db=PubMed&dopt=Citation&list_uids=15131540

Lancet (2004);364:953-62
Association of psychosocial risk factors with risk of acute myocardial infarction in 11119 cases and 13648 controls from 52 countries (the INTERHEART study): case-control study
A. Rosengren*, et al.*
Sahlgrenska University Hospital/Ostra, Goteborg, Sweden.
BACKGROUND: Psychosocial factors have been reported to be independently associated with coronary heart disease. However, previous studies have been in mainly North American or European populations. The aim of the present analysis was to investigate the relation of psychosocial factors to risk of myocardial infarction in 24767 people from 52 countries. METHODS: We used a case-control design with 11119 patients with a first myocardial infarction and 13648 age-matched (up to 5 years older or younger) and sex-matched controls from 262 centres in Asia, Europe, the Middle East, Africa, Australia, and North and South America. Data for demographic factors, education, income, and cardiovascular risk factors were obtained by standardised

approaches. Psychosocial stress was assessed by four simple questions about stress at work and at home, financial stress, and major life events in the past year. Additional questions assessed locus of control and presence of depression. FINDINGS: People with myocardial infarction (cases) reported higher prevalence of all four stress factors ($p<0.0001$). Of those cases still working, 23.0% (n=1249) experienced several periods of work stress compared with 17.9% (1324) of controls, and 10.0% (540) experienced permanent work stress during the previous year versus 5.0% (372) of controls. Odds ratios were 1.38 (99% CI 1.19-1.61) for several periods of work stress and 2.14 (1.73-2.64) for permanent stress at work, adjusted for age, sex, geographic region, and smoking. 11.6% (1288) of cases had several periods of stress at home compared with 8.6% (1179) of controls (odds ratio 1.52 [99% CI 1.34-1.72]), and 3.5% (384) of cases reported permanent stress at home versus 1.9% (253) of controls (2.12 [1.68-2.65]). General stress (work, home, or both) was associated with an odds ratio of 1.45 (99% CI 1.30-1.61) for several periods and 2.17 (1.84-2.55) for permanent stress. Severe financial stress was more typical in cases than controls (14.6% [1622] vs 12.2% [1659]; odds ratio 1.33 [99% CI 1.19-1.48]). Stressful life events in the past year were also more frequent in cases than controls (16.1% [1790] vs 13.0% [1771]; 1.48 [1.33-1.64]), as was depression (24.0% [2673] vs 17.6% [2404]; odds ratio 1.55 [1.42-1.69]). These differences were consistent across regions, in different ethnic groups, and in men and women. INTERPRETATION: Presence of psychosocial stressors is associated with increased risk of acute myocardial infarction, suggesting that approaches aimed at modifying these factors should be developed.
http://www.ncbi.nlm.nih.gov/entrez/query.fcgi?cmd=Retrieve&db=PubMed&dopt=Citation&list_uids=15364186

Circulation (2004);110:380-5
C-reactive protein, the metabolic syndrome, and prediction of cardiovascular events in the Framingham Offspring Study
M. K. Rutter*, et al.*
Countess of Chester Hospital, Chester, UK. Martin.Rutter@coch.nhs.uk
BACKGROUND: Inflammation (assessed by C-reactive protein [CRP]) and the metabolic syndrome (MetS) are associated with cardiovascular disease (CVD), but population-based data are limited. METHODS AND RESULTS: We assessed the cross-sectional relations of CRP to the MetS (National Cholesterol Education Program Expert Panel on Detection, Evaluation, and Treatment of High Blood Cholesterol in Adults, Adult Treatment Panel III definition) in 3037 subjects (1681 women; mean age, 54 years) and the utility of CRP and the MetS to predict new CVD events (n=189) over 7 years. MetS (> or =3 of 5 traits) was present in 24% of subjects; mean age-adjusted CRP levels for those with 0, 1, 2, 3, 4, or 5 MetS traits were 2.2, 3.5, 4.2, 6.0, or 6.6 mg/L, respectively (P trend <0.0001). In persons with MetS, age-adjusted CRP levels were higher fT3.traiare1(f)-5 o.7 TD-0e ass 5usP etis, Adut5(K)-25.1()-5.1et

CONCLUSIONS: Elevated CRP levels are related to insulin resistance and the presence of the MetS, especially in women. Although discrimination of subjects at risk of CVD events using both MetS and CRP is not better than using either phenotype alone, both CRP and MetS are independent predictors of new CVD events.
http://www.ncbi.nlm.nih.gov/entrez/query.fcgi?cmd=Retrieve&db=PubMed&dopt=Citation&list_uids=15262834

Circulation (2004);109:e9033-4
High systolic blood pressure increases cardiovascular risk
R. SoRelle
http://www.ncbi.nlm.nih.gov/entrez/query.fcgi?cmd=Retrieve&db=PubMed&dopt=Citation&list_uids=15066963

Circulation (2004);110:344-8
Carotid artery plaque burden, stiffness, and mortality risk in elderly men: a prospective, population-based cohort study
S. Stork*, et al.*
Julius Center for Health Sciences and Primary Care, University Medical Center Utrecht, Utrecht, The Netherlands.
BACKGROUND: Indicators of carotid atherosclerosis may confer additional prognostic value and guide clinicians in cardiovascular risk assessment. Carotid artery morphology (plaque burden) and function (stiffness indexes) as predictors of all-cause and cardiovascular mortality were prospectively evaluated in elderly men. METHODS AND RESULTS: Cardiovascular risk profile was measured in 367 independently living men (mean+/- SD age, 78+/-4 years). The number of carotid plaques was assessed by B-mode ultrasound, and arterial stiffness was quantified with a wall tracker system. During 48 months of follow-up, 70 deaths (28 cardiovascular) occurred. The total number of carotid plaques was the parameter most closely related to prognosis. In the age-adjusted multivariate Cox model, all-cause mortality was predicted by number of plaques (hazard ratio [HR] per 1-unit increase, 1.35; 95% confidence interval [CI], 1.12 to 1.64). Predictors of cardiovascular mortality in the respective model were number of plaques (HR, 1.18; 95% CI, 1.04 to 1.33) and Young's elastic modulus (HR, 1.68; 95% CI, 1.26 to 2.26). Number of plaques improved the prognostic utility in any prognosis model when added to commonly available cardiovascular risk information. In contrast, stiffness indexes offered no consistent additive value. CONCLUSIONS: In elderly men, carotid artery plaque burden is a strong independent predictor of all-cause and cardiovascular mortality in the years to come. The additional value of carotid artery stiffness measurements as a pathophysiologically related entity appears to be limited in this age group and, if anything, confined to cardiovascular mortality risk.
http://www.ncbi.nlm.nih.gov/entrez/query.fcgi?cmd=Retrieve&db=PubMed&dopt=Citation&list_uids=15238459

Am J Cardiol (2005);95:1-7
Impact of stenting and abciximab in patients with diabetes mellitus undergoing primary angioplasty in acute myocardial infarction (the CADILLAC trial)
T. D. Stuckey*, et al.*
LeBauer Cardiovascular Research Foundation and Moses Cone Heart and Vascular

Center, Greensboro, North Carolina 27401, USA. tstuckey23@aol.com <tstuckey23@aol.com>
We sought to determine the benefits of stent implantation and abciximab in patients with diabetes mellitus and acute myocardial infarction (AMI) who underwent primary angioplasty. In a 2-by-2 factorial design, 2,082 patients with AMI were randomly assigned to balloon angioplasty versus stenting, with or without abciximab. Diabetes was present in 346 patients (16.6%). The primary end point was the composite incidence of death, disabling stroke, reinfarction, and ischemic target vessel revascularization (TVR). The primary end point at 1 year occurred significantly more frequently in diabetic than nondiabetic patients (21.9% vs 16.8%, p <0.02), driven by increased rates of death (6.1% vs 3.9%, p = 0.04) and TVR (16.4% vs 12.7%, p = 0.07). Among patients with diabetes, TVR at 1 year was significantly reduced with routine stenting compared with balloon angioplasty (10.3% vs 22.4%, p = 0.004), with no differences in death, reinfarction, or stroke. Angiographic restenosis was also greatly reduced in diabetics randomized to stenting (21.1% vs 47.6%, p = 0.009). No beneficial effects were apparent with abciximab in diabetic patients at 1 year. Despite the improved outcomes with stenting in patients with diabetes, 1-year mortality remained increased in diabetic patients who received stents compared with nondiabetics (8.2% vs 3.6%, p = 0.005). Thus, routine stent implantation in diabetic patients with AMI significantly reduces restenosis and enhances survival free from TVR, independent of abciximab use, although survival remains reduced compared with survival in nondiabetic patients regardless of reperfusion modality.
http://www.ncbi.nlm.nih.gov/entrez/query.fcgi?cmd=Retrieve&db=PubMed&dopt=Citation&list_uids=15619385

Circulation (2004);109:2850-6
Relations of plasma matrix metalloproteinase-9 to clinical cardiovascular risk factors and echocardiographic left ventricular measures: the Framingham Heart Study
J. Sundstrom*, et al.*
The Framingham Heart Study, Framingham, Mass 01702-5803, USA.
BACKGROUND: Plasma levels of matrix metalloproteinase-9 (MMP-9), a key determinant of extracellular matrix degradation, are increased in heart failure and in acute coronary syndromes. We investigated cross-sectional relations of plasma MMP-9 to vascular risk factors and echocardiographic left ventricular (LV) measurements.
METHODS AND RESULTS: We studied 699 Framingham Study participants (mean age, 57 years; 58% women), free of heart failure and previous myocardial infarction, who underwent routine echocardiography. We examined sex-specific distributions of LV internal dimensions (LVEDD) and wall thickness (LVWT) and sampled persons with

LVWT, 0.99; 95% CI, 0.39 to 2.52; P=0.59 for LV mass). CONCLUSIONS: In our community-based sample, detectable plasma MMP-9 levels were associated with increased LV diastolic dimensions and increased wall thickness in men. These observations indicate that plasma MMP-9 level may be a marker for cardiac extracellular matrix degradation, a process involved in LV remodeling.
http://www.ncbi.nlm.nih.gov/entrez/query.fcgi?cmd=Retrieve&db=PubMed&dopt=Citation&list_uids=15173025

Eur Heart J (2004);25:1509-16
Relations of plasma total TIMP-1 levels to cardiovascular risk factors and echocardiographic measures: the Framingham heart study
J. Sundstrom*, et al.*
The Framingham Study, Boston University School of Medicine, 73 Mt Wayte Ave Suite 2, Framingham, MA, USA.
AIMS: Tissue inhibitor of metalloproteinases-1 (TIMP-1) is a key regulator of extracellular matrix degradation. We examined relations of plasma total TIMP-1 to cardiovascular risk factors and echocardiographic left ventricular (LV) structure and function in a community-based sample. METHODS AND RESULTS: We studied 1069 Framingham Heart Study participants (mean age 56 years, 58% women) free of heart failure and previous myocardial infarction. Plasma TIMP-1 was higher in men compared with women, and increased with age, body mass index and total/HDL-cholesterol ratio, but decreased with alcohol intake. Plasma TIMP-1 was also directly related to smoking, diabetes and use of anti-hypertensive treatment. Adjusting for age, sex and height, plasma TIMP-1 was positively associated with LV mass, wall thickness, relative wall thickness, end-systolic diameter, and left atrial diameter and the risk of having increased LV end-diastolic diameter or increased wall thickness, and negatively correlated with fractional shortening. Additional adjustment for clinical covariates attenuated the relations of plasma TIMP-1 to most echocardiographic measures. CONCLUSIONS: In our cross-sectional investigation, plasma total TIMP-1 was related to major cardiovascular risk factors and to indices of LV hypertrophy and systolic dysfunction. This raises the possibility that cardiovascular risk factors may influence cardiovascular remodelling via extracellular matrix degradation, which may be reflected in plasma TIMP-1 levels.
http://www.ncbi.nlm.nih.gov/entrez/query.fcgi?cmd=Retrieve&db=PubMed&dopt=Citation&list_uids=15342170

Jama (2004);292:1179-87
Relationship of physical fitness vs body mass index with coronary artery disease and cardiovascular events in women
T. R. Wessel*, et al.*
Division of Cardiovascular Medicine, University of Florida College of Medicine, Gainesville, FL 32610-0277, USA. twessel@ufl.edu
CONTEXT: Individual contributions of obesity and physical fitness (physical activity and functional capacity) to risk of coronary heart disease in women remain unclear. OBJECTIVE: To investigate the relationships of measures of obesity (body mass index [BMI], waist circumference, waist-hip ratio, and waist-height ratio) and physical fitness (self-reported Duke Activity Status Index [DASI] and Postmenopausal

Estrogen-Progestin Intervention questionnaire [PEPI-Q] scores) with coronary artery disease (CAD) risk factors, angiographic CAD, and adverse cardiovascular (CV) events in women evaluated for suspected myocardial ischemia. DESIGN, SETTING, AND PARTICIPANTS: The National Heart, Lung, and Blood Institute-sponsored Women's Ischemia Syndrome Evaluation (WISE) is a multicenter prospective cohort study. From 1996-2000, 936 women were enrolled at 4 US academic medical centers at the time of clinically indicated coronary angiography and then assessed (mean follow-up, 3.9 [SD, 1.8] years) for adverse outcomes. MAIN OUTCOME MEASURES: Prevalence of obstructive CAD (any angiographic stenosis >or=50%) and incidence of adverse CV events (all-cause death or hospitalization for nonfatal myocardial infarction, stroke, congestive heart failure, unstable angina, or other vascular events) during follow-up. RESULTS: Of 906 women (mean age, 58 [SD, 12] years) with complete data, 19% were of nonwhite race, 76% were overweight (BMI >or=25), 70% had low functional capacity (DASI scores <25, equivalent to <or=7 metabolic equivalents [METs]), and 39% had obstructive CAD. During follow-up, 337 (38%) women had a first adverse event, 118 (13%) had a major adverse event, and 68 (8%) died. Overweight women were more likely than normal weight women to have CAD risk factors, but neither BMI nor abdominal obesity measures were significantly associated with obstructive CAD or adverse CV events after adjusting for other risk factors (P =.05 to.88). Conversely, women with lower DASI scores were significantly more likely to have CAD risk factors and obstructive CAD (44% vs 26%, P<.001) at baseline, and each 1-MET increase in DASI score was independently associated with an 8% (hazard ratio, 0.92; 95% confidence interval, 0.85-0.99; P =.02) decrease in risk of major adverse CV events during follow-up. CONCLUSIONS: Among women undergoing coronary angiography for suspected ischemia, higher self-reported physical fitness scores were independently associated with fewer CAD risk factors, less angiographic CAD, and lower risk for adverse CV events. Measures of obesity were not independently associated with these outcomes.

angiographic follow-up had diabetes. Restenosis (> or =50% diameter stenosis at follow-up) occurred in 550 of 2672 (20.6%) nondiabetic and 130 of 418 (31.1%) diabetic patients (P<0.001). Univariate predictors of restenosis in diabetics were smaller vessel reference diameter (RD) (P<0.001), smaller minimal luminal diameter before stenting (P=0.01), smaller minimal luminal diameter and percent diameter stenosis after stenting (P<0.001, P=0.04), greater stented length of vessel (P<0.001), and reduced body mass index (BMI) (P=0.04). With the use of multivariate analysis, only smaller RD (P=0.003), greater stented length of vessel (P=0.04), and reduced BMI (P=0.04) were associated with restenosis. Reference charts demonstrated an incremental risk of restenosis that appears solely dependent on vessel RD. CONCLUSIONS: Restenosis after stent deployment is significantly increased in diabetic patients. Vessel caliber, stented length of vessel, and lower BMI are predictors of in-stent restenosis in patients with diabetes. Furthermore, vessel caliber affected the predicted risk of restenosis incrementally.
http://www.ncbi.nlm.nih.gov/entrez/query.fcgi?cmd=Retrieve&db=PubMed&dopt=Citation&list_uids=14757691

Circulation (2004);109:II2-10
Inflammation as a cardiovascular risk factor
J. T. Willerson and P. M. Ridker
University of Texas Health Science Center and Texas Heart Institute at Houston, 77225, USA. james.t.willerson@uth.tmc.edu
Inflammation occurs in the vasculature as a response to injury, lipid peroxidation, and perhaps infection. Various risk factors, including hypertension, diabetes, and smoking, are amplified by the harmful effects of oxidized low-density-lipoprotein cholesterol, initiating a chronic inflammatory reaction, the result of which is a vulnerable plaque, prone to rupture and thrombosis. Epidemiological and clinical studies have shown strong and consistent relationships between markers of inflammation and risk of future cardiovascular events. Inflammation can potentially be detected locally by imaging techniques as well as emerging techniques, such as identification of temperature or pH heterogeneity. It can be detected systemically by measurement of inflammatory markers. Of these, the most reliable and accessible for clinical use is currently high-sensitivity C-reactive protein. A combination of methods may provide the best identification of persons at risk for cardiovascular events who would benefit from treatment. In randomized, controlled trials, 3-hydroxy-3-methylglutaryl coenzyme A (HMG-CoA) reductase inhibitors, in the form of statins, have been shown to provide effective therapy for lowering CRP, in conjunction with their lipid-lowering effects. Although the magnitude of risk reduction associated with statin use appears to be largest for those with the highest serum levels of CRP, whether CRP reduction per se lowers cardiovascular risk is unknown.
http://www.ncbi.nlm.nih.gov/entrez/query.fcgi?cmd=Retrieve&db=PubMed&dopt=Citation&list_uids=15173056

Circulation (2004);110:e463-70
Prevention Conference VII: Obesity, a worldwide epidemic related to heart disease and stroke: Group I: worldwide demographics of obesity
D. A. York*, et al.*
http://www.ncbi.nlm.nih.gov/entrez/query.fcgi?cmd=Retrieve&db=PubMed&dopt=Citatio

n&list_uids=15520330

Lancet (2004);364:937-52
Effect of potentially modifiable risk factors associated with myocardial infarction in 52 countries (the INTERHEART study): case-control study
S. Yusuf*, et al.*
Population Health Research Institute, Hamilton General Hospital, 237 Barton Street East, Hamilton, Ontario, Canada L8L 2X2. yusufs@mcmaster.ca
BACKGROUND: Although more than 80% of the global burden of cardiovascular disease occurs in low-income and middle-income countries, knowledge of the importance of risk factors is largely derived from developed countries. Therefore, the effect of such factors on risk of coronary heart disease in most regions of the world is unknown. METHODS: We established a standardised case-control study of acute myocardial infarction in 52 countries, representing every inhabited continent. 15152 cases and 14820 controls were enrolled. The relation of smoking, history of hypertension or diabetes, waist/hip ratio, dietary patterns, physical activity, consumption of alcohol, blood apolipoproteins (Apo), and psychosocial factors to myocardial infarction are reported here. Odds ratios and their 99% CIs for the association of risk factors to myocardial infarction and their population attributable risks (PAR) were calculated. FINDINGS: Smoking (odds ratio 2.87 for current vs never, PAR 35.7% for current and former vs never), raised ApoB/ApoA1 ratio (3.25 for top vs lowest quintile, PAR 49.2% for top four quintiles vs lowest quintile), history of hypertension (1.91, PAR 17.9%), diabetes (2.37, PAR 9.9%), abdominal obesity (1.12 for top vs lowest tertile and 1.62 for middle vs lowest tertile, PAR 20.1% for top two tertiles vs lowest tertile), psychosocial factors (2.67, PAR 32.5%), daily consumption of fruits and vegetables (0.70, PAR 13.7% for lack of daily consumption), regular alcohol consumption (0.91, PAR 6.7%), and regular physical activity (0.86, PAR 12.2%), were all significantly related to acute myocardial infarction ($p<0.0001$ for all risk factors and $p=0.03$ for alcohol). These associations were noted in men and women, old and young, and in all regions of the world. Collectively, these nine risk factors accounted for 90% of the PAR in men and 94% in women. INTERPRETATION: Abnormal lipids, smoking, hypertension, diabetes, abdominal obesity, psychosocial factors, consumption of fruits, vegetables, and alcohol, and regular physical activity account for most of the risk of myocardial infarction worldwide in both sexes and at all ages in all regions. This finding suggests that approaches to prevention can be based on similar principles worldwide and have the potential to prevent most premature cases of myocardial infarction.
http://www.ncbi.nlm.nih.gov/entrez/query.fcgi?cmd=Retrieve&db=PubMed&dopt=Citation&list_uids=15364185