

intraoperative findings, and follow-up duration. The outcomes studied were limb salvage and primary stent patency. Continuous data were analyzed with a *t* test, and categorical data were analyzed with a  $\chi^2$  test.

**Results:** We identified 40 patients in the proximal stent group and 56 in the distal stent group. Follow-up imaging data were available for 82 patients. The two groups did not differ in demographics, mean number of patent runoff vessels (proximal, 2.0 vessels; distal, 1.8 vessels;  $P = .18$ ), or mean duration of follow-up (proximal, 259 days; distal, 257 days;  $P = .98$ ). Claudication was more often an indication for popliteal stent placement in the proximal group (42% vs 16%;  $P = .004$ ). Limb-threatening ischemia was more frequently an indication for stent placement in the distal group (75% vs 55%;  $P = .04$ ). Limb salvage was achieved in 92.5% of proximal and in 85.7% of distal stent placements ( $P = .30$ ). Limb salvage did not differ between the groups when only patients with limb-threatening ischemia were included in the analysis (proximal, 86%; distal, 83%;  $P = .75$ ). Primary patency at 3 months was 57% in the proximal group vs 49% in the distal group ( $P = .46$ ).

**Conclusions:** Popliteal artery stenting is associated with a high rate of limb salvage at a mean follow-up of 8 months and is an acceptable option for patients with incapacitating claudication and limb-threatening ischemia who are poor candidates for alternative interventions. Popliteal stents placed across the knee joint did not affect limb salvage or patency compared with stents placed above the knee joint.

#### Low Levels of High-Density Lipoproteins Are Associated With Acute Kidney Injury Following Revascularization for Chronic Limb Ischemia

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**Objective(s):** Perioperative acute kidney injury (AKI) is not uncommon in patients after extremity revascularization. High-density lipoproteins (HDL) have been shown to reduce organ injury and death in animal models via modulation of adhesion molecules and cytokines. Our aim was to examine the association of HDL and other factors on perioperative AKI in patients undergoing revascularization for symptomatic chronic limb ischemia.

**Methods:** All patients who underwent open or endovascular revascularization between June 2001 and December 2009 for symptomatic chronic limb ischemia (Rutherford category 3 to 6) were retrospectively analyzed. Patients on dialysis and those with incomplete data were excluded. Patients were grouped for HDL <40 or  $\geq 40$  mg/dL. Univariate and multivariate analysis were used to identify factors associated with AKI.

**Results:** Included were 684 patients (219 open, 465 endovascular/hybrid) with diabetes (47%) chronic kidney disease (20%), critical limb ischemia (31%), and <40 HDL (60%). Medications included statin use (57%), angiotensin converting enzyme inhibitors/angiotensin receptor blockers (53%). Postoperative AKI developed in 85 patients (12.4%), 9.4% endovascular vs 12.6% open ( $P = \text{NS}$ ). The AKI group was more likely to be older ( $71.5 \pm 10.1$  vs  $68.0 \pm 10.8$  years,  $P = .01$ ), have diabetes (60% vs 46%,  $P = .01$ ), be using angiotensin-converting enzyme inhibitors/angiotensin receptor blockers (64% vs 52%,  $P = .04$ ), and have pre-existing chronic kidney disease (36% vs 17%,  $P < .001$ ). AKI occurred in 16% of patients with low HDL and in 7% with high HDL ( $P < .001$ ). Multivariate analysis using logistic and propensity score showed that HDL level (hazard ratio, 2.4; 95% confidence interval, 1.4-4.2) and underlying chronic kidney disease were independent predictors of postoperative AKI ( $P < .001$ ).

**Conclusions:** AKI after revascularization is not uncommon (12.4%), and lower HDL, along with chronic kidney disease, is associated with increased odds of postoperative AKI. If these observations can be verified in a prospective fashion, strategies for increasing HDL level in patients with a high risk of postoperative AKI should be investigated.

#### Reduction in Hospital Length of Stay for Patients Requiring Lower Extremity Amputation

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**Objective(s):** This study evaluated the effect of a multidisciplinary approach and initiation of care pathways on hospital length of stay (LOS) for lower extremity amputations.

**Methods:** Patients undergoing lower extremity amputations (toe, below the knee, above the knee, or revision of prior amputation) between January 2010 and December 2011 were retrospectively identified by International Classification of Diseases–9th Edition codes (84.11, 84.12,

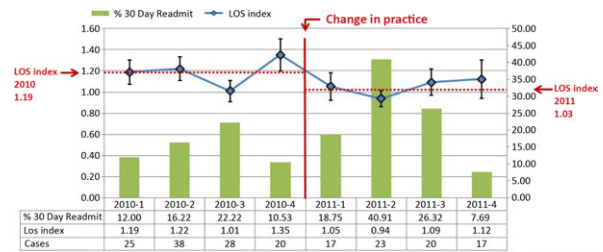


Fig.

84.14, 84.15, or 84.3) in our institution's administrative database after obtaining Investigational Review Board approval. Midway through the study period, in January 2011, a multidisciplinary change in care of these patients was initiated. Among the changes made was initiation of twice-weekly rounds with representatives from vascular surgery, limb loss counseling, physical therapy, and a discharge coordinator. Patients' discharge diagnoses and medical comorbidities were analyzed by All Patient Refined Diagnosis Related Group (APR-DRG) in the University HealthSystem Consortium (UHC) Clinical Database. LOS before and after the change in practice was compared with similar patients in academic institutions nationwide via the LOS index, defined as actual LOS-to-expected LOS ratio.

**Results:** During the 2-year study period, 150 patients underwent 188 amputations, including 114 amputations in 2010. After the change in practice, 74 amputations were performed in 2011. Patient demographics were consistent across the study period, including a 72% prevalence of diabetes mellitus. Average LOS was  $11.1 \pm 7.04$  days in 2010 and decreased to  $9.61 \pm 6.37$  days in 2011 ( $P = .0621$ ), without a significant change in readmission rate. The crude LOS decrease was not statistically significant, but when adjusted for patient comorbidities, the LOS index was significantly decreased from  $1.19 \pm 0.629$  in 2010 to  $1.03 \pm 0.547$  in 2011 ( $P = .0365$ ). LOS index was inversely related to the 30-day readmission rate (Fig). Total savings to the hospital >\$150,000 for 2011.

**Conclusions:** A multidisciplinary partnership of physician and hospital team members resulted in a decrease in LOS of 1.5 days for patients undergoing lower extremity amputations, representing increased efficiency of care and decreased observed costs.

#### Association of Inflammatory and Metabolic Serum Biomarkers With Carotid Intima Media Thickness (cIMT) in a Community-Based Population: The Heart Strategies Concentrating on Risk Evaluation (Heart SCORE) Study

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**Objective(s):** Carotid intima media thickness (cIMT) has been broadly used as a surrogate measure for cardiovascular risk but is not widely available or standardized. Our goal was to identify a set of serum biomarkers associated with cIMT independent of race and sex.

**Methods:** The Heart Strategies Concentrating on Risk Evaluation (SCORE) study is a prospective community-based cohort study of 2000 adults that started enrollment in 2003. Serum biomarkers of inflammation, metabolic, and endothelial function were obtained and examined in relation to cIMT, which was measured as a continuous variable and categorically with a cutoff of  $\geq 1$  mm.

**Results:** cIMT was measured in 697 patients (66% white, 32% black; 62% women). Cohort demographics and comorbidities are detailed in the Table. cIMT was positively associated with interleukin-6 ( $R_S = 0.17$ ,  $P < .0001$ ), fasting glucose ( $R_S = 0.20$ ,  $P < .0001$ ), and insulin ( $R_S = 0.14$ ,  $P = .0002$ ) levels and inversely associated with adiponectin ( $R_S = -0.20$ ,  $P < .0001$ ), CD40L ( $R_S = -0.14$ ,  $P = .0003$ ), and high-density lipoprotein cholesterol ( $R_S = -0.20$ ,  $P < .0001$ ) levels. cIMT was not associated with endostatin, highly-selective C-reactive protein, soluble intercellular adhesion molecule, total cholesterol, low-density lipoprotein cholesterol, or triglycerides. Multiple regression analysis identified age (partial correlation [ $R_P$ ] = 0.23,  $P < .0001$ ), female sex ( $R_P = -0.16$ ,  $P < .0001$ ), black race ( $R_P = 0.13$ ,  $P = .0009$ ), body mass index ( $R_P = 0.08$ ,  $P = .04$ ), serum glucose ( $R_P = 0.14$ ,  $P = .0002$ ), high-density lipoprotein cholesterol ( $R_P = -0.08$ ,  $P = .03$ ), and interleukin 6 ( $R_P = 0.07$ ,  $P = .05$ ) were independently associated with cIMT.

**Conclusions:** We identified several biomarkers that are positively (interleukin-6, glucose, insulin) or inversely (adiponectin, CD40L, high-density lipoprotein) associated with cIMT. Because increased cIMT predicts cardiovascular outcomes, examination of these clinical markers in relation to future cardiovascular events is