and presence of diabetes or hypertension are all associated with increased 30-day mortality after CABG.
CONCLUSION: The incidence of major adverse events in CABG patients varies widely across different studies and patient populations. This heterogeneity must be controlled when using the literature to benchmark safety.

PCV3

A RETROSPECTIVE, OBSERVATIONAL COHORT STUDY OF THE EFFECTS OF STATIN THERAPY ON LIPID LEVELS IN A NATURALISTIC SETTING

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Current data are limited regarding the effects of statins in the naturalistic setting of clinical practice.
OBJECTIVES: This study sought to determine the effects of statins on the lipid profile and target LDL-cholesterol (LDL-C) attainment in this setting.
METHODS: Patients newly initiated on atorvastatin, fluvastatin, pravastatin, or simvastatin from 1/99 to 6/99 were retrospectively identified from a southeastern U.S. health plan database. A parallel design incorporated four study arms based on the statin prescribed. Exclusion criteria included statin therapy in the prior 6 months, less than 90 days of statin therapy, switching of statin, use of combination dyslipidemia therapy, or non-continuous enrollment in the health plan. Changes in lipid subfractions and attainment of LDL-C goal based on NCEP ATP II guidelines were evaluated with OLS and logistic regression techniques utilizing clinically relevant covariates.
RESULTS: A total of 2,429 patients (age = 62 ± 13 years, 47.8% male) were identified. Comorbidities included 73% hypertension, 24% diabetes, and 34% atherosclerotic vascular disease. Median duration of statin therapy was 19.4 months. Patients receiving atorvastatin had significantly greater mean absolute (and percentage) reductions in LDL-C and triglycerides compared to the other statins in both the unadjusted and adjusted results (all $p < 0.05$ vs. atorvastatin). Differences in HDL-cholesterol (HDL-C) were small, however, a statistically significant increase was observed with simvastatin compared to atorvastatin ($p < 0.05$). Also, a significantly greater percentage (unadjusted, adjusted) of patients reached their NCEP LDL-C goal on atorvastatin (74.0%, 73.0%) compared with fluvastatin (52.0%, 51.0%), pravastatin (58.3%, 56.4%) and simvastatin (69.0%, 69.4%), and atorvastatin patients reached goal faster than the other statins (median: 184 days vs. 215–357 days, all $p < 0.05$ vs. atorvastatin).
CONCLUSION: Patients prescribed atorvastatin had statistically significant improvements in LDL-C and triglycerides, though not in HDL-C, compared to those prescribed other statins. In addition, atorvastatin patients attained LDL-C goal more often and in a shorter timeframe.

PCV4

TRENDS IN THE ATTAINMENT OF CHOLESTEROL TREATMENT GOALS: EVIDENCE FROM MANAGED CARE

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OBJECTIVES: The benefits of aggressive lipid-lowering (L-L) therapy among patients with an elevated risk of coronary heart disease (CHD) are well established, but longitudinal data from clinical practice are limited. Our objective was to assess trends in the rate of cholesterol goal attainment (based on NCEP criteria) among moderate- and high-risk patients in a managed care setting.
METHODS: A retrospective cohort design was employed using linked pharmacy claims, medical claims, and clinical laboratory data from members of a Northeastern US group model HMO. The study cohort included patients 55+ years of age who were newly treated with L-L drug therapy between 1995 and 1998, had an LDL-C value over 160 mg/dL within 90 days prior to treatment, and had no history of CHD but at least one CHD risk factor other than age. The duration of follow-up was 1 year.
RESULTS: A total of 1044 patients were identified. The average age was 68 years and 41% were male. The mean baseline LDL-C level was 197 mg/dL. Most patients (86%) began treatment with a statin, and adherence (evaluated by "covered days") averaged 61%. The mean decline in LDL-C was 25%. Target LDL-C levels were reached by 34% of this population. The rate of LDL-C goal attainment increased from 18% in the 1995 cohort to 46% in the 1998 cohort. The likelihood of reaching goal was positively associated with cohort year ($P < 0.01$), male gender ($P = 0.05$), and beginning treatment with a statin ($P = 0.04$) and negatively associated with initial LDL-C level ($P < 0.01$). Age and the number of risk factors were not associated with goal attainment.
CONCLUSIONS: In this primary prevention population, cholesterol management improved substantially over time. Nonetheless, most patients still did not achieve their target LDL-C levels, indicating that further research is required to identify steps for increasing the effectiveness of cholesterol treatment.

PCV5

ESTIMATING THE IMPACT OF ANTICOAGULATION QUALITY ON EVENT RATES

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OBJECTIVES: Warfarin anticoagulation has been shown to effectively decrease the rate of thromboembolism (TE), with an associated increased rate of bleeding. Maximizing the benefit and minimizing the risk depends on maintaining patients in a narrow therapeutic range for prothrombin time (measured as INR); increased percent-

age of time spent in target range (TTR) is predictive of better clinical outcomes. However, strategies to improve TTR can be costly. To allow local clinical policy makers to determine whether these strategies can be justified, we developed a general approach to estimating bleeding and TE rates associated with a given population distribution of INR.

METHODS: We used data from a large cohort (Cannegieter, 1995) to derive a logistic equation for baseline absolute risk of bleeding as a function of INR. Based upon a separate large cohort of patients (Fihn, 1993) with various time since initiation of therapy we derived a risk ratio that modifies the above baseline relationship in order to take into account time since initiation of therapy. A similar strategy was used to estimate TE, using INR and indication (mechanical valve versus atrial fibrillation) as predictors.

RESULTS: The model for bleeding was: logit (p) = –8.84 +.83 INR +.64 EARLY, where EARLY = 1 if the patient is in the first 3 months of anticoagulation, and 0 otherwise. The final model for TE was: logit (p) = –73 – 1.17 INR – .64(AF), where AF = 1 if the indication is atrial fibrillation and 0 if the indication is mechanical heart valve. The integral of these logistic equations, weighted by a given population distribution of INR, provides population estimates of annual bleed and TE rates.

CONCLUSION: Existing epidemiological data can provide tailored estimates of concrete benefits resulting from improving the quality of anticoagulation.

PCV6

IMPACT OF PHARMACIST-MANAGED AMBULATORY LIPID CLINIC

Cross LB

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Coronary heart disease (CHD) is the leading cause of adult deaths in America. Multiple trials have shown that by modifying cholesterol levels, risk of CHD can be decreased.

OBJECTIVES: Objectives of this research were to assess the impact of a pharmacist-managed ambulatory lipid clinic (PMALC) on CHD-risk profile, effectiveness and cost of care in patients with hyperlipidemia in a VA ambulatory clinic.

METHODS: This longitudinal research began with a retrospective review of 30 randomly selected charts using indicators consistent with NCEP-ATPII guidelines. This review led to opening the PMALC. After 9 months, 80 randomly selected charts were reviewed (40 PMALC + 40 non-PMALC). To further evaluate the impact of the PMALC on patient outcomes, researchers took part in a prospective, randomized, controlled, multi-centered trial.

RESULTS: Initial review suggested that 60% of patients did not have baseline and follow-up lipid panels, 93% did not have baseline liver function tests (LFT's), 55% had no documented change in LDL after 3 months, 16% reached LDL goal of <130 mg/dL, and 6% reached LDL goal of <100 mg/dL. The second review revealed 100% of PMALC patients versus 40% of non-PMALC patients with baseline lipid profiles, baseline LFT's were measured in 100% of PMALC patients versus 35% of non-PMALC patients, 66% of PMALC patients reaching an LDL goal of <130 mg/dL versus 36% of non–PMALC patients, 70% of PMALC patients reaching an LDL goal of <100 mg/dL versus 14% of non—PMALC patients. Non-PMALC patients utilized more medication, costing $62/month versus PMALC patients $38/month.

CONCLUSIONS: Pharmacist-managed ambulatory lipid clinic programs ensured more patients were treated to NCEP ATP-II guideline goals, offered a cost-effective option for treating patients, and decreased patients' overall CHD risk profile versus standard care from primary care teams.

PCV7

AN ANALYSIS OF SCREENING RATES FOR HYPERLIPIDEMIA AMONG MANAGED CARE PLAN MEMBERS PREVIOUSLY HOSPITALIZED FOR CORONARY HEART DISEASE

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Recent studies have shown that reductions in cholesterol levels among patients with coronary heart disease (CHD) reduce mortality.

OBJECTIVE: To determine screening rates for hyperlipidemia among health plan members recently hospitalized for CHD.

METHODS: Utilizing data from a large managed care company in a major metropolitan area, member data were selected from the health plan pharmacy, medical and labs claims databases from April 1, 1998 to April 1, 2000. Selection criteria included an age of 35 years and older, continuous enrollment in the plan for the previous 24 months, having one or more inpatient claim during November 1, 1998 to November 1, 1999 indicating CHD, and not having a pharmacy claim for a cholesterol lowering medication within 6 months prior to hospitalization.

RESULTS: Of the 74,097 plan members enrolled during the study period, 340 members met inclusion criteria. Of these only 7 (2.1%) had prescription claims for a lipid lowering medications within six months prior to the admission date and were eliminated from the analysis. The mean age of the remaining 333 members was 57.6 years (range 35–79). A majority (61.6%, n = 205) of members were male. A total of 436 lab tests for any cholesterol lab value, including total cholesterol, LDL cholesterol, HDL cholesterol and triglycerides, were completed for only 66 (19.8%) of 333 members. The mean number of lab tests for these members was 6.6 (Range 4 to 24).

CONCLUSIONS: The major finding of this analysis was the low percentage of members who received any cholesterol lab test following a hospital admission for CHD. This suggests that the majority of these high-risk patients