

Increasing lipid adherence to goal

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BACKGROUND: In April 2004, the National Cholesterol Education Program Adult Treatment Panel III Guidelines for management of high cholesterol encouraged even lower levels of low-density lipoprotein (LDL) than previous guidelines for high and very high risk groups. Assessing patients' risk factors to determine LDL goals is the first step to help guide therapy.

OBJECTIVE: To determine whether the use of the Mobile Lipid Clinic Personal Digital Assistant (PDA) Calculator during office visits will increase the number of patients achieving their LDL goal compared to using electronic medical records or conventional methods.

METHODS: Four family medicine residency programs affiliated with the Northeastern Ohio Network participated with each site using a different method. The PDA site used the Mobile Lipid Clinic Calculator, the second site used electronic health records (EHRs), the control site used usual care methods, and the transition site moved from paper charts to EHRs during the study. In 2006, baseline chart reviews were conducted to randomly enroll 100 patients per site (aged 40–75 years) with LDL levels at least 10% above goal. In 2007, follow-up chart reviews were conducted on the same patients to determine reductions in LDL and the percent of patients that reached their LDL goals.

RESULTS: The percentage reaching their LDL goal and option goal were as follows: PDA site 27% and 12%, EHR site 19% and 3%, control site 4% and 1%, transition site 32% and 12%. Cholesterol-lowering medication usage increased significantly from 38% at baseline to 47% at follow-up ($\chi^2 = 149.5$, $P < 0.0001$).

CONCLUSIONS Using a PDA tool can be just as effective as EHRs in getting patients to their LDL goal and is better than some conventional methods, suggesting the benefit of utilizing technology to improve patient care and health outcomes.

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In 2001, the National Cholesterol Education Program (NCEP) published the Adult Treatment Panel III (ATP III) outlining the recommendations for management of high cholesterol based on evidence from the results of randomized, controlled clinical trials. Low-density lipoprotein cholesterol (LDL-C) levels have been shown to be an important risk factor for coronary heart disease, which is the leading cause of death in the United States. Baessler et al.¹ deter-

mined that patients not at their optimal LDL goal had a higher risk of a coronary event. Patients treated with sufficient statin therapy to reach their goal comprised only 11% of the patients who had a coronary event, whereas those treated suboptimally made up 43% of patients with a coronary event and those untreated made up 46%. The benefits of improving lipid levels to goal include reducing coronary heart disease events, cerebral vascular accidents, coronary heart disease mortality, and overall mortality.^{2–5}

In the updated ATP III guidelines, a new, even lower therapeutic LDL-C level option goal was given as <70 mg/dL for high-risk patients, including diabetic patients. However, the newer goals are more difficult to achieve, as

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adherence to therapy has already been shown to be low in previous studies conducted using the older, less aggressive guidelines.⁶

In August 2005, the NCEP Evaluation Project Utilizing Novel E-Technology (NEPTUNE II) reported some improvement from previous surveys in getting patients to their LDL goal. However, still only 18% of those classified as "very high risk" achieved the optional goal of LDL <70 mg/dL. Despite improvements in lipid control, age-adjusted mean serum total cholesterol levels for adults have not changed significantly between 1988 to 1994 and 1999 to 2002.⁷ The Multi-Ethnic Study of Atherosclerosis (MESA) reported in February 2006 that only 54% of patients with dyslipidemia were on lipid-lowering drug treatment.⁸ More than 50% of hypercholesterolemic patients in the United States who qualify for treatment remain unaware of their elevated levels and are not currently undergoing any form of dyslipidemia therapy.⁹ The end result of this approach to the therapy of hyperlipidemia is that more patients are at risk of disease progression and cardiovascular events. The Reversal of Atherosclerosis with Aggressive Lipid Lowering (REVERSAL) trial showed that patients receiving intensive lipid-lowering treatment achieved lower overall LDL levels and less progression of atherosclerotic plaques.¹⁰ Therefore, it is important to understand the barriers we need to cross and the tools we have at our disposal to help patients reach their LDL goals and reduce their cardiovascular disease risks.

Lack of treatment to NCEP goals has at least two identifiable sources: insufficient prescribing and insufficient adherence to the prescribed regimen. Patient compliance often hinges upon their knowledge of their risk of heart disease. In a study by Mosca et al,¹¹ doctors and patients were surveyed after a visit discussing the patient's risk factors for heart disease. There was shown to be a low agreement between patients and doctors on the presence of risk for heart disease. Fifty-eight percent of the patients who considered themselves low risk were actually classified as high risk by the doctor. To improve this healthcare issue, patients at risk need to first be identified and a goal needs to be established. A plan of attaining the goal needs to be put into action whether it is lifestyle modification or intense pharmacotherapy. Finally, the physician must convince the patient that following through with the plan to reduce risk factors involves careful adherence to a successful regimen. A systematic method of screening patients to identify the global risk of cardiovascular disease in the given patient is necessary for assuring appropriate goal setting and developing a rationale for compliance with a regimen.¹² Calculating 10-year risk of coronary artery disease and cardiovascular age-adjusted risk can provide information that should be motivating for patients to lower LDL-C levels. There are many tools physicians can utilize in their practice to perform such tasks. Some of these tools include chart stickers listing the global risk score, scoring sheets, and online/handheld risk calculators, and more recently, personal digital assistant (PDA) devices.¹³

Use of PDAs by physicians is on the rise because it is an inexpensive tool for providing patient-specific reminders at the point of care.¹³ The number of doctors using PDAs as medical resources nearly doubled from 1999 to 2001 (from 10% to 18%).¹⁴ One study showed that 55% of participating physicians reported frequent PDA use in patient encounters and 73% of these physicians reported that PDA use affected clinical decision-making in some way.¹⁵ Most commonly, physicians use PDAs as patient care resources, including drug information programs, medical references, and medical calculators.¹⁵ PDAs have several advantages over desktop computers: they are simpler, cheaper, and portable, so they are more immediately available in the entire area of the physicians practice. Simply put, PDAs are conducive to the fast-paced style of primary care practice and offer an efficient way to help encourage use of the guidelines.

A study conducted in a primary care facility in British Columbia in 2005 found that a Palm-based program that assessed individual patient characteristics increased adoption of several specific guidelines, including screening for hypertension, hyperlipidemia, colorectal cancer, and cervical cancer.¹⁶ It showed that PDAs are useful in improving preventive care and facilitating translation of knowledge into practice. This was especially evident with newer guidelines.

The PDA intervention program in this study, the Mobile Lipid Clinic Coronary Heart Disease (CHD) Risk Assessment Calculator, is a program that was designed to help doctors better manage their patients with hyperlipidemia and can be downloaded free of charge on the Mobile Lipid Clinic website (<http://www.mobilelipidclinic.com>). Once patient demographic data, such as age, sex, height, weight, blood pressure, risk factors (family history of CHD, smoking, diabetes, blood pressure medication, left ventricular hypertrophy, etc.), and lipid levels, are entered onto a single screen, the program will output the patient's 10-year risk of heart disease, 10-year risk for stroke, and the LDL-C goal.

A pilot study was performed at the Akron General Center for Family Medicine (Akron, OH) in July 2005 assessing the use of the Mobile Lipid Clinic CHD Risk Assessment Calculator as a clinical tool for physicians to discuss heart disease risk with their patients. When used, the doctors reported that the program was helpful in 80% of visits. The doctors indicated that it was helpful to calculate risk and communicate that risk to their patients. They also observed that the program had an influence on their decisions about care. The doctors mainly discussed with their patients the topics of 10-year coronary artery disease risk, cardiac risk age, LDL goal, and percent reduction to get to goal. According to the doctors, the patients seemed most interested in these topics as well. Therefore, the objective of this study was to compare the use of four different types of assessment and goal setting tools (electronic health records [EHR], a PDA program, a transition site from paper charts to EHR and standard practice) in achieving lower LDL levels in family medicine residency center patients.

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