Achievement of Blood Lipid Targets in Patients Informed of Their Coronary Risk

Grover SA, Lowensteyn I, Joseph L, et al. Patient knowledge of coronary risk profile improves the effectiveness of dyslipidemia therapy: the CHECK-UP study: a randomized controlled trial. Arch Intern Med 2007;167:2296–303.

Study Overview

Objective. To determine whether sharing the calculated risk of future cardiovascular events with patients enhances the effectiveness of treating dyslipidemia in the primary care setting.

Design. Randomized, nonblinded, controlled trial.

Setting and participants. Interested physicians in Canada attended an investigator meeting consisting of an educational session that reviewed national lipid guidelines, the study protocol, and how to interpret risk profiles. Participants were recruited from the primary care practices of physicians who attended the meeting. Patients were eligible if they were aged 30 to 70 years with: (1) cardiovascular disease or diabetes mellitus or a calculated 10-year coronary risk > 30%, with a low-density lipoprotein cholesterol (LDL-C) level of 97 mg/dL or a total cholesterol to high-density lipoprotein (TC:HDL-C) ratio ≥ 4; (2) a calculated 10-year risk of 20% to 30%, with an LDL-C level ≥ 116 mg/dL or a TC:HDL-C ≥ 5; or (3) a calculated 10-year risk of 10% to 20%, with an LDL-C level ≥ 155 mg/dL or a TC:HDL-C ≥ 6. Patients were excluded if they had a hypersensitivity to statins or metabolic contraindications to their use, such as elevated liver function tests, a history of pancreatitis, or significant renal insufficiency.

Intervention. Patients were randomized to routine care or physician-guided discussions about their calculated coronary risk and the role of lifestyle changes and medications. The guided discussions focused on the coronary risk profile, a 1-page computer-generated printout that graphically displays a patient's cardiovascular risk and their "cardiovascular age" (ie, the patient's age minus the difference between his/her estimated remaining life expectancy and the average remaining life expectancy of Canadians of the same age and sex) as compared with their actual age. Pharmacotherapy, if indicated, was chosen by physicians based on individual patient lipid targets.

Main outcome measures. The primary endpoints were the change in LDL-C levels, TC:HDL-C ratio, and the percentage of patients who reached Canadian national lipid targets at 1-year follow-up.

Main results. Of 3053 participants, 1510 were allocated to the intervention group and 1543 to the usual care group. 2687 patients completed the study. Baseline characteristics were similar between the 2 groups, and patients received similar statin therapies. The change in LDL-C from baseline to 1 year in the intervention group was –51.2 mg/dL (95% confidence interval [CI], –52.8 to –49.7 mg/dL) compared with –48.0 mg/dL (95% CI, –49.5 to –46.4 mg/dL) in the usual care group, with a mean difference of –3.3 mg/dL (95% CI, –5.4 to –1.1 mg/dL; $P = 0.02$). Overall, patients in the intervention group were no more likely to reach lipid targets than those receiving usual care (55.2% vs. 52.2%; odds ratio [OR], 1.13 [95% CI, 0.98–1.30]). Subgroup analysis found that the intervention increased the likelihood of reaching lipid targets in patients without cardiovascular disease (OR, 1.26 [95% CI, 1.04–1.53]), most effectively in patients with diabetes (OR, 1.42 [95% CI, 1.11–1.81]). Patients with larger age gaps (cardiovascular age > actual age) demonstrated greater reductions in LDL-C when compared with usual care ($P = 0.04$); however, those with a cardiovascular age lower than their actual age had equivalent or worse LDL-C levels when compared with usual care.

Conclusion. Patient-specific feedback about coronary risk is associated with a small improvement in the efficacy of lipid therapy.

Commentary

Given the burden of hyperlipidemia in the United States and its numerous clinical consequences, new interventions are needed to improve the low rate of compliance with guidelines and treatment [1]. Focusing on primary prevention and overall cardiovascular risks is an information-intensive task that requires an active physician-patient partnership and decision-support tools [2].

The intervention of electronically generated patient-specific materials used in this study produced a positive effect, but it is likely of too little potential benefit to justify the changes to work flow and visit efficiency that implementa-

tion would require. However, with information needed for calculating risk becoming more readily available within electronic health records and the tools to display the information freely available online [3], it is possible that the intervention could be delivered by other types of care providers or used by the patients themselves.

An important limitation of this study is that participants were randomized at the patient level, not the physician level. This meant that physicians were delivering risk profiles and feedback during some visits and not others. The authors acknowledge that this likely led to significant horizontal contamination, as physicians integrated patient activation and education more routinely for all of their patients. Of note, this limitation should have improved the percentage of patients reaching lipid targets in both groups, minimizing the differences between groups but improving outcomes for all participants; however, this was not the case.

This study also did not address issues of health literacy and numeracy, which are important barriers to patients understanding and acting upon risk [4]. It was unclear to the investigators if the observed changes were due to a change in patient knowledge and understanding or simply to more time spent focusing on lipid management.

Applications for Clinical Practice

Patient-specific discussions about coronary risk can produce a small improvement in overall lipid levels and may help some patients reach lipid targets. These discussions can be enhanced by using computer-based coronary risk tools that generate summaries for patient and provider use.

—Review by Marc M. Triola, MD

References

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