Physician extenders were more cost-effective than usual health care in men with hypercholesterolemia


Objective
To determine whether physician extenders (use of allied health professionals to initiate and maintain patients on diet and drug therapy) using cost-effective drug algorithms could provide effective management for hypercholesterolemia while conserving costs.

Design
2-year randomized controlled trial and cost-effectiveness analysis.

Setting
Veterans Affairs medical center in Wisconsin, USA.

Patients
247 men (mean age 63 y) with low-density lipoprotein (LDL) cholesterol levels $> 4.14 \text{ mmol/L}$ were included. Exclusion criteria were triglyceride levels $> 2.82 \text{ mmol/L}$; thyroid, liver, or kidney abnormalities; severe underlying illness; diabetes; or unwillingness to stop taking lipid-lowering medication for 1 month before study entry.

84% of patients completed the study.

Intervention
127 patients were allocated to a cholesterol treatment program, and 120 were allocated to usual health care provided by a general internist. The cholesterol treatment program included 1) an intensive dietary program given by a registered dietitian who used individual and group counseling and 2) drug therapy, initiated by physician extenders, for patients who failed to achieve their target LDL cholesterol level with diet alone. Drug therapy initially consisted of niacin and was followed by bile acid sequestrants and then by lovastatin if target LDL cholesterol levels were not achieved.

Main cost and outcome measures
LDL cholesterol level, cost of therapy, and cost-effectiveness defined as the cost per unit reduction in LDL cholesterol.

Main results
By 2 years, more patients in the cholesterol treatment program than in the usual health care group were taking cholesterol-lowering drugs (93% vs 61%, $P < 0.01$). By 2 years, LDL cholesterol levels were reduced by 27% (standard error [SE] 2%) in the cholesterol treatment program and by 14% (SE 2%) in the usual health care group ($P < 0.001$). Target LDL cholesterol levels were achieved more frequently by patients allocated to the cholesterol treatment program (65% vs 44%, $P = 0.002$). Total cost per patient was 40% higher in the cholesterol treatment program ($\$659, \text{ SE } \$43$ vs $\$477, \text{ SE } \$42, P < 0.01$), but the cost per mmol reduction in LDL cholesterol level was lower than the cost of usual health care ($\$758, \text{ SE } \$58$ vs $\$685, \text{ SE } \$70, P < 0.002$). By the end of the study, drug costs accounted for 79% of total costs in the cholesterol treatment program.

Conclusion
Physician extenders using cholesterol treatment algorithms were more costly but more cost-effective than usual health care in men with high levels of low-density lipoprotein cholesterol.

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For article reprint: Dr. G. Schectman, Division of General Internal Medicine, 9200 West Wisconsin Avenue, Milwaukee, WI 53226, USA. FAX 414-383-8010.


Commentary
The effectiveness of statins in reducing morbidity and mortality among patients with elevated serum cholesterol levels is supported by the results of the Scandinavian Simvastatin Survival Study (4S) (1) and more recently by the West of Scotland Coronary Prevention Study (2). The 4S showed that statins were effective in patients with established coronary heart disease (secondary prevention), and the West of Scotland study showed that statins were beneficial and safe in patients who did not have coronary heart disease (primary prevention) but had moderately increased cholesterol levels. Between 20% and 40% of adults in Western countries would have been eligible to enter 1 of these trials or the other and might have benefited from treatment, but statins typically cost $600 to $700 per patient per year. Hence, a range of important clinical, public health, and economic issues are at stake.

Schectman and colleagues produced evidence consistent with that from previous studies showing that health professionals working as physician extenders can be more effective than physicians in reducing LDL cholesterol levels. They also showed that physician extenders were more costly but more cost-effective; that is, they achieved a lower cost-per-unit reduction in LDL cholesterol level than did conventional care.

Readers may wish to consider whether the niacin-first strategy makes clinical or economic sense, particularly because reported adherence to niacin therapy was low and adverse events were frequent. The intervention was evaluated as a package, and data on the marginal costs and effectiveness of each step along the treatment algorithm were not reported. Therefore, the study is more valuable in relation to the mode of treatment delivery than for details about the treatment itself.

Pharaoh and Hollingworth concentrate on variations in effectiveness and cost among different treatment groups. The cost data are the least refined part of their study and could be improved by direct evidence of changes in resource use and costs after the interventions reported in the 4S and West of Scotland Coronary Prevention Study. This evidence was recently published (3).

In deciding which patients should be treated while taking into account total treat-