Meta-analysis: Antidyslipidemic therapy prevents myocardial infarction and death

Rembold CM. **Number-needed-to-treat analysis of the prevention of myocardial infarction and death by antidyslipidemic therapy.** J Fam Pract.1996 Jun;42:577-86.

Objective
To evaluate the benefits of treating dyslipidemia to prevent morbidity and mortality from cardiovascular disease.

Data sources
Studies were identified using MEDLINE (1966 through 1995) with the keywords atherosclerosis, coronary artery disease, and regression, and from recent literature reviews.

Study selection
Randomized studies were selected if they involved standard antidyslipidemic therapy (diet, pharmaceutical agents, or surgery) and included patients with multiple atherosclerosis risk factors but no known coronary atherosclerosis (primary prevention studies), patients with known atherosclerosis (secondary prevention studies), or patients with a previous myocardial infarction (MI) (tertiary studies).

Data extraction
Data were extracted on risk factors for coronary atherosclerosis, treatment type and duration, results of angiography, and absolute risk reduction (ARR) for MI and cardiovascular death.

Main results
In 6 trials of primary prevention (excluding 1 trial that evaluated clofibrate, which is no longer used), standard antidyslipidemic therapy reduced the total cholesterol level by 15% and led to an ARR of 1.6% for nonfatal MI, 0.5% for cardiovascular death, and 0.5% for all-cause mortality. This ARR means that 53 patients would need to be treated (NNT) for 4.8 years with standard antidyslipidemic therapy (rather than usual care) to prevent 1 additional nonfatal MI or cardiovascular death (95% CI 41 to 81). The NNT to prevent 1 additional death from all causes is 190 (CI 106 to 3425). In 23 trials of secondary and tertiary prevention, active treatment using various dietary and pharmacologic agents for a mean of 4.9 years reduced the total cholesterol level by 18% and led to an ARR of 6.4% for nonfatal MI or cardiovascular death (NNT 16, CI 13 to 19) and 2.7% for all-cause mortality (NNT 37, CI 26 to 64). 13 secondary and tertiary prevention trials that lasted for 2.6 years reported angiographic dat
The NNT to prevent 1 additi
progression of coronary atheroscle
sis was 7 (CI 6 to 9) and to ind
1 additional regression of coro
atherosclerosis was 10 (CI 7 to 17
Similar benefits on atheroscleros
progression and regression were ob
served in 9 secondary and tertia
trials evaluating 3-hydroxy-3-met
ylglutaryl coenzyme A (HMG-Co
reductase inhibitors.

Conclusion
5 years of treatment of dyslipidem
in patients with and without know
atherosclerosis prevents myocard
infarction or cardiovascular dea
with a number needed to treat of
patients and 53 patients, respectiv

Sources of funding: In part, Lucille P. Mar
Charitable Trust and the U.S. Public He
Service.

For article reprint: Dr. C.M. Rembold
146, Cobb 1034, Hospital Drive, Cardi
cular Division, University of Virginia He
Sciences Center, Charlottesville, VA 2
USA. FAX 804-924-9604.

Abstract and Commentary also publish
ACP Journal Club. 1997;126:4.

Commentary

NNT analysis is a useful tool for clinical decision making (1); the higher the risk for patients the greater the potential benefit from treatment. The Table compares the NNT for cholesterol reduction in secondary (2) and primary (3) prevention trials with primary prevention in isolated systolic hypertension (4).

53 as the NNT for primary prevention of MI or cardiovascular death, calculated by Rembold and colleagues, is very close to that of the West of Scotland trial (3); similarly, 16 as the NNT for secondary prevention is comparable to the NNT in the Scandinavian Simvastatin Survival Study (4S) trial (2).

If we assume that our secondary prevention patients have risks and benefits similar to those of patients in the 4S trial (2), an NNT of 11 compares favorably with the NNT for treatment of isolated systolic hypertension (5).

Therefore, the message from these studies is to focus on which types of patients to treat and not on which level of cholesterol to treat. Based on this, high-risk patients will benefit most from cholesterol reduction.

Study (Reference)	Event Prevented	NNT
4S trial (2)	1 MI in 6 years	11
West of Scotland (3)	1 MI in 6 years*	55
SHEP (4)	1 stroke in 6 years*	26

* Adjusted to 6 years assuming linear proportions. SHEP = Systolic Hypertension in the Elderly Program.

J. David Spence,
Robarts Research Insti
London, Ontario, Can

References
1. **Laupacis A, Sackett DL, Robert** N Engl J Med. 1988;318:1728-34.
2. **Scandinavian Simvastatin Survival St Group.** Lancet. 1994;344:1383-9.
3. **Shepherd J, Cobbe SM, Ford I,** N Engl J Med. 1995;333:1301-7.
4. **SHEP Cooperative Research Grou** JAMA. 1991;265:3255-64.