CARDS
Collaborative AtoRvastatin Diabetes Study

Cardiovascular disease (CVD) and stroke risks can be lowered to a great extent in type 2 diabetes patients having normal or moderately elevated LDL cholesterol levels with atorvastatin 10 mg /day as per results from CARDS trial.

CARDS was conducted at 132 centers across UK and Ireland . It is the first ever specifically designed study to assess the effectiveness of lipid-lowering treatment (with atorvastatin 10 mg) for the primary prevention of CVD in patients with type 2 diabetes. Investigators enrolled 2838 patients based on the following criteria:

- Patients with type 2 diabetes.
- Without any history of heart disease.
- LDL-C= 4.14mmol/L (160 mg/dL)
- Triglycerides = 6.78 mmol/L (600 mg/dl).
- Having at least one of the following risk factors; hypertension, retinopathy, micro or macroalbuminuria, or smoking.

Results

The mean LDL for the treated group at the entry level was 3 mmol/L or 116 mg/dL. 25% of the patients had LDL cholesterol below 2.6 mmol/L or 100 mg/dL. But 60% of patients had LDL cholesterol below 3.35mmol/L, which is the ADA criterion for definitive pharmacological intervention.

- **Atorvastatin 10 mg reduced cardiovascular events (defined as acute coronary events, stroke and CABG / other revascularization procedures) by 37% relative to placebo (p=0.01) in patients with diabetes without existing CVD (Fig. 1).**
- **Atorvastatin lowered the risk of stroke by 48% (p=0.016) relative to placebo.**
- All-cause mortality was also reduced by 27% with atorvastatin treatment.
- Acute coronary events were reduced by 36% and coronary revascularization by 31% in the atorvastatin group as compared to placebo.
- The benefit to patients was observed irrespective of their baseline LDL-cholesterol or triglyceride levels.
- These results also reinforce the long-term safety profile of atorvastatin, with no differences in adverse events observed between patients on atorvastatin and placebo.

The treatment group results at the end were similar to results at 3 months duration into the study in terms of lipid lowering treatment. This lipid lowering effect was persistent with 40% reduction achieved in the LDL cholesterol levels. There was an absolute difference of 1.2 mmol/L.

Although about 80% of the treatment group had LDL cholesterol below the 100 mg/dL recommended target levels, the effects of preventive treatment with the active agent for CVD and stroke were found to be very dramatic.

The trial was halted 2 years early because of the striking early results.

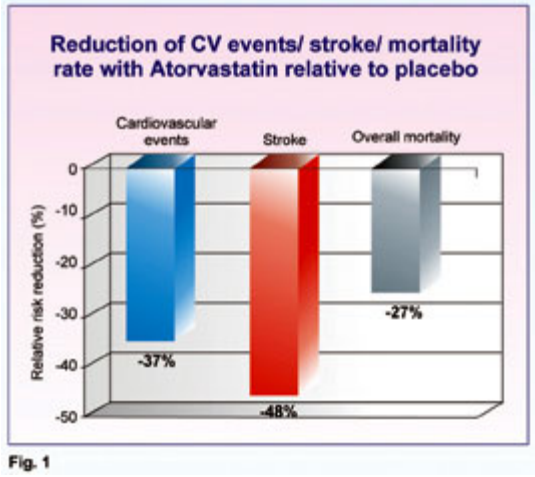

Fig. 1

"In this study, patients on atorvastatin experienced major CVD benefits - so much so that the trial was stopped early because it would be unfair to those receiving placebo to continue", said CARDS co-investigator John Betteridge, M.D., Professor in the department of medicine, Sir Jules Thorn Institute, The Middlesex Hospital in London, UK. "Currently, only patients with

diabetes with elevated cholesterol or established heart disease routinely receive statins - but this study shows that even those without CVD or high cholesterol could benefit from cholesterol-lowering." **Initiating cholesterol lowering at the time of diabetes diagnosis could save thousands of lives.**

According to the American Diabetes Association recommended treatment guidelines, adults with type 2 diabetes should be considered for statin therapy regardless of their LDL levels. In addition, European cholesterol guidelines also set more aggressive cholesterol goals for patients with diabetes, and recommend that patients with diabetes be treated to the same cholesterol goals as patients with established heart disease.

Reference:

American Diabetes Association, 64th Annual Scientific Sessions, June 2004. Abstract No: 15-LB