1. Title:
LDL-glycemia and atherosclerosis

2. Writing Group:
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3. Timeline:
Preliminary analyses and official analyses request to be completed in 2 months.

4. Rationale:
Glycosylation is one of the modifications in the LDL and apolipoprotein-B molecule, that seems to decrease the affinity of LDL for the LDL receptors, while increasing the uptake of LDL by macrophages and foam cell formation (Steinberg, NEJM 1989). LDL glycosylation occurs as a result of prolonged exposure of LDL to high concentration of glucose in vitro (Brownlee, NEJM 1988).

It has been recently suggested that glycosylation makes the LDL molecules more susceptible to oxidative modifications in vivo (Lyons, Diabetes, 1992; Bucala, Proc Nat Acad Sci 1993). Glycation of LDL also stimulates platelet aggregation (Lyons, Diabetes, 1992). The role of LDL-glycosylation in atherogenesis seems to be one of the mechanisms responsible for atherogenesis in diabetic mellitus (Schwartz, Diabetes Care 1992; Lyons, Diabetes, 1992).

5. Hypotheses:
The association between LDL-apoB and carotid atherosclerosis is stronger (in a multiplicative scale) among hyperglycemic or hyperinsulinemic individuals as compared to normal subjects.

6. Data:
Analyses will be done in the entire visit 1 cohort and compared to analyses in the ultrasound-defined case-control sample, where glycated apo-B measurements are available.

Main dependent variable(s):
- wall thickness: defined as continuous (for linear regressions) and categorical (for logistic regressions)
- plaque/shadowing

Independent variables: LDL, apo-B, diabetes (y/n), fasting glucose, fasting insulin, triglycerides, HDL, obesity, sex, age, smoking, and hypertension.