SUPPLEMENTAL MATERIAL

Data S1. Supplemental Methods

Area under the curve (AUC) – childhood risk factor cumulative burden

At the time of the first field study, participants were aged 3 to 18 years. During puberty, there is a significant decrease in serum lipid and lipoprotein levels and thus 1980 baseline values measured at different age points were not comparable with each other.[18,20] Therefore, to obtain comparable childhood lipid and lipoprotein levels for each participant, we used the AUC method, which allowed us to determine the cumulative burden for each serum lipid and lipoprotein, as well as blood pressure and body mass index, during childhood. To create AUC variables, we exploited repeatedly measured data from the longitudinal Cardiovascular Risk in Young Finns Study from 1980 to 2011 (measurements from 3 to 34 years of age and for diastolic blood pressure from 6 to 34 years of age). First, mixed model regression splines were used to estimate subject-specific curves.[21] The covariance structure for the longitudinal setting was modelled by allowing for subject-specific regression spline coefficients, which were incorporated as the random effects into the model. To avoid overfitting at the participant level, the number of knots were reduced on the calendar time for the subject-specific part from that of the fixed effect parts on age. For diastolic blood pressure and triglycerides, the number of knots on age were reduced for the subject-specific part from that of the fixed effect parts on the calendar time. The mean profile was allowed to vary across ages, sex, birth cohorts, and in case of blood pressure family's area of residence at the beginning of the study and in case of diastolic blood pressure parent's hypertension in terms of possibly different fixed effect parts. Then, similar to the approach of Lai et al,[22] AUCs were evaluated for each cardiovascular risk factor as a measure of risk factor cumulative burden. AUC variables were defined for the age period of 6 to 18 years indicating the individual cumulative burden for the risk factor in childhood.

Table S1. Flowchart for the Cardiovascular Risk in Young Finns Study

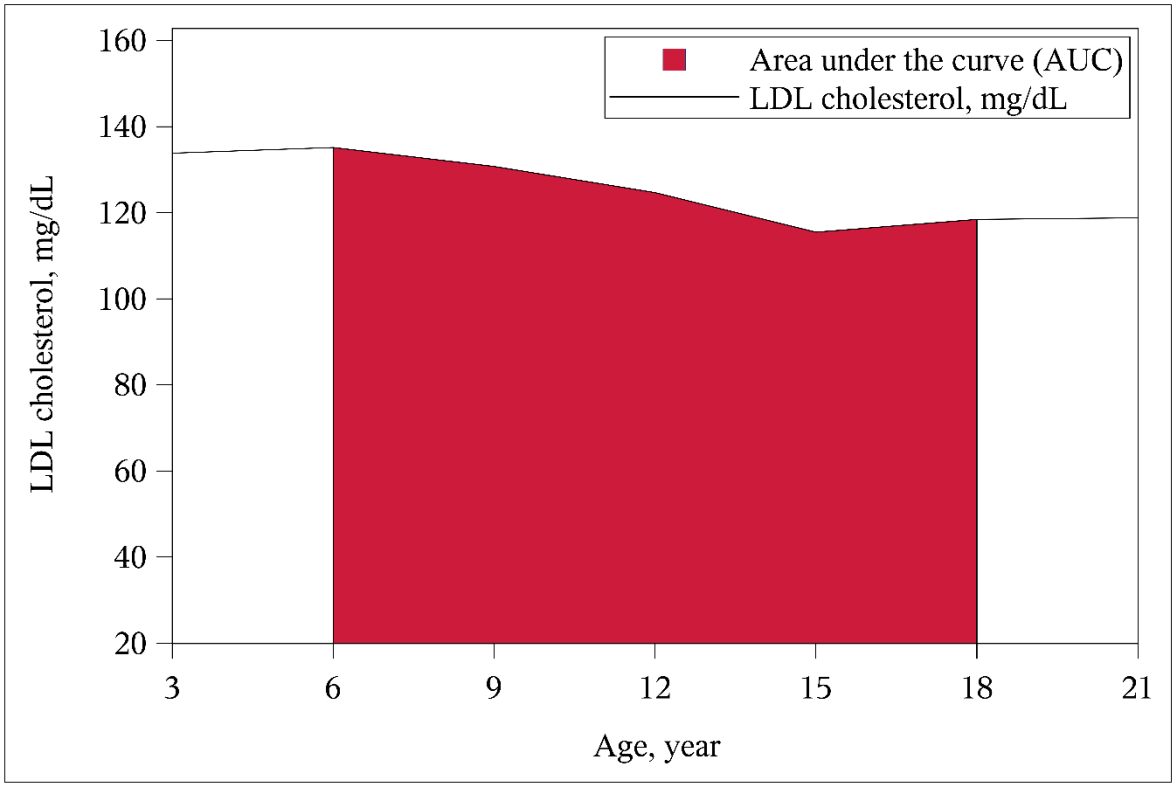
Study year	No.	Age, year																			
1980	3596	3	6	9	12	15	18														
1983	2991		6	9	12	15	18	21													
1986	2799			9	12	15	18	21	24												
1989	2737*				12	15	18	21	24	27											
1992	2730*					15	18	21	24	27	30										
2001	2620†								24	27	30	33		36		39					
2007	2243†										30	33		36		39		42		45	
2011	2115												34		37		40		43		46	49

Abbreviations: No, number of participants who participated in any phase of the study in a given year.

*In 1989, physical examinations and blood tests were gathered only in one center (N=632 individuals). In 1992, cohorts from Helsinki, Kuopio and Turku areas were included for blood sampling and/or physical examinations (N=891 individuals). In 1989 and 1992, the limitation in cohort size for blood sampling and/or physical examinations were due to economic constraints and do not imply loss to follow-up.

†In 2001 and 2007, carotid ultrasound was performed to 2283 and 2204 participants, respectively.

Figure S1. Area under the curve (AUC) for childhood low-density lipoprotein (LDL) cholesterol



To convert LDL cholesterol units from mg/dL to mmol/L, multiply by 0.02586.