Sciences Research Paper Abstract

Author's Name Surname

Department of X, Name of Institution

Course number: Course Title

Instructor's Name Surname

Month Day, Year

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Background:

Prediction tools that combine polygenic risk scores with clinical factors provide a new opportunity for improved prediction and prevention of atherosclerotic cardiovascular disease, but the clinical utility of polygenic risk score has remained unclear.

Methods:

We collected a prospective cohort of 7342 individuals (64% women, mean age 56 years) and estimated their 10-year risk for atherosclerotic cardiovascular disease both by a traditional risk score and a composite score combining the effect of a polygenic risk score and clinical risk factors. We then tested how returning the personal risk information with an interactive web-tool impacted on the participants' health behavior.

Results:

When reassessed after 1.5 years by a clinical visit and questionnaires, 20.8% of individuals at high (>10%) 10-year atherosclerotic cardiovascular disease risk had seen a doctor, 12.4% reported weight loss, 14.2% of smokers had quit smoking, and 15.4% had signed up for health coaching online. Altogether, 42.6% of persons at high risk had made one or more health behavioral changes versus 33.5% of persons at low/average risk such that higher baseline risk predicted a favorable change (OR [CI], 1.53 [1.37-1.72] for persons at high risk versus the rest, P<0.001), with both high clinical (P<0.001) and genomic risk (OR [CI], 1.10 [1.03-1.17], P=0.003) contributing independently.

Conclusions:

Web-based communication of personal atherosclerotic cardiovascular disease risk-data including polygenic risk to middle-aged persons motivates positive changes in health

behavior and the propensity to seek care. It supports integration of genomic information into clinical risk calculators as a feasible approach to enhance disease prevention.