

Individual access to genomic disease risk factors has a beneficial impact on lifestyles

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Giving personal genomic information to individuals can have a major, long-term effect on their lifestyle, researchers have found. The Finnish GeneRISK study, providing information on the risk of cardiovascular disease (CVD) based on their genome and traditional risk factors to 7,328 people inspired changes for the better in areas such as weight loss and smoking cessation. Nearly 90 percent of them said the information had made them take better care of their health, the annual conference of the European Society of Human Genetics will hear today (Saturday).

Although there is plenty of evidence that genomic factors have an important impact on the risk of common diseases, to date, there has been little use of this [information](#) in prevention. Elisabeth Widen, MD, a senior scientist at the Institute for Molecular Medicine, University of Helsinki, Finland, and colleagues have developed a web-based tool that allows patients and doctors to see and manage [genomic information](#) based on 49,000 disease-associated genetic variants and lifestyle-associated risk factors.

"Delivering the results of the tool KardioKompassi directly to patients, they were able to see their 10-year risk for [ischemic heart disease](#). The tool combines risk information based on traditional risk factors such as age, sex, cholesterol levels and blood pressure with a [polygenic risk score](#). Where a patient's overall disease risk was elevated, KardioKompassi advised the participant to contact their doctor in order to discuss how best to reduce it," Dr. Widen will say.

When reassessed 18 months later, the results were impressive. Compared with a 4 percent smoking cessation rate in the general population, 17 percent of smokers in the study had given up, and sustained [weight loss](#) had been achieved by 13.7 percent of participants. Overall, risk-reducing behaviour such as weight loss, giving up smoking, or visiting a doctor was 32.4 percent in those with a

predicted CVD risk of more than 10 percent and 18.4 percent in those at lower risk.

"As many as 40 percent of participants with a high risk of CVD were smokers at the start of the study, so these results are encouraging. We believe that giving information on their genetic profile to individuals is particularly motivating, perhaps simply because it is new information. For example, many of the participants already knew that they had high levels of cholesterol. But it was receiving information on their personal genetic risk that triggered changes," Dr. Widen says.

GeneRISK participants will be recalled for follow-up studies over the next 20 years and their health status will be closely followed. The researchers believe that those who have already made lifestyle changes are likely to continue them. "Since they have managed to maintain these changes for 1.5 years, we expect them to persist," says Dr. Widen.

The general trend towards patient participation is particularly important in disease prevention, say the researchers. Empowering individuals by giving information on their personal risk of disease, as opposed to something more generalised, is clearly effective in encouraging them to follow healthier lifestyles.

"Our results show that this approach to managing and interpreting genomic data for individuals is feasible and effective. We think that our study provides a model for the use of such data in healthcare that can be easily adapted to other diseases, where we believe that it is likely to be equally valuable," Dr. Widen will conclude.

Chair of the ESHG conference, Professor Joris Veltman, Director of the Institute of Genetic Medicine at Newcastle University, Newcastle, United Kingdom, said: "It is impressive to see how genomic information can be used successfully to promote a healthier lifestyle in people at higher risk

of developing heart [disease](#). Clearly in the population there will also be many people with a relatively lower genetic risk of developing [common diseases](#), and I do wonder what would happen if these people are informed about this; would they start showing an unhealthier lifestyle? This field of predictive genomic medicine is only just emerging, with lots of opportunities for further research."

Provided by European Society of Human Genetics

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