

News release

PHG Foundation and our partners in the COGS (Collaborative Oncological Gene-environment Study) Consortium have published a significant collection of papers in the current issue of [Nature Genetics](#), which is a special edition focusing on the COGS Consortium's groundbreaking work advancing our understanding of the genetic epidemiology of cancer.

Our commentary in the *Nature Genetics* special issue is: [Public health implications from COGS and potential for risk stratification and screening](#). What follows is a news release describing that work and outlining its principle findings.

Personalised cancer screening to include genetic testing

Future cancer screening may be improved by the use of genetic information, predicts new research led by the PHG Foundation and the University of Cambridge; but greater accuracy will come at the price of increased complexity.

The research is part of a major international scientific collaborative study into the genetic risk of breast, ovarian and prostate cancer, known as the Collaborative Oncological Gene-environment Study (COGS).

Cambridge based health think-tank, the PHG Foundation led work on the implications that the study's research results have for the people working in health services and the people who use those services.

Principal investigator Dr Hilary Burton, Director of the PHG Foundation, said: *"For the last decade scientists have envisaged a future where Genome Wide Association Studies (GWAS) would lead to stratification of populations and improved prevention based on genetic susceptibility. This is the first time one of these major international studies has been associated with a parallel process using real results to investigate the potential impact on population health. Our conclusion is stratified prevention is possible and useful, but is complex. To achieve this vision of the future effective engagement between policy-makers, the public and the researchers is crucial"*.

How cancer screening will change

The overall research from COGS found that testing for genetic variants that increase the risk of breast and prostate cancer risk could be used to refine screening programmes by stratifying populations, ultimately helping to target disease prevention and reducing harm.

Screening aims to detect cancer at an early stage, maximising successful treatment. Current programmes, such as the NHS Breast Screening Programme, offer a standard package of screening over an agreed age

Director: Dr Hilary Burton

range where the risk of disease is typically greatest; the addition of genetic information will help identify those who may benefit most from screening. Stratification could lead to fewer people needing to be screened; better detection of more aggressive cancers in younger age groups, and the number of 'false-positive' results (where no cancer is present) to fall.

The report authors, all researchers from the PHG Foundation and the Cambridge Institute of Public Health (CIPH), conclude that genetic research can be used to create new and improved stratified screening programmes. However, they warn that stratified screening will be complex, requiring genetic testing and integration of results into a risk assessment process as well as differential care pathways for people in different risk groups. Questions about the storage, access and privacy of genetic data will also arise. In addition, the greater complexity of such screening makes it essential that relevant health professionals develop their understanding of genetics.

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Notes to Editors

The research referred to will be published simultaneously as part of a collection to be published in *Nature Genetics*.

Publication reference

Public health implications of COGS and potential for risk stratification and screening. Burton H, Chowdhury S, Dent T, Hall A, Pashayan N and Pharoah P. *Nature Genetics*

About the PHG Foundation

- The PHG Foundation is a genomics think-tank based in Cambridge, UK
- Our mission is *making science work for health* – identifying the best opportunities for 21st century science to improve health, and to promote the fair and effective translation of scientific innovation into medical and public health policy and practice
- We generate knowledge, evidence and ideas to inform, educate, and stimulate debate
- We also provide expert research, analysis, health services planning and consultancy services for governments, health systems, and other non-profit organisations
- For more information see www.phgfoundation.org

About COGS

- The Collaborative Oncological Gene-environment Study (COGS) is a project funded by the European Commission and 7th Framework Programme under grant agreement 223175 (HEALTH-F2-2009-223175)

- The aim of COGS is to define individual risk of breast-, ovarian- and prostate cancers, based on lifestyle factors and genetic variants, to improve identification of people at increased risk of these cancers, and prevention of disease
- For more information see www.cogseu.org

About CIPH

- The Cambridge Institute of Public Health (CIPH) improves population health by fostering research, training and evidence based service.
- It is one of three Institutes within the School of Clinical Medicine at the University of Cambridge and includes among its university membership the Department of Public Health and Primary Care.
- The PHG Foundation is the first charitable status member of the CIPH.
- For more information see www.iph.cam.ac.uk