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HORIZON SCANNING SR014

HSE Horizon Scanning Intelligence Group

Genetic Testing in the Workplace

Issue

The potential use of genetic testing in the workplace.

Background

Genetic technologies are increasing at a rapid rate along with our knowledge of the interactions between our genes and disease. There are currently genetic tests for more than 1300 diseases and genetic testing is continually getting cheaper and faster. Now scientists are researching the sources of more complex disorders involving multiple genes e.g. heart disease and Alzheimer's disease. Recently the largest ever study of the genetics behind common diseases such as diabetes and rheumatoid arthritis was published.¹ Researchers suggest that genetic tests for some of these diseases could be available by 2010.² Huge research projects such as the International HapMap Project and UK Biobank are providing key resources for researchers in finding genes that affect health and disease and in understanding the complex interactions between genes, health, lifestyle and environmental factors.^{3, 4} Additionally gene chips are available that will allow scientists to search for the genetic causes of disease much more quickly.⁵

Status: Active Monitoring

Genetic tests can:

- identify an individual's genetic make-up (genotype); and
- detect genetic damage that occurs over time

The results can reveal whether a person:

- has a genetic disorder e.g. Huntingdon's disease;
- is at an increased risk of developing a common disorder e.g. cancer; or
- is at an increased risk of developing a condition e.g. asthma when exposed to hazardous chemicals/radiation.⁶

Implications for health and safety

Genetic testing has the potential to offer many benefits in general health, for example in identifying markers for certain disease so that people can be forewarned and appropriate action taken. In the workplace it could be used to screen existing staff for certain jobs, or before employment to select or exclude applicants on the basis of their susceptibility to certain diseases or substances. This could mean that people prone, say, to asthma can be kept away from

¹ <http://www.wtccc.org.uk/info/070606.shtml>

² <http://www.msnbc.msn.com/id/16006193/site/newsweek/>

³ <http://www.genome.gov/11511175>

⁴ http://www.eurekalert.org/pub_releases/2006-08/ub-ubg082006.php

⁵ http://www.technologyreview.com/printer_friendly_article.aspx?id=17938

⁶ Genetic discrimination by insurers and employers: still looming on the horizon, February 2006, Report, Genewatch UK, <http://www.genewatch.org/>

asthmagens. Testing could also be used as a diagnostic tool to detect work-related genetic damage.⁷

However, the downside could be that employers think that recruiting 'non-susceptible' people means they can relax their controls. People could also be screened for susceptibility to non-work-related conditions for economic reasons (i.e. likely to have less time off sick).

The difficulty, apart from the considerable ethical aspects, is that genetic screening is in most cases not a simple yes/no test – it is an indicator of risk. The possession of a certain genotype that predisposes someone to a condition does not necessarily mean that they will definitely get it, or when they will get it, if they do. Conversely, the absence of particular genes linked with a condition doesn't necessarily mean that someone won't develop a serious condition in the future. This could mean that taking any employment decisions based on genetic information could be unreliable.

We have not found any evidence that employers are currently carrying out genetic testing in Britain (with the exception of the MoD for aircrew training) and the Human Genetics Commission (HGC) has concluded that employee genetic testing is not currently occurring in the workplace, but they admit that their evidence base in this area is poor.⁸

Even if employers do not themselves seek to introduce genetic testing, it could be that insurers influence the situation through premiums. British insurers are observing a voluntary moratorium until 2011 on genetic testing for life insurance (apart from high value policies), but thereafter there is the potential for increasing use of testing, including in the employment arena.

In 2004 the Health and Safety Commission stated that it considered it unacceptable to exclude or remove a person from the workplace because he or she might develop a genetic condition.⁹ While there are restrictions in place on the taking of DNA without people's knowledge, and voluntary codes of disclosure on testing, there is no UK law stopping employers from carrying out and acting upon genetic screening. At present UK law does not cover a genetic abnormality which gives rise to a disability, if one has not yet developed that disability.¹⁰ In the US the House of Representatives recently passed the Genetic Information Non-discrimination Act (GINA) that prevents employers from collecting genetic information about their employees.^{11, 12}

Recommendations

Given the present state of genetic testing capability, and the likelihood of rapid advances, HSE needs to keep abreast of this subject and to anticipate potential future developments. It may be that despite the questions over the current reliability of some genetic testing and the interpretation of its results, there are some cases where it might make a contribution to workplace health and safety. But an important consideration must be whether or not workplace genetic testing will ever be allowed (developments in the US are significant, see above). The ethical debate goes much wider than HSE, but HSE needs to be ready in the event that genetic screening in the workplace starts to become a reality.

Sam Bradbrook, Horizon Scanning Team, May 2007

⁷ <http://news.bbc.co.uk/go/pr/fr/-/1/hi/health/6998437.stm>

⁸ <http://www.hgc.gov.uk/UploadDocs/Contents/Documents/For web - Lord Sainsbury prevalence of genetic testing response.doc>

⁹ Genetic testing for employment: susceptibility and exposure to hazardous substances, Advisory Committee on Toxic Substances, ACTS/10/2004, paper file reference: PG/334/1000/04

¹⁰ http://www.workplacelaw.net/display.php?resource_id=8594

¹¹ <http://www.newscientisttech.com/article.ns?id=mg19325923.600&print=true>

¹² http://blog.wired.com/wiredscience/2007/04/genetic_informa.html