

Trends in *BRCA* testing over time and socioeconomic deprivation

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OBJECTIVES: *BRCA1&2* (*BRCA*) testing received much publicity following Angelina Jolie's editorial 'My Medical Choice' in the New York Times on the 14th May 2013. In addition, in the UK, guidelines were updated by NICE (clinical guidance CG164) on the 25th June 2013. We analysed the effects of these two events on uptake of *BRCA1* and *BRCA2* testing in the area covered by Cheshire and Merseyside Regional Genetic Service, and whether this was affected by socioeconomic deprivation.

METHODS: A database was collated using routinely collected hospital data for patients who received hereditary breast and ovarian cancer (HBOC) *BRCA* testing. A total of 1393 patients received *BRCA* testing. A natural experimental approach was undertaken using segmented linear regression to estimate changes in the level and trend of *BRCA* testing following the publication of both the Jolie's editorial and NICE CG164. Regression coefficients were used to calculate average change in rates, adjusted for prior level and trend. The Index of Multiple Deprivation (IMD) of patients from areas who received *BRCA* testing to those of the catchment population were compared.

RESULTS: The month following the publication of Jolie's editorial and NICE CG164, *BRCA* testing increased by approximately 84% ($P=0.006$). Between April 2010 and March 2017, testing rates increased 11-fold from 0.14 to 1.52 tests/100,000 per month. The odds of receiving *BRCA* testing were higher for patients from socioeconomically advantaged areas pre-publication (OR 1.21 95% CI 0.99-1.48, $P=0.06$) although this was not significant. After publication the odds were significantly higher for patients from advantaged areas compared with disadvantaged areas (OR 1.18 95% CI 1.08-1.29, $P=0.0002$).

CONCLUSIONS: Our study found that *BRCA* testing uptake increased following the publication of Jolie's editorial and NICE CG164. However, uptake was lower in more deprived areas. This inequity should be further investigated, and consideration given to targeted care within areas of greater socioeconomic deprivation.