

**Changes in environmental tobacco smoke (ETS) exposure over a 20-year period:
cross-sectional and longitudinal analyses**

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Aims: To examine long-term changes in environmental tobacco smoke (ETS) exposure in British men between 1978 and 2000, using serum cotinine.

Design: Prospective cohort: British Regional Heart Study.

Setting: General practices in 24 towns in England, Wales and Scotland.

Participants: Non-smoking men: 2125 studied at baseline (Q1:1978-80, aged 40-59 years), 3046 studied 20 years later (Q20: 1998-2000, aged 60-79 years) and 1208 studied at both times. Non-smokers were men reporting no current smoking with cotinine <15ng/mL at Q1 and/or Q20.

Measurements: serum cotinine to assess ETS exposure.

Findings: In cross-sectional analysis, geometric mean cotinine level declined from 1.36 ng/mL (95% CI 1.31, 1.42) at Q1 to 0.19 ng/mL (95% CI 0.18, 0.19) at Q20. The prevalence of cotinine levels ≤ 0.7 ng/mL (associated with low CHD risk) rose from 27.1% at Q1 to 83.3% at Q20. Manual social class and northern region of residence were associated with higher mean cotinine levels both at Q1 and Q20; older age was associated with lower cotinine level at Q20 only. Among 1208 persistent non-smokers, cotinine fell by 1.47 ng/mL (95% CI 1.37, 1.57), 86% decline. Absolute falls in cotinine were greater in manual occupational groups, in the Midlands and Scotland compared to Southern England, although percentage decline was very similar across groups.

Conclusions: A marked decline in ETS exposure occurred in Britain between 1978 and 2000, which is likely to have reduced ETS-related disease risks appreciably before the introduction of legislation banning smoking in public places.

Key words: cotinine, environmental tobacco smoke, tobacco, trend, cohort study