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## Editorial

### Richard Doll's Contribution to Epidemiology

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OVER THE past half century Richard Doll has done more than any other epidemiologist to transform the general understanding of the avoidability of cancer. In 1950, major case-control studies by Doll and Hill [1] in Britain and by Wynder and Graham [2] in America showed that smoking was a cause of most lung cancer deaths, but Doll's own account of that period [3] concludes, probably correctly, that it was inevitable that this particular causal relationship would have become established around the middle of the century; indeed, as a few smaller studies had already pointed to the hazards of tobacco, he found it in retrospect slightly surprising that this did not happen a little earlier. What was not inevitable, however, was the way in which Doll and Hill consolidated and extended the finding. They dealt thoughtfully and reliably with the many objections raised to their conclusions about smoking and lung cancer and in doing so they ushered in the modern era of cancer epidemiology. They also initiated a wide range of different studies, often with novel epidemiological methods (and findings). They established the first relatively large cohort study, asking British doctors in 1951 what they smoked and then following them immediately to see what those doctors died of: the first decade or two [4–6] of this famous prospective study showed how many different diseases could be caused by tobacco and the 40-year follow-up [7] showed the absolute hazards of really prolonged smoking, demonstrating that about half of all persistent smokers would eventually be killed by their habit. Doll, often with Hill, established studies (with novel designs) of radiation and of various industrial hazards and first quantified the effects of asbestos, coal gasification and nickel refining. More generally,

in the late 1950s and 1960s, Doll, more than anybody else, helped demonstrate the avoidability of cancer: each type of cancer that is relatively common in one population is relatively uncommon in another, indicating that wherever that particular disease is common it need not be [8–10], and his Denoix Memorial Lecture in this issue of the *European Journal of Cancer* [11] (pp. 16–23) summarises that evidence.

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