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Peter Armitage

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Commentary on Lecture by Sir Austin Bradford Hill

Peter Armitage
Wallingford, Oxfordshire, U.K.

armitage55@btinternet.com

This lecture is quoted widely as the source for Bradford Hill's principles, or criteria, for favouring causality in epidemiological studies as distinct from mere association between environmental factor and disease. The criteria were also proposed in an edition of his textbook on medical statistics published later (Hill, 1977). A careful analysis of the arguments is provided by Rothman and Greenland (1998). The lecture was given a few years after Hill's retirement, and perhaps indicates a return to the themes that would have permeated his thoughts in the pre-war period, when he was actively involved in occupational epidemiology, before his important advocacy of randomized trials which occupied much of his time in the 1950s. The abundance in this paper of examples of contentious issues in occupational medicine suggests that these had never been far from his mind. Is it also, perhaps, an indication that he thought of himself primarily as an epidemiologist rather than a statistician?

It is interesting that statistical analysis does not occur as the central theme of any of the nine criteria, but there is an important final section on significance tests, which he regards as being irrelevant to the main issue. This may have been an offshoot of his desire to discuss the problem as one of common sense, avoiding technical detail. One wonders, though, whether significance tests can be wholly ignored. If all the other criteria are satisfied the results of a test may be sufficiently ambiguous as to affect the conclusions and perhaps lead the investigators to extend the study before publicizing the results.

Bradford Hill was a persuasive and perceptive advocate, and his writings are a joy to read. I frequently read in the press of large studies which demonstrate that people who have particular habits suffer more from some disease, without any explanation of the thorny distinction between association and causation. Let us hope that this reissue of Bradford Hill's classic lecture will achieve some of its author's intentions.

References

- Hill, A.B. (1977). *A Short Textbook of Medical Statistics*. London: Hodder and Stoughton.
Rothman, K.J and Greenland, S. (1998). Hill's Criteria for Causality. In *Encyclopedia of Biostatistics* (ed. P. Armitage and T. Colton), Vol.3. London: Wiley.