Correspondence

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Sir,

How 'scientific' is blood pressure measurement in leading medical journals?

The number of papers published in hypertension research is reflected in the proliferation of journals devoted solely to hypertension in recent years. Blood pressure measurement is often the keystone on which papers reporting clinical research depend. In the last decade, there has been growing interest in blood pressure measurement and a number of authorities have made recommendations on the topic [1–4]. It may not be unreasonable to assume that, if these recommendations are being effective, this will be evident from research papers which use the technique of blood pressure measurement. It is now just 10 years since we evaluated the standard of reporting of blood pressure measuring methodology in medical journals [5] and the purpose of the following survey is to reassess this important aspect of hypertension research.

Seven journals, published between January 1st and December 31st, 1988, were selected for the assessment. These included four general journals — *British Medical Journal, Lancet, New England Journal of Medicine* and *Journal of the American Medical Association*, and three specialist hypertension journals — *Journal of Hypertension, Hypertension* and *Clinical and Experimental Hypertension*. Articles were chosen for analysis if the key words 'blood pressure' and/or 'hypertension' occurred in the titles. Editorials, correspondence, commentaries, book reviews and device validation studies were not included. Nineteen aspects of methodology were assessed.

A total of 116 articles fulfilled the criteria for selection. The results are summarized in Table 1. Patient position during measurement and the number of measurements made were described in over two-thirds of papers, but all other details were reported in less than half the papers. Twelve of the 19 details listed were provided in less than 20% of papers.

There can be little doubt that the measurement of blood pressure, whether by conventional sphygmomanometry with expensive and elaborate automated devices, non-invasively with ambulatory devices, by patients in their homes or by direct intra-arterial techniques, is fraught with numerous potential errors. And yet, in clinical research, we have been making important decisions, both in relation to patient management and scientific research, with a disregard for the limitations of the techniques available. Why, one may ask, do editors of prestigious scientific medical journals demand (quite correctly) the exact methodology of a hormonal assay technique but disregard the detail of methodology of blood pressure measurement on which may depend, for example, the acceptance (or rejection) of an antihypertensive drug in clinical practice?

Table 1. Details of blood pressure measurements in 116 papers in 7 journals in one year (1988).

Technique	General (41)	Hypertension (75)	Total (116)	%
Validation of apparatus	0	4	4	3
Accuracy of apparatus	0	3	3	3
Diastolic — phase IV/V	19	33	52	45
Patient position	26	62	88	76
Number of measurements	23	58	81	70
Interval between measurements	16	38	54	47
Inflatable bladder dimensions	9	6	15	13
Arm circumference	3	4	7	6
Same arm — right or left?	11	14	25	22
Training of observers	7	14	21	18
Same observer or multiple observers	4	13	17	15
Time of day of measurement	3	18	21	18
Relationship to meals	2	14	16	14
Rest before measurement	15	39	54	47
Medications at time of measurement	9	41	50	43
Limb used — arm/leg	11	11	22	19
Subject details e.g. obesity/arrhythmias	3	9	12	10
Cuff deflation rate	0	1	1	0.8
Arm level/arm support	2	4	6	5

When we first reviewed the reporting of blood pressure measuring methodology in four medical journals a decade ago, we wrote that 'it might reasonably be assumed that the method on which research conclusions in scientific papers are based would be carefully examined by editors and referees of medical journals' [5]. Though the results of the present survey show that more detail is given than in the earlier review, it is a cause for concern that a third of papers did not provide what can only be regarded as essential details and less than five percent of papers commented on the accuracy of the apparatus being used. The diastolic end-point was provided in less than half and the bladder dimensions in relation to arm circumference in only 13% of papers. Most of the details looked for in this survey form the basis of published recommendations from bodies such as the British Hyperten-

sion Society [3] and their omission from scientific papers is inexcusable. The detail given by the specialist hypertension journals was considerably better than in the general journals and editors may wish to ask themselves if this is a reflection on their reviewers.

We can do no better than close as we did in our 1980 report: 'If the prevailing carefree attitude to blood pressure measurement is to be corrected to enable more accurate diagnosis and treatment of hypertension, the incentive and example for a general reappraisal of measurement teaching must come from those who profess a special interest and skill in the subject' [5].

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