- 3 Bogomoletz WV, Adnet JJ, Birembaut P, Feydy P, Dupont P. Collagenous colitis: an unrecognised entity. *Gut* 1980;21:164-8.
- 4 Pieterse A, Hecker R, Rowland R. Collagenous colitis: a distinctive and potentially reversible disorder. *J Clin Pathol* 1982;35:338-40.
- 5 van den Oord JJ, Geboes K, Desmet VJ. Collagenous colitis: an abnormal collagen table? Two new cases and review of the literature. *Am J Gastroenterol* 1982;77:377-81.
- 6 Bogomoletz WV. Collagenous colitis: a clinicopathological review. *Survey of Digestive Diseases* 1983;1:19-25.
- 7 Eaves ER, McIntyre RLE, Wallis PL, Korman MG. Collagenous colitis: a recently recognised reversible clinico-pathological entity. *Aust NZ J Med* 1983;13:630-1.
- 8 Debonnie JC, de Galocsy C, Cahollesur MO, Haot J. Collagenous colitis: a transient condition? *Dis Colon Rectum* 1984;27:672-6.
- 9 Flejou JF, Grimaud JA, Molas G, Baviera E, Potet F. Collagenous colitis. *Arch Pathol Lab Med* 1983;108:977-81.
- 10 Teglbjaerg PS, Thaysen EH, Jensen HH. Development of collagenous colitis in sequential biopsy specimens. *Gastroenterology* 1984;87:703-9.
- 11 Fausa O, Foerster A, Hovig T. Collagenous colitis. A clinical, histological and ultrastructural study. *Scand J Gastroenterol [Suppl]* 1985;20:8-23.
- 12 Kingham JGC, Levison DA, Morson BC, Dawson AM. Collagenous colitis. *Gut* 1986;27:570-7.
- 13 Palmer KR, Berry H, Wheeler PJ, et al. Collagenous colitis—a relapsing and remitting disease. *Gut* 1986;27:578-80.
- 14 Hwang WS, Kelly JK, Shaffer EA, Hershfield NB. Collagenous colitis: a disease of pericryptal fibroblast sheath? *J Pathol* 1986;149:33-40.
- 15 Giardiello FM, Bayless TM, Jessurun J, Hamilton SR. Collagenous colitis: physiologic and pathologic studies. *Gastroenterology* 1985;88:1392.
- 16 Guarda LA, Nelson RS, Stroehlein JR, Korinek JF, Raymond AK. Collagenous colitis. *Am J Clin Pathol* 1983;80:503-7.
- 17 Teglbjaerg PS, Thaysen EH. Collagenous colitis: an ultrastructural study of a case. *Gastroenterology* 1982;82:561-3.
- 18 Loo FD, Wood CM, Soergel KH, Komorowski RA, Cheung H, Gay S, Gay RE. Abnormal collagen deposition and ion transport in collagenous colitis. *Gastroenterology* 1985;88:1481.
- 19 Pascal RR, Kaye GI, Lane N. Colonic pericryptal fibroblast sheath: replication, migration, and cytodifferentiation of a mesenchymal cell system in adult tissue. I. Autoradiographic studies of normal rabbit colon. *Gastroenterology* 1968;54:835-51.
- 20 Kaye GI, Lane N, Pascal RR. Colonic pericryptal fibroblast sheath: replication, migration, and cytodifferentiation of a mesenchymal cell system in adult tissue. II. Fine structural aspects of normal rabbit and human colon. *Gastroenterology* 1968;54:852-65.
- 21 Gledhill A, Cole FM. Significance of basement membrane thickening in the human colon. *Gut* 1984;25:1085-8.
- 22 Gardiner GW, Goldberg R, Currie D, Murray D. Colonic carcinoma associated with an abnormal collagen table. *Cancer* 1984;54:2973-7.
- 23 Weidner N, Smith J, Pattee B. Sulfasalazine in treatment of collagenous colitis. *Am J Med* 1984;77:162-6.
- 24 Foerster A, Fausa O. Collagenous colitis. *Pathol Res Pract* 1985;180:99-104.
- 25 Erlendsson J, Fenger C, Meinicke J. Arthritis and collagenous colitis. *Scand J Rheumatol* 1983;12:93-5.
- 26 Farah DA, Mills PR, Lee FD, McLay A, Russell RI. Collagenous colitis: possible response to sulfasalazine and local steroid therapy. *Gastroenterology* 1985;88:792-7.
- 27 Weinstein WM, Saunders DR, Tytgat GN, Rubin CE. Collagenous sprue—an unrecognized type of malabsorption. *N Engl J Med* 1970;283:1297-301.
- 28 Guller R, Anabitar M. Die Kollagenkolitis. *Schweiz Med Wochenschr* 1981;111:1076-9.
- 29 Mogensen AM, Olsen JH, Gudmand-Hoyer E. Collagenous colitis. *Acta Med Scand* 1984;216:535-40.
- 30 Rask-Madsen J, Grove O, Hansen MGJ, Bukhave K, Scient C, Henrik-Nielsen R. Colonic transport of water and electrolytes in a patient with secretory diarrhoea due to collagenous colitis. *Dig Dis Sci* 1983;28:1141-6.

Doctors' ignorance of statistics

Many of us faced with someone who quotes statistics find it difficult to distinguish whether any consequent conclusion is correct or whether we have been bamboozled. If we do not understand the basics of statistics then we cannot question the statements and claims that are built on them. But the nature of medical science is to use an understanding of probability to interpret limited studies and thus move closer towards assertions of what might be "true" or "right." Yet, recent evidence suggests,² many doctors know little about statistics.

Wulff and colleagues sent a questionnaire to 250 Danish doctors (of whom 148 replied) to assess their knowledge of elementary statistical expressions (standard deviation, standard error, $p < 0.05$, $p > 0.05$, and the correlation coefficient r).¹ Although the study was itself imperfect (it had some ambiguous multiple choice questions and did not verify the answers against what statisticians might answer), it produced thought provoking evidence of ignorance. From nine multiple choice questions respondents produced a median correct response of 1.4. The authors concluded: "The statistical knowledge of most doctors is so limited that they cannot be expected to draw the right conclusions from those statistical analyses which are found in medical

journals." Note, however, even in this article critical of others' knowledge, the extrapolation from 148 replies to a statement about "most doctors"—an example of studying a sample and then drawing global conclusions.

Nevertheless, the Danish doctors who replied clearly knew little (and the 102 who did not reply may have known less). Are doctors in other countries more knowledgeable? The evidence suggests not. Other studies have reported defects in statistical skills^{2,3} and shown that they become worse with increasing time from graduation.² In one study the respondents showed a perceived need for other doctors to have a biostatistical training together with a lack of enthusiasm for their own education in the subject⁴—a dichotomy that has been noted before.⁵ But innumerate doctors cannot interpret scientific biological data.⁶ They are doomed to have to accept without reservation the statements made in summaries, discussions, or conclusions, and their clinical practice may thus be altered on the basis of flimsy or inconclusive evidence.

In Britain the General Medical Council has since 1967 recommended that the medical curriculum should include teaching in statistics,⁷ and each medical student is now exposed to between 11 and 48 teaching hours (median 24) and most are examined in this knowledge. This teaching is reviewed at a workshop of statisticians held annually at the University of Bristol.⁸ But the problem remains that if interpreting statistics is not a regular activity the knowledge will evaporate. All doctors will have known the first and second laws of thermodynamics at some stage, but few could now recite or use them. Statistics cannot be understood in a vacuum: knowing that a correlation coefficient can vary between 0 and +1 (or 0 and -1) is of little value unless one understands its dependence on the number of observations. Similarly values become highly significant when the number of observations is large even when the correlation coefficient is very small.

There are a variety of approaches to the problem, which are not mutually exclusive. Medical students must continue to be taught the basic technicalities of statistics, and some comprehension of p values, r values, and confidence intervals should be instilled into all. But the teaching also needs to encompass a sense of what data mean. The need is to teach how to obtain information from data and knowledge from information. Journals need to ensure that results are explained in terms that the statistically amblyopic can still comprehend. Confidence intervals should be more widely used,^{9,10} and diagrams should be encouraged, especially where correlations are concerned. Expansive statements claiming "fact" from probability should be discouraged, and, despite the policy of some editors, all medical journals should allow space in their letter columns for disagreements and informed counter opinions.

DAVID R MATTHEWS

Joan and Richard Doll senior research fellow

Green College,
Oxford, and
Honorary Consultant Physician,
Diabetes Research Laboratories,
Radcliffe Infirmary,
Oxford OX2 6HE

KLIM MCPHERSON

University lecturer in medical statistics

Department of Community Medicine and
General Practice,
Radcliffe Infirmary,
Oxford OX2 6HE

- 1 Wulff HR, Anderson B, Brandenhoff P, Guttler F. What do doctors know about statistics? *Stat Med* 1987;6:3-10.
- 2 Berwick DM, Fineberg HV, Weinstein MC. When doctors meet numbers. *Am J Med* 1981;71:991-8.
- 3 Cassells W, Schoenberger A, Grayboys TB. Interpretation by physicians of clinical laboratory skills. *N Engl J Med* 1978;299:999-1001.
- 4 Krall JM, Hall DS, Garland BK, Pearson RJ. Physicians' view of the teaching and utility of courses in epidemiology and biostatistics. *J Med Educ* 1983;58:815-7.
- 5 *Holy Bible*. Gospel according to St Matthew vii, 1-5.
- 6 Colditz GA, Emerson JD. The statistical content of published medical research: some implications for biomedical education. *Med Educ* 1985;19:248-55.
- 7 General Medical Council. *Recommendations as to basic medical education*. London: General Medical Council, 1967.
- 8 Clayden AD, ed. *The teaching of medical statistics at undergraduate and post-graduate levels*. Leeds: University of Leeds. (Available from Department of Community Medicine.)
- 9 Langman MJS. Towards estimation and confidence intervals. *Br Med J* 1986;292:716.
- 10 Gardner MJ, Altman DG. Confidence intervals rather than p values: estimation rather than hypothesis testing. *Br Med J* 1986;292:746-50.

Hypochondriasis: an acceptable diagnosis?

Can a persistent belief in a non-existent illness be an illness itself? Hypochondriacal fears and feelings are well recognised features of depression,¹ but doctors disagree over the existence of a neurotic syndrome of fear of and preoccupation with disease unaccompanied by a more fundamental psychiatric disorder. Early writers were sceptical,² and (despite an absence of statistical analysis and in apparent defiance of its own data) one influential study concluded that an underlying depression would surface sooner or later.³

Supporters of the proposal that hypochondriasis is a distinct entity have claimed that the primary condition occurs with only mild disturbance of affect⁴ and is characterised by a prominence of those symptoms—pains, especially in the musculoskeletal system—that are typically hypochondriacal.³ From closer examination has emerged a precise descriptive triad of the patient being convinced that he has a disease, fearing the disease, and being preoccupied with his body; this triad arises without underlying affective illness and responds at most temporarily to reassurance.^{5,6}

The debate has, however, been muddled by its emphasis on psychiatric patients, an inevitably biased sample—most of those labelled as hypochondriacs are seen by non-psychiatrists. But a recent study of medical outpatients has confirmed that the components of the triad correlate not only with each other but also with the number of somatic symptoms, though not the number of established medical diagnoses.⁷ Depression, though often present, is not invariable. Any comment that hypochondriacal beliefs probably lie on a continuum with depression at one end does not diminish the usefulness of the diagnostic category, as, for example, with obsessions. So to view hypochondriacal symptoms as masks of depression is both to undermine the meaning of depression itself and to ignore the mounting evidence.

Despite the lack of supporting information psychiatrists often assume that reassurance is ineffective and that even to consider hypochondriacal complaints encourages further complaining. Thus a belief that such patients should be directed "out of the office as quickly as possible because the time they take up is spent to no good purpose" enjoys unjustifiable popularity.⁸ This negative view probably originates in the absence of physical illness to explain physical symptoms and in the frustration evoked by equally frustrated, possibly antagonistic, patients. It may also reflect a departure from the sick role, which expects the patient to cooperate with his doctor—that is, to accept his word.⁹

But to be effective reassurance must be credible, educative and specific, and directed at both expressed and concealed fears.¹⁰ Hypochondriacal patients may misinterpret normal sensations¹¹ or feel them more sharply.¹² Childhood experiences¹³ and social reward¹⁴ may encourage somatic complaints under stress. The scarce research into treatment suggests that such explanation of psychosomatic symptoms coupled with careful examination and reassurance leads to lasting improvements.¹⁵ Moreover, detailed reassurance becomes increasingly effective over time and can reduce the worries aroused by fresh symptoms. When followed by family counselling on reinforcement¹⁶ it may be the treatment such patients desperately seek. The sufferer from hypochondriacal neurosis sees perfunctory or ill directed reassurance as dismissal, as failure to take him seriously. He does not want to be told there is nothing wrong; he needs to understand his symptoms as a first step to overcoming them.

LOUIS APPLEBY

Clinical Lecturer,
Institute of Psychiatry,
London SE5 8AF

- 1 Kreitman N, Sainsbury P, Pearce K, Costain WR. Hypochondriasis and depression in outpatients at a general hospital. *Br J Psychiatry* 1965;111:607-15.
- 2 Bleuler EP. *Textbook of psychiatry*. Brill AA, trans. New York: Dover Publications, 1924.
- 3 Kenyon FE. Hypochondriasis: a clinical study. *Br J Psychiatry* 1964;110:478-88.
- 4 Pilowsky I. Primary and secondary hypochondriasis. *Acta Psychiatr Scand* 1970;46:273-85.
- 5 Pilowsky I. Dimensions of hypochondriasis. *Br J Psychiatry* 1967;113:89-93.
- 6 American Psychiatric Association Committee on Nomenclature and Statistics. *Diagnostic and statistical manual of mental disorders*. 3rd ed. Washington, DC: American Psychiatric Association, 1980.
- 7 Barsky AJ, Wyshak G, Klerman GL. Hypochondriasis: an evaluation of the DSM III criteria in medical outpatients. *Arch Gen Psychiatry* 1986;43:493-500.
- 8 Alvarez WC. A gastro-intestinal hypochondriac and some lessons he taught. *Gastroenterology* 1944;2:265-9.
- 9 Parsons T. Illness and the role of the physician: a sociological perspective. *American Journal of Orthopsychiatry* 1951;21:452-60.
- 10 Kessel N. Reassurance. *Lancet* 1979;i:1128-33.
- 11 Mechanic D. Social psychologic factors affecting the presentation of bodily complaints. *N Engl J Med* 1972;286:1132-9.
- 12 Pennebaker JW, Skelton JA. Psychological parameters of physical symptoms. *Personality and Social Psychology Bulletin* 1978;4:524-30.
- 13 Parker G, Lipscombe P. The relevance of early parental experiences to adult dependency, hypochondriasis and utilization of primary physicians. *Br J Med Psych* 1980;53:355-63.
- 14 Wooley S, Epps B, Blackwell B. Pain tolerance in chronic illness behaviour. *Psychosom Med* 1975;37:98.
- 15 Kellner R. Psychotherapeutic strategies in hypochondriasis: a clinical study. *Am J Psychother* 1982;36:146-57.
- 16 Barsky AJ, Klerman GL. Overview: hypochondriasis, bodily complaints and somatic styles. *Am J Psychiatry* 1983;140:273-83.

Inequalities and the new Health Education Authority

When our reporter arrived at the Health Education Council last week to attend a press conference on a new report,¹ she found the press conference coming out to meet her. The report was an update of the Black report on inequalities in health,² and Sir Brian Bailey, chairman of the now defunct Health Education Council and new chairman of its successor, the Health Education Authority, had ordered the press conference to be cancelled. He was apparently annoyed that the council had not had a chance to approve a report that he said was "political dynamite in an election year." Sir Douglas Black, Margaret Whitehead (author of the report), and other distinguished guests were not upset at being thrown out: they knew that any attempt at suppression would guarantee front page coverage—and so it turned out. But this episode raises important issues—in particular what is the future of the new authority and its chairman?