

Chaos and complexity <i>T Marshall</i>	234	<i>H Faulding-Bird</i>	236
Authors' response <i>F Griffiths and D Byrne</i>	234	Methadone treatment practices <i>G Ridding Morse</i>	236
Patients' lists <i>J Middleton and B McKinley</i>	235	If I won the lottery... <i>A Huang</i>	237
Stigmatization of sufferers with mental disorders <i>E Armstrong</i>	236	Volume of antibiotic: use in England <i>DP Clappison</i>	237

Note to authors of letters: Letters submitted for publication should not exceed 400 words. All letters are subject to editing and may be shortened. Letters may be sent either by post (please use *double spacing* and, if possible, include a Word for Windows or plain text version on an IBM PC-formatted disk), or by e-mail (addressed to journal@rcgp.org.uk; please include your postal address). All letters are acknowledged on receipt, but we regret that we cannot notify authors regarding publication.

Chaos and complexity

Sir,

In 1996, *Social Text*, the American cultural studies journal, unwittingly published a hoax article by a professor of physics.¹ The article parodied the misuse (by post-modernist writers) of terminology borrowed from mathematics and physics. It was peppered with deliberate inaccuracies, non-sequiturs, and meaningless sentences, but these passed unnoticed by the journal's editors. A subsequent book expands on the theme and devotes a chapter to debunking claims that chaos theory has in some way altered the nature of science or has a special relevance in the social sciences.² Has a similar hoax been perpetrated on the *British Journal of General Practice*?³

The authors begin by appearing to make a number of elementary mistakes in describing the theories of chaos and complexity. First they conflate chaos and complexity. Sokal and Bricmont specifically refer to this confusion: 'to make things worse, chaos theory, which is well developed mathematically, is often confused with the still-emerging theories of complexity and self-organization'.²

The authors then inaccurately describe the common theme of chaos theory and complexity as 'how systems that are internally complex, undergo changes over time'. (Chaos in mathematics refers to the sensitivity of a system to its initial conditions and can equally apply to simple systems, such as two joined pendulums, as to complicated ones, such as the weather.) The article then pretends to link this theme to a number of rather unsurprising observations. These are essentially that, illness in individuals is unpredictable; that there are more physiological, psychosocial, and therapeutic variables that we can ever hope to measure; and that 'being cared for can affect the outcome of a biomedical intervention'. You don't say! There is no obvious relationship between this and chaos theory. Again, Sokal and Bricmont specifically point out this kind of mistaken analogy: 'human societies are complicated systems involving a vast number of variables, for which one is

unable (at least at present) to write down any sensible equations. To speak of chaos for these systems, does not take us much further than the intuition already contained in popular wisdom.'²

Chaotic systems are often understood using statistical (rather than deterministic) modelling, such as statistical physics of clinical epidemiology. But the authors take liberties here too. Theories of causation rely on the timing of supposed causes and effects, plausibility, consistency, and so on, not simply on statistical association. It follows that no statistical analysis alone 'can tell us which variables ... are important in bringing about the observed changes'. And why privilege the loglinear associations so beloved of econometrics? Bizarrely, this part of the article is referenced to a guide for users of SPSS software.

The authors argue for sophisticated mathematical modelling based on longitudinal data of individual biological and social variables. But the paper also suggests that data from general practice records, public health datasets, and social surveys might be used together. This contradicts the earlier suggestion. As there is no linkage between these datasets, individual level data would be lost. It also hardly qualifies as 'new science' as small-area analysis is commonplace in epidemiology. And, am I alone in doubting the practicality of such an approach? Sophisticated models are only ever as good as the data on which they are based. How many GPs will accurately record data on 'variables that we do not realize are important' on the off-chance that it might be useful in the future?

As a final twist, the paper ends with a plea for better recording of data in general practice records. What exactly has this got to do with the sensitivity of a mathematical system to its initial conditions?

TOM MARSHALL

Department of Public Health
and Epidemiology
The University of Birmingham
Edgbaston
Birmingham B15 2TT

References

1. Sokal AD. Transgressing the boundaries: towards a transformative hermeneutics of quantum gravity. *Social Text* 1996; **46/47**: 217-252.
2. Sokal A, Bricmont J. *Intellectual impostures: postmodern philosopher's abuse of science*. London: Profile Books Ltd, 1998.
3. Griffiths F, Byrne D. general practice and the new science emerging from the theories of 'chaos' and complexity. *Br J Gen Pract* 1998; **48**: 1697-1699.

Authors' response

Sir,

We are pleased that our discussion paper has been successful in stimulating debate (*October Journal*).¹

Marshall's letter raises some interesting points, primarily because it displays the privileging of deductive mathematical reasoning as opposed to careful attention to the use of quantitative procedures in an exploratory way. This is a characteristic of the reductionist science that general practice finds difficult to apply in clinical practice. Sokal² was quite correct to criticize the absolute relativism of postmodernism, which attacks all efforts at the establishment of any valid knowledge. However, his conception of the relationship between mathematical models and the real world remains one in which mathematics is given the status of some platonic ideal of what the world should be like, rather than that of important analogy that can help, among other approaches, in understanding what it is like.

The original descriptive work of epidemiology was, to a considerable extent, the foundation of the exploratory use of measurement in understanding a complex world. It is therefore rather regrettable that epidemiology may be defending an idea, arising from the discipline of physics, that it is apparently possible to make clear, formal representations of the biosocial world without regard to the complex and multi-level character of that world.

The relationship between chaos and complexity is a tricky issue when it is conceived in relation to the problem of under-

standing how reality actually works, rather than when it is presented in relation to the development of deductive mathematical models of that reality. Those interested in this important issue should see Paul Cillier's very useful recent book,³ which deals with it very well. Cillier distinguishes among the absolute relativism of post-modernist accounts correctly criticized by Sokal; universalist claims in which mathematical representations are confounded with the world, and local descriptions that may be presented in mathematical terms but do not involve claims for universal applicability. The last is the domain of the complex.

When making clinical decisions, general practitioners use data from many levels, including the individual, their family, and the social setting. Our article points towards ways in which data from many levels may be understood, that may offer us some purchase on the complex and inter-linked systemic connections between individual lives and the social collectives within which those lives are led. There may not be in-built linkage between datasets from general practice, public health and social surveys, however, the links can be made. For example, a GP knows that the level of unemployment in their town affects an individual patient, even if the particular individual is not unemployed. The level of unemployment for each individual in the town in addition to the individual's own employment status. The hierarchical nature of datasets, which incorporate these levels, reflects the actual organization of the social world. The failure to grasp this fundamental point renders a good deal of, otherwise interesting, quantitative work as substantively useless.

Feedback from individual GPs indicates that the ideas discussed in our article may be a useful way of articulating the world. The analogies make sense to those engaged in clinical work. There is more work to be done on the implications of these ideas for our research and the development of our health services and clinical practice.

As Marshall points out, the mathematical understanding of 'chaos' is well developed. From these ideas and from other sources there have emerged ideas about complexity that are still being developed. General practice has an engagement with the complexity of our world that can inform the development of these ideas and keep them in touch with reality.

FRANCES GRIFFITHS

Primary Care Unit
University of Warwick
Coventry
CV4 7AL

DAVID BYRNE

Department of Sociology and Social
Policy
University of Durham
Durham
DH1 3JI

References

1. Griffiths F, Byrne D. general practice and the new science emerging from the theories of 'chaos' and complexity. *Br J Gen Pract* 1998; **48**: 1697-1699.
2. Sokal A, Bricmont J. *Intellectual impostures: postmodern philosophers' abuse of science*. London: Profile, 1998.
3. Cillier P. *Complexity and postmodernism: understanding complex systems*. London: Routledge, 1998.

Patients' lists

Sir,

We wish to report a study on written lists brought by patients into general practice consultations. These are often associated with negative perceptions by doctors — that the patients tend to be middle aged, middle class, and have psychological or psychiatric problems^{1,2} — though the lists may also be an aid to communication.³ The image of a patient with a long list and the potential to disrupt entire consultation sessions, is familiar in the medical press in articles⁴⁻⁶ and cartoons (e.g. 'A doc's life' - *Doctor*). These perceptions might be a barrier to the identification of patients' agendas; a task that is frequently not achieved in dysfunctional consultations.^{7,8}

The aims of this study were to investigate how far the negative perceptions of patients and their lists are justified, and whether the phenomenon of the list is as frequent as implied in the medical press.

Lists, and the casenotes of patients who brought them, were collected in one group practice over 12 months. Doctors received daily written and weekly verbal reminders to collect the lists. The casenotes were compared with those of controls who attended a similar appointment in the previous week.

Lists occurred in 0.1% of consultations and were brought by 0.4% of patients, who had more physical labels in their casenotes than controls (median = 8; range = 0-17; cf = 5 and 0-13; $P = 0.015$) with a trend towards more psychological labels (median = 2; range = 0-8; cf = 0 and 0-4; $P = 0.013$). There were no differ-

ences in age, sex, civil state, social class, or consulting rate.

The lists were about postcard size (137 cm²), with a tendency to be organized into requests, questions, reporting information, and offering opinions. The mean number of items on the list was 4.8, of which most were symptoms.

The findings do not support the opinions of doctors and the popular medical press, except for the comparatively large number of items on the lists (which might have been reduced by combining clusters of symptoms). The infrequency of lists in consultations was surprising but was similar to the incidence in a large multi-practice study (unpublished data). The finding of increased physical labels in their notes suggests that list-bringers may have more to remember and, consequently, more need to write a list.

Lists appear to be much less common than is implied in the popular medical press, but patients who bring them may make a disproportionate impact on their doctors.

JOHN MIDDLETON

BOB MCKINLEY

Department of General Practice
University of Leicester
Leicester General Hospital
Gwendolen Road
Leicester LE5 4PW

References

1. Burnum JF. La maladie du petit papier - is writing a list of symptoms a sign of an emotional disorder? *New Engl J Med* 1985; **313**: 690-691.
2. Middleton J. Written lists in the consultation: attitudes of general practitioners to lists and the patients who bring them. *Br J Gen Pract* 1994; **44**: 309-310.
3. Middleton JF. Asking the patient to bring a list: feasibility study. *BMJ* 1995; **311**: 34.
4. Godfrey M. Beware of freaks bearing lists. *General Practitioner*; May 22, 1992.
5. Duckworth J. Twenty ways to drive your doctor insane. *Pulse*; Oct 22, 1994: 43.
6. Copperfield T. A chilling tale of 20-minute chats. *Doctor*; Aug 10, 1996: 27.
7. Byrne PS, Long BEL. *Doctors talking to patients*. London: HMSO, 1976.
8. Tuckett D, Boulton M, Olson C, Williams A. *Meetings between experts: an approach to sharing ideas in medical consultations*. London: Tavistock, 1985

Stigmatization of sufferers with mental disorders

Sir,

I was pleased to read the excellent editorial, 'The stigmatization of sufferers with mental disorders' by Professor Crisp

(January *Journal*).¹

It is pertinent to remember that doctors suffer from mental health problems and that, too often, there is prejudice against these individuals from within the medical profession.

The Doctors' Support Network (DSN) provides support for doctors with mental health problems. It may be contacted on 01707 223372. All calls are taken by doctors who themselves have recovered from such problems. In addition, the DSN is committed to putting 'our own house in order'. If we can remove the stigma of mental illness from within medicine itself, then the rest of society might be encouraged to follow.

ELIZABETH ARMSTRONG

46 Harwood Road
Fulham
London SW6 4PY

Reference

1. Crisp AH. The stigmatization of sufferers with mental disorders. *Br J Gen Pract* 1999; **49**: 3.

Sir,

The editorial on stigmatization of mental disorders and on the Changing Minds Campaign (January *Journal*)¹ was very encouraging, and the Royal College of Psychiatrists appear to be addressing the issue of stigma in a practical and accessible manner.

Numerous studies have shown higher than average levels of anxiety, depression, and alcohol-related illnesses among the medical profession, which covers three of the six categories that the Changing Minds Campaign will address.^{2,3} Research has also consistently shown that doctors tend to ignore or self-treat these problems and will avoid seeking appropriate help for themselves.⁴

Doctors learn stoicism at an early stage in their career,^{6,8} and with this comes a tendency to 'work through' illness, particularly mental ill-health where the shame of discussing these issues with another doctor seems too difficult for some. Doctors tend to the belief that they have no right to be ill, and that illness, especially mental illness, 'does not belong to us'.⁵ Sickness absence within the medical profession is perceived as 'letting the side down' or 'not coping', and is a source of shame to many ill physicians.⁸

A recent study investigated how doctors had responded to a recent illness.⁵ It found that, with regards to mental illness, doc-

tors initially lacked the insight to recognize the nature of the problem. Once diagnosed, they felt embarrassment, shame, or horror that they had been labelled as mentally ill. In addition, a documented mental disorder carries implications both for insurance and for future employment, and this may deter doctors from seeking the appropriate help.⁸

How then, can we as doctors help in the battle against stigmatization of mental disorder when we ourselves as sufferers hold onto these very prejudices and use them against ourselves and our colleagues? I agree with Professor Crisp's statement that to combat stigmatization we need to 'get our own house in order',¹ and would suggest that this involves taking a careful look at our own attitudes to ourselves and our colleagues within the sphere of mental illness. If we continue to short-change ourselves, how can we properly evaluate the effectiveness of interventions for our patients?

HELEN FAULDING-BIRD

Department of General Practice
20 West Richmond Street
Edinburgh EH8 9DX

References

1. Crisp AH. The stigmatization of sufferers with mental disorders. *Br J Gen Pract* 1999; **49**: 3.
2. Chambers R, Campbell I. Anxiety and depression in general practitioners: associations with type of practice, fundholding, gender and other personal characteristics. *Fam Pract* 1996; **13**: 170-173.
3. Brooke D, Edwards G, Taylor C. Addiction as an occupational hazard: 144 doctors with drug and alcohol problems. *Br J Addict* 1991; **86**: 1011-1016.
4. Chambers R, Belcher J. Self-reported health care over the past 10 years: a survey of general practitioners. *Br J Gen Pract* 1992; **42**: 153-156.
5. McKeivitt C, Morgan M. Illness doesn't belong to us. *J R Soc Med* 1997; **90**: 491-495.
6. Baldwin PJ, Dodd M, Wrate RM. Young doctors' health - II. Health and health behaviour. *Soc Sci Med* 1997; **45**: 41-44.
7. McKeivitt C, Morgan M, Dundas R, Holland WW. Sickness absence and 'working through illness': a comparison of two professional groups. *J Pub Health Med* 1997; **19**: 295-300.
8. Richards C. *The health of doctors*. London: Kings Fund, 1989.

Methadone treatment practices

Sir,

I was delighted to see the *Journal* give space to Michael Gossop *et al*'s paper (January *Journal*),¹ which was derived from some of the early outcomes of the

NTORS study.² With an estimated 300 000 opiate addicts in the country — with their attendant enormous costs on health care, welfare provision, and the criminal justice system, let alone the cost in human misery — it is high time that the subject was given more prominence. Research that shows that treatment is effective and cost effective is both timely and compelling. However, it is also important that the subject is studied well and understood, as I fear that, in some corners, methadone, for all its doubted value, is seen as the 'answer', to the exclusion of other treatments. Substance misuse is far more complex and deserves far greater understanding. It arises from social and psychological distress and breeds further social and psychological, as well as physical, disease; indeed, substance misuse can be seen as the thermometer of a society's well-being. Treatment of the individual needs to take all these factors into consideration. Methadone merely contains and helps to diminish physical harm: a valuable though narrow part of the problem.

Well-designed treatment, preferably in a residential setting, which addresses the patient's psychological distress, has been shown by NTORS to be the most effective single treatment modality, despite being confined to those 'with the most complex needs'. Residential treatment, methadone maintenance, community treatment, and others all have their place and we all need more and better research, like NTORS, to evaluate them.³

The important message is this: treatment *is* effective, this is a 'condition' that is worth treating and highly rewarding to do so. Interested practitioners would do well to subscribe to the (free) Substance Misuse Management in General Practice newsletter (available from Brent and Harrow Health Authority, Grace House, Harrobian Business Village, Bessborough Road, Harrow HA1 3EX), and to attend the annual Royal College of General Practitioners' conference.

GORDON RIDDING MORSE

Becher's Brook
High Street
Fovant
Salisbury
Wiltshire SP3 5JL

References

1. Gossop M, Marsden J, Stewart D, *et al*. Methadone treatment practices and outcome among opiate addicts treated in drug clinics and in general practice: results from the National Treatment Outcome Research Study. *Br J Gen Pract* 1999; **49**: 31-34.

- National Treatment Outcome Research Study. *Bulletin*. London: HMSO, 1999.
- Educational material and outcome analysis. Clouds House, East Knoyle, Salisbury Wiltshire.

If I won the lottery...

Sir,

It is reported that many doctors are disillusioned¹ and plan to leave the profession.² In response to this, we set up study to determine what doctors would do if they won the lottery jackpot.

Postal questionnaires were sent to hospital doctors and general practitioners in the South Buckinghamshire Health Authority. They were asked to complete the statement, 'If I were to win the lottery jackpot tomorrow, I would...', with the options of continuing to work as before, working part-time, giving up work completely, changing occupation, or other.

Three hundred and thirty-six questionnaires were sent in total. The overall response rate was 75%, but 10 responders were excluded owing to incomplete answers. The study was completed on 242 doctors (120 GPs, 57 hospital trainees, and 65 hospital seniors; Table 1).

At a time when doctors are being cautioned for asking for too high a salary,³ winning the lottery jackpot would remove the financial incentive for a doctor to stay in the profession. However, money is not the only reason why doctors are in the profession; other factors include benevolence, job satisfaction, personal challenge, intellectual interest, and status.

One survey of nearly 2000 doctors showed that one-fifth regretted becoming a doctor and one-third would leave the medical profession if possible.⁴ The present study has shown that, upon winning the lottery jackpot, 60–79% of doctors would remain in the profession. However, about one-half would then work in a part-time capacity, suggesting that many doctors do enjoy their work but would also like more time to devote to other activities.

Hospital trainees were more likely to continue as before compared with seniors and GPs (35.1% versus 10.8% and 10% respectively). They were also less likely to

give up working altogether compared with the other two groups (15.8% versus 21.3% and 30% respectively).

Young doctors are leaving the profession,⁵ but the extent has been exaggerated and most are leaving on a temporary basis only.⁶ It has been suggested that 'factors binding a young doctor ... include investment of time in training, relatively good rates of pay, and job security'.⁷ However, if the financial rewards were to be removed, it is evident that there must be other reasons for hospital trainees to stay in medicine. These must be important enough to be able to overcome the high levels of stress and disillusionment expressed by doctors.¹

ANDY HUANG

Milton Keynes Hospital
Standing Way
Eaglestone
Milton Keynes MK6 5LD

References

- Richards T. Disillusioned doctors. *BMJ* 1997; **314**: 1705-1706.
- Hale R, Hudson L. The Tavistock study of young doctors: report of the pilot phase. *Br J Hosp Med* 1992; **47**(6): 452-464.
- Baker R. Doctors should beware of asking for too high a salary. *BMJ* 1997; **315**: 954.
- Day M. Disgruntled doctors talk of heartache and regrets. *Hosp Doctor* 1993; **13**(25): 16.
- Beedham T. Why do young doctors leave medicine? *Br J Hosp Med* 1996; **55**: 699-701.
- Richards P, McManus C, Allen I. British doctors are not disappearing. *BMJ* 1997; **314**: 1567-1568.
- Paice E. Why do young doctors leave the profession? *J R Soc Med* 1997; **90**(8): 417-418.

Volume of antibiotic use in England

Sir,

In the December *Journal*, both the editorial by Tom Fahey, 'Antibiotics for respiratory tract symptoms in general practice', and the discussion paper by Butler *et al* on 'Reducing antibiotics for respiratory tract symptoms in primary care: consolidating why and considering how', made reference to the paper by Davey *et al* in the

BMJ 1996 to support statements on the continuing growth in antibiotic usage. Davey *et al* reported on the use of antibiotics in the community in England and Scotland in 1980–1993, and these data are no longer current.

Having peaked in 1995, the number of National Health Service prescriptions for antibiotics that were dispensed in the community has, since then, fallen below that in 1993: in 1995, the number of antibacterial drugs prescribed totalled 49 369, and in 1997 the total had fallen to 46 442 (data from the Department of Health, 9/12/1998).

However, while this is encouraging, if we are to contain the increasing resistance to antibiotics and retain their value to patients, this modest change should in no way minimize the importance of encouraging significant reductions in the use of antibiotics when they are unlikely to offer any gains to the patient.

D P CLAPPISON

NHS Executive Headquarters
Department of Health
Quarry House
Quarry Hill
Leeds LS2 7UE

Table 1. Responses from doctors as to what they would do work-wise if they were to win the lottery [n (%)].

	Continue as before	Continue part-time	Give up working	Find another job	Other
GPs	12 (10)	61 (50.8)	36 (30)	10 (8.3)	1 (0.9)
Hospital trainees	20 (35.1)	25 (43.9)	9 (15.8)	2 (3.5)	1 (1.7)
Hospital seniors	7 (10.8)	32 (49.2)	14 (21.5)	9 (13.8)	3 (4.6)