Chapter 11

Clinician bias in diagnosis and treatment

D. B. Double

Introduction

The history of medicine has been said to be largely the history of the placebo effect (Houston, 1938). Doctors' beliefs and hopes about treatment, combined with patients' suggestibility, may have an apparent therapeutic effect. Countless ailments throughout history have seemingly been relieved by medicines and other medical interventions because sufferers and their doctors have believed in them.

There can be disastrous consequences from patients investing their faith in the omnipotence of doctors. As an example, I want to look at the notorious case of the Kaadt diabetic clinic, founded on the 'wonderful new treatment' for diabetes initially marketed by Dr Charles Kaadt. This promise of a new cure was made available soon after Frederick G. Banting was awarded the Nobel prize, in 1923, for the discovery of insulin. Kaadt's formula was essentially saltpetre – potassium nitrate – dissolved in vinegar. Nonetheless, he told his patients that an old European woman disclosed the secret of the formula to him.

James Harvey Young (1992) tells the story of the two Kaadt brothers, Charles and Peter, in a chapter of his book *The Medical Messiahs*. Both doctors made considerable sums of money because of their diabetic treatment, but lost their licences to practice. Young's book demonstrates that quackery in America persisted despite the passing of the first Food and Drugs Act in 1906. He gives some indication of why quack remedies for diabetes may have had such appeal.

> [D]iabetes, before insulin, could be treated only with a regimen of hygiene and severely circumscribed diet, both as to quantity and kinds of food. Although semi-starving lengthened the life expectancy, patients often rebelled against its limitations and yielded to the quack's promise of an easier way.
>
> (Young, 1992, p. 218)

Even after insulin therapy was introduced, as Young notes,

> [t]he only method of introducing insulin into the body was by hypodermic injection – in the early years by several injections a day. Quacks, in playing on fear of the needle, struck a responsive chord.
>
> (Young, 1992, p. 219)

There were many satisfied users of the Kaadt therapy. Even at the 1948 trial of the Kaadt brothers and their clinic superintendent, defence witnesses told of remarkable recoveries. Despite this evidence, the Kaadt brothers were convicted of violating the 1938 Food and Drugs law by giving false and misleading information about the efficacy of their treatment.

The Kaadt brothers did not subscribe to the orthodox explanation of diabetes as pancreatic insufficiency of insulin. Instead, they believed that their treatment corrected a digestive problem. The standard treatment for insulin was therefore wrong and they advised patients to give up their insulin treatment. This abandonment of proper treatment was clearly the most dangerous feature of their advice.

The Kaadt brothers were obviously not merely misunderstood scientists, as their defence attorney suggested in his summing up of the trial. Such is the self-protective power of denial that it is likely at the trial that Peter Kaadt still believed that diabetes was due to poor digestion. He left the witness stand after cross-examination 'apparently near breakdown'. Charles Kaadt sat through the trial showing little interest in what went on. He said he had been very sick and could remember hardly anything. The judge may well have been correct that the Kaadt brothers had engaged 'in a sordid, an evil and a vicious enterprise, without the slightest regard or consideration for the patients that consulted [them]'.

What I want to highlight from this case is the powerful combination of gullible patients and misinformed doctors. The Kaadt brothers could only have succeeded if they had enough believers in their treatment, but their theory about diabetes was totally wrong. How much of the theories of modern medicine are incorrect? What biases do doctors still introduce into the processes of diagnosis and treatment?

Illness is one of the key problems of life. It may not be surprising that we take an antirational approach to dealing with it. We want a simple, quick, cheap, painless, and complete cure. If the science of medicine could ever win a total victory over disease, then we would not have any need for pseudoscience. To quote from Skrabanek and McCormick's (1998) *Follies and fallacies in medicine*:

> The physician's belief in his treatment and the patient's faith in his physician exert a mutually reinforcing effect; the result is a powerful remedy which is almost guaranteed to produce an improvement and sometimes a cure. As a rule, discussions of the

> placebo effect concentrate on the gullibility of patients but ignore the self-deception of physicians. . . . Patients who receive treatment are readily persuaded that they are having appropriate therapy and doctors may be deluded into believing that their prescribing is having specific effects. This results in a 'folie a deux' afflicting patient and doctor alike.

In this chapter, I want to attempt to correct the imbalance referred to by Skrabanek and McCormick by concentrating on misinformed doctors. The tendency for doctors to overvalue the verity of their clinical diagnosis and treatment is a major factor contributing to the placebo effect. Are doctors facing up to the extent to which their treatments may be placebos?

I want look briefly at medical error, and particular the diagnostic bias created through not taking psychosocial factors sufficiently into account. I move on to look at the implications for treatment, particularly overmedication of symptoms. The basis of decision-making about prescribing is discussed, with particular reference to the role of doctors' expectations. Finally, I want to look at the power of suggestion and to question whether expectancy has really been eliminated in the assessment of the efficacy of medical treatment.

Medical error and bias to make a physical diagnosis

Mistakes occur in medicine as much as in any other field. We are all fallible, and it is impossible for anybody to avoid all mistakes, even avoidable ones. This state of affairs was recognized by Neil McIntyre and Sir Karl Popper (1983) when they called for a new ethics in medicine. They proposed that doctors should avoid hypocrisy by not hiding mistakes. Nonetheless, the clinical task should still be to minimize errors in practice.

AQ: Please check, Neil McIntyre and Sir Karl Popper (1983) is not listed.

There have been several major inquiries in the NHS over recent years in the context of what appear to be medical errors and service failures (Walsh and Higgins, 2002). Inquires have become an increasingly common managerial and political response to a clinical governance incident. For example, since 1994, health authorities have been obliged to hold an independent inquiry in cases of homicides committed by those who have been in contact with the psychiatric services (Buchanan, 1999). The findings of inquiries seem to highlight similar sorts of institutional failures, which may suggest there are inherent difficulties in the system of medical practice.

I want to mention one inquiry for the purpose of my theme of misinformed doctors. This is the case of Dr Andrew Holton, previously consultant paediatrician at Leicester Royal Infirmary (Chadwick and Smith, 2002). He was suspended and referred to the General Medical Council. A review concluded that he had over-diagnosed and over-treated epilepsy in children (Royal College of Paediatrics and Child Health, 2001). Although regarded as a

hard working and conscientious doctor, with a particular interest in Landau–Klefner syndrome, the report by the British Paediatric Neurological Association found that Dr Holton went beyond the available evidence in his belief that epilepsy could account for many neurodevelopmental problems in children and that early aggressive treatment achieved better long-term outcome.

This verdict has to be set in the clinical context of the generally not uncommon over-diagnosis and over-treatment of epilepsy in clinical practice. Holton's practice could be seen as being at the extreme of a continuum. For example 39 per cent of children admitted as inpatients in 1997 to the Danish Epilepsy Centre for Children did not have epilepsy (Uldall *et al*., 2001). Similarly, 38 per cent of children re-evaluated at a tertiary centre in Sarajevo were found not to have epilepsy (Zubcevic *et al*., 2001). Diagnosis of epilepsy can be challenging. Differential diagnosis includes pseudoseizures, ranging from syncope to psychogenic events. Over-diagnosis may therefore be frequent.

In the case of Dr Andrew Holton, although he may have had certain idiosyncrasies in his diagnostic style, a considerable proportion of the blame was placed on system errors such as insufficient training, being overworked, and being isolated from specialist support. The general tendency in clinical governance has been to concentrate on system errors in complex health care systems (Cook *et al*., 2000).

I want to suggest that Dr Andrew Holton is the, not unexpected, outcome of a medical system that overestimates the potential for physical intervention. This is a system error that investigations into the case of Andrew Horton have not sufficiently considered. In fact, the independent review of paediatric neurology services in Leicester, where Dr Holton worked, established by the Regional Director of Public Health, did not even attempt to judge Dr Holton's clinical practice (Department of Health, 2003). This aspect is left to the medical profession, but professional attitudes may not be sufficiently unbiased. Doctors may find it difficult to acknowledge the extent to which they themselves are therapeutic agents for the placebo effect.

I am focusing on bias, which is a term that refers to systematic deviation from validity, or to some deformation of practice that produces such deviation. Bias tends to produce spurious results whereas random error may obscure true conclusions. Medicine needs to be more aware of its own self-deception.

In particular, I want to look at the bias produced by clinician **over**-diagnosis and **over**-treatment, in the way that Dr Horton over-diagnosed and over-treated epilepsy. Of course, in the ordinary course of their practice doctors both under- and over-diagnose. However, I think it is difficult to find evidence

of a bias for under-diagnosis, in the sense of a systematic error as I have just defined it. Under-diagnosis seems to be idiosyncratic and dependent on individual clinicians. This random error also affects over-diagnosis, but I think in addition there is evidence of a systematic bias for over-diagnosis. And I will argue that this bias is related to the conceptual framework of a biomedical way of looking at practice.

False-positive diagnoses for other disorders besides epilepsy are also quite common. Let me give three examples:

1 The diagnosis of heart failure was unconfirmed by echocardiography in 48 per cent of patients receiving diuretics for presumptive heart failure, particularly in women (Wheeldon *et al.*, 1993).

2 The diagnosis of cerebrovascular disease was unmade in 27 per cent of cases of TIA and minor stroke referred to a regional neurovascular centre (Martin *et al.*, 1997).

3 Providing treatment for pulmonary embolism (PE) without objective confirmation of an embolus was regarded as preferable to missing a case of PE in a utility analysis of physicians' attitude towards misdiagnosis of PE before ordering lung scanning (Rosen *et al.*, 2000).

Patients may well not be aware that the level of over-diagnosis of such common conditions as heart failure and cerebrovascular disease is so high. I want to suggest that there is a common theme in the examples I have given. For example it may be easier to diagnose heart failure and cerebrovascular disease than to attempt to disentangle the emotional origins of non-specific symptoms that may mimic cardiac and cerebrovascular disease. Misdiagnosing pseudoepilepsy as epilepsy suggests that the problem arises because of concentration on a disease model of diagnosis. Pseudoepilepsy may not have a physical pathological basis. Yet doctors tend to be looking for the physical cause of patients' symptoms.

Doctors tend to err on the side of caution, as witnessed by the pulmonary embolism example. It is more of a 'crime' to miss a physical diagnosis than to create a non-disease. But overall diagnosis needs to take psychosocial factors into account. Failure to do so may lead to an over-diagnosis of physical disease, and may miss psychosocial diagnoses. Over-diagnosis may therefore arise through taking an overly physical perspective of the presentation of symptoms. Medicine's search for physical causes leads to a surfeit of positive diagnoses.

To examine this issue further, I want to look more generally at so-called medically unexplained symptoms. 'Medically unexplained symptoms' is a term that has gained recent popularity. Its meaning is little different from

other similar terms used previously, such as functional, hysterical, and somatoform disorders. These labels are applied to symptoms for which doctors cannot find a physical cause. By examining how readily doctors are prepared to apply the term medically unexplained symptoms, we may detect a bias in favour of making a physical diagnosis.

Medically explained symptoms and psychosocial factors in diagnosis

Doctors, perhaps particularly in general practice, are confronted with a diversity of symptoms that do not necessarily conform with neat textbook descriptions of diagnoses. GPs operate in an atmosphere of low disease prevalence and deal with a high incidence of non-specific symptoms. It has been estimated that about 70 to 90 per cent of general practice patients are without serious physical disorder (Barsky, 1981). Medically unexplained symptoms are also common in secondary care. About 50 per cent of patients meet such criteria across a range of outpatient clinics, with medically unexplained symptoms being the most common diagnosis in some specialities (Nimnuan *et al.*, 2001).

Nimuan *et al.* (2000) studied the accuracy of doctors' provisional diagnosis of medically unexplained illness. Physicians were asked to state whether they thought the patients' presenting symptoms were medically explained or medically unexplained. Subsequent case notes were examined to determine whether investigations or later examinations revealed an explained cause of patients' symptoms. Congruence between the final diagnosis and the physicians' provisional diagnosis are shown in Table 11.1.

These results show that doctors are more likely to change their provisional diagnosis from medically explained to medically unexplained (56 per cent) rather than the reverse of changing from medically unexplained to explained (17 per cent). In other words, on initial presentation they over-diagnose what turn out to be medically unexplained symptoms as a physical diagnosis. This suggests they worry more about errors of omission rather than commission,

Table 11.1 Congruence between physicians' provisional and final diagnosis

Provisional diagnosis	**Final diagnosis**	
	Medically unexplained	**Medically explained**
Medically unexplained	118 (44%)	43 (17%)
Medically explained	152 (56%)	213 (83%)
Total	270 (100%)	256 (100%)

leading to potential over-diagnosis of physical disease and over-investigation of psychosocial symptoms.

This demonstration of the under-diagnosis of medically unexplained symptoms is reminiscent of the reported under-recognition of psychiatric disorders in general practice, and medical practice in general. Research suggests that general practitioners fail to diagnose up to half of cases of depression or anxiety on initial presentation (Goldberg and Huxley, 1992). Over the longer term this figure may not be as high or as clinically important as this initial impression may suggest (Kessler *et al.*, 2002). Some depressed patients are given a diagnosis at subsequent consultations or recover without a general practitioner's diagnosis. However, there is still a significant minority of patients (14 per cent in this study) with a diagnosis of persistent depression that are undetected.

The failure of detection of depression is commonly presumed to arise because of a lack of psychological mindedness amongst doctors. What I am suggesting is that there is a bias towards making a physical diagnosis rather than a psychosocial diagnosis in medicine. This is understandable, considering the origin of modern medicine in the anatomo-clinical method and clinico-pathological correlation. It also makes sense for doctors to be cautious as patients consult them because they do not want a physical diagnosis to be missed. However, in general, objective evidence of disease is valued over subjective experience. Such a tendency creates a bias towards the over-diagnosis of physical illness.

Critical psychiatry

This bias extends beyond physical medicine to psychiatry. Although psychiatry deals with mental disorders, the origins of these disorders are not necessarily conceptualized in psychosocial terms. In particular, the biomedical model of mental illness postulates that abnormalities of brain functioning are the cause of mental illness (Roth and Kroll, 1986). There may have been a time when psychological approaches, such as psychoanalysis or the pragmatic psychobiology of Adolf Meyer (Winters, 1951/2), were more influential, but the biomedical approach currently dominates psychiatric practice.

Neurobiological approaches emphasize brain and genetic abnormalities as the basis for mental illness. The complexity of psychosocial meaning may, therefore, be oversimplified in psychiatric diagnosis and physical treatment. Application of the biomedical model creates controversy because of the potential to lead to objectification of the mentally ill (Double, 2002). At its most extreme, the biomedical approach reduces people to objects that need their biology cured.

A bias towards concentrating on biological causes may be particularly obvious in psychiatry, because the mental health field evidently relates to psychosocial aspects. What I am suggesting is that this bias is the same in the rest of medicine. Clearly there are biological correlates of disease in medicine and psychiatry, but psychosocial factors are also important. These may be dominant in some presentations, perhaps particularly psychiatric presentations. There needs to be more of a balanced perspective, or medical interventions may be inappropriately applied in situations where the real issues are psychosocial.

Over-treatment and polypharmacy

Having considered over-diagnosis, I want to move on to examine over-treatment. Bias that affects medical diagnosis is likely to have consequences for treatment.

Prescribing costs have been increasing rapidly over recent years. For example, in the UK, the increase in primary care drugs spending from 1998/99 to 2001/2 was 29 per cent compared to an increase of 21 per cent in total Family Health Services expenditure in the same period (Audit Commission, 2003). British GPs are usually described as conservative in their prescribing (Gilley, 1994). In the US, prescription drug expenditure has risen 15 per cent or more per year over the past several years (National Institute for Health Care Management, 2002). While spending on prescription drugs accounts for around 10 per cent of spending on health in the US, drug costs have in recent years contributed disproportionately to a sharp upturn in overall health costs.

Despite being in the era of evidence-based medicine, there has been a steady increase in the therapeutic options for a widening variety of indications, some with only marginal benefit (Pillans and Roberts, 1999). Thirty-five years ago there were approximately 600 medications readily available to patients, but it is now estimated that there are up to 8000 different pills, potions, and powders on the market (Berenbeim, 2002).

A report by the Audit Commission in 1994 suggested that irrational and inconsistent prescribing by British general practitioners costs the NHS over £400 m a year (Audit Commission, 1994). Particular evidence for polypharmacy, or the use of several drugs when fewer may be sufficient, comes from medication use in the elderly. This over-prescribing still seems to be increasing. For example cross-sectional surveys in Finland of people over 64 found that the number of people with concomitant use of over five medications (defined as polypharmacy) had increased between 1990–1 and 1998–9 from 19 to 25 per cent (Linjakumpu *et al*, 2002).

Three examples of over-prescribing and polypharmacy are given below:

1 Many patients with apparent treated, uncomplicated, mild to moderate hypertension do not need antihypertensive treatment and can be withdrawn from their therapy without developing persistent hypertension (Myers *et al*, 1996). This may be because some patients have been inappropriately started on medication merely because of transient increases in office blood pressure.

2 Antiepileptics are overused in the following situations: combination therapy when optimal treatment is with a single drug; long-term use (or continuation) in situations where it is not indicated (e.g. in children with simple febrile seizures); unnecessarily fast dose escalation rates; and unnecessarily high maintenance dosages (Perucca, 2002).

3 Up to 25 per cent of outpatients with schizophrenia may be receiving antipsychotic polypharmacy, usually consisting of both an atypical and a conventional agent. This is partly because a significant number of patients become 'stuck' on the combination when an attempt is made to switch medication to the newer atypical agent (Tapp *et al*, 2003).

Many other examples could be given. What I have tried to demonstrate is that there is a bias for over-diagnosis and over-treatment of patients' physical symptoms. This may arise out of an emphasis on bodily processes rather than fully integrating psychosocial factors, including medically unexplained symptoms. I want to move on to examine in more detail the reasons for over-prescribing by a micro-analysis of the decision by the doctor to prescribe. What pressures and influences have a bearing on the process of prescribing?

Patients' expectations and doctors' perception of patients' expectations

Over-prescribing is commonly blamed on the expectations of patients. My emphasis is on the role that the doctor plays in this exchange and the biases that the doctor's faith and belief in the treatment produces. This is an interesting, complicated interaction. Clearly, doctors cannot entirely blame patients for their over-prescribing (Britten, 1995). For example a significant number of prescriptions are not consumed, or even dispensed, suggesting that prescribing levels actually exceed patients' expectations. And, non-compliance with doctors' orders is commonly seen as a problem in its own right by doctors. Patients would not define it as a problem if their wish for medication were taken as the over-riding factor.

Studies of patient preferences have found that about a quarter of patients come to a consultation in primary care wanting a prescription (Little *et al*, 2001). Most patients (54 per cent) are 'neutral' about wanting a prescription. The term 'want' is quite a strong indication of preference. Measurement of patient expectation is affected by the question asked and the methodology used. Other studies have found higher figures of patients expecting or hoping for a prescription (50–67 per cent) using questions with a forced yes/no answer. Nonetheless, not all consultations seem to be motivated by the aim of acquiring a prescription from the doctor.

Although patients' expectation does correlate with actual prescribing, the doctors' perception of patients' expectations is the stronger determinant of the decision to prescribe (Cockburn and Pit, 1997; Britten and Ukoumunne, 1997). For the most part, doctors' and patients' expectations are in accord, although not always so. Patients still receive a prescription when they do not hope for one and conversely do not receive when they come to the consultation hoping for one.

Furthermore, Britten and Ukoumunne (1997) found that doctors considered 22 per cent of prescriptions that they wrote were not strictly indicated. Only 66 per cent of prescriptions were both clinically indicated from the doctors' perspective and hoped for by patients. This suggests there is scope for reducing prescribing without depriving patients of drugs they either need or want, although only 3 per cent of prescriptions were neither indicated nor hoped for.

The writing of non-indicated prescriptions was primarily associated with the doctors' sense of feeling pressurized. Bradley (1992) has studied the related issue of 'uncomfortable prescribing'. Antibiotics, tranquillizers or hypnotics, and symptomatic remedies are the drugs whose prescription most often lead to feelings of discomfort. The main reasons for feeling uncomfortable are concern about drug toxicity, failure to live up to the GPs' own expectations and concern about the inappropriateness of treatment, and ignorance or uncertainty. Respiratory tract infections were found to be by far the commonest conditions in incidents when the doctor feels uncomfortable. This is because most such infections are viral and not bacteriological in origin, and therefore will not respond to antibiotics.

In summary, I have concentrated on the actual process of the decision to prescribe in an attempt to elucidate the factors involved in the bias to overprescribe. The interaction between patients' and doctors' expectations may be complicated, but there is clear evidence that doctors themselves do have a role in producing a distortion of prescribing.

The importance of suggestion

Having looked at the psychological factors involved in the decision to prescribe, I want to return to the more general theme of this chapter, and the book overall, about the degree to which non-specific belief factors play a role in medicine. Despite the growth of scientific medicine, and the modern emphasis on evidence-based medicine, have we really eliminated useless, and possibly dangerous, medicines from clinical practice?

Progress was made with the introduction of clinical trial methodology, initially by the use of placebo controls and the single-blind method, and finally in the 1950s by the acceptance of the double-blind method (Bull, 1959). The extent to which doctors did not want to give up their placebogenic function is demonstrated by the considerable resistance to the introduction of the randomized, controlled trial. Many regarded it as an intrusion on medical practice (e.g. Nash, 1962). Eventually rigorous clinical trials were required by the authorities before approving applications for new drugs. However, the regulatory agencies themselves do not always maintain independence and are heavily reliant on the pharmaceutical industry (Abraham, 2002). Drug development and regulation is not merely a matter of technical science. Too often the balance of scientific doubt are weighed in the interests of manufacturers rather than patients and public health.

There is clear evidence that publication bias by the drug companies has biased the perception of effectiveness in the literature. For example Kirsch *et al*. (2002) used the Freedom of Information Act to obtain the New Drug Application (NDA) data sets from the US Food and Drug Administration for the six most widely prescribed antidepressants approved between 1987 and 1999. Analysing these studies produced a lower effect size for antidepressants than has generally been found. More than half of these clinical trials sponsored by the pharmaceutical companies failed to find significant drug/placebo differences. A similar finding of selective publication by drug companies for antidepressants was also found in data submitted to the Swedish regulatory authority (Melander *et al*., 2003).

The limitations of double-blind trials are not always fully appreciated. In particular, they are not as double-blind as is commonly assumed. Assessors' guesses made after the end of treatment to determine whether subjects had been in the active or placebo arm of the trial are generally greater than chance (Shapiro and Shapiro, 1997). This implies that trials are not truly masked. Patients and doctors may be cued in to whether patients are taking active or placebo medication by a variety of means. In fact if treatment is clearly

superior to placebo, this should be obvious to raters in the trial, making it not technically blind. Patients in clinical trials are naturally curious to ascertain whether they are in the active or placebo group, and may, for example, notice that placebo tablets they have been taking taste differently from medication to which they have previously become accustomed. Active medication may produce side-effects which distinguishes it from inert medication.

For example publications have reported that the ability of raters and subjects to distinguish placebo and antidepressant is greater than chance (Even *et al*, 2000). Degree of unmasking can be correlated with apparent antidepressant effect. Antidepressant trials, because they involve assessment of depression on rating scales, are particularly prone to the effects of unblinding, compared to trials which have endpoints, such as mortality, which are not so dependent on subjective assessment by raters.

The breaking of the double-blind on occasions has been interpreted as the explanation for a positive trial result. For example Karlowski *et al*. (1975) found that ascorbic acid seemed to reduce the duration of a common cold, but these differences were eliminated when taking into account the correct guesses of medication. If such an analysis can be produced to support sceptical views about the effectiveness of ascorbic acid, why should it not be applied to agents which are believed to have therapeutic potency, such as antidepressants?

In fact, mean-end-point differences found in clinical trials are often quite small on average. Continuing the example of using the data on antidepressants, from the FDA data analysed by Kirsch *et al.* (2002) it was found that the average difference between antidepressants and placebo in these trials was two points on the Hamilton Rating Scale for Depression. The Hamilton Scale is the most commonly used measure of depression, with a total score of 50 or 62, depending on which version is used. A difference of two points seems of doubtful clinical relevance.

These small differences reinforce the view that statistically positive results in some trials may merely be the consequence of an amplified placebo effect made apparent because of unmasking. The problem is that the results of 'double-blind' studies tend to be automatically accepted as scientifically valid. A misleading self-deception is encouraged that trials can be conducted completely double-blind and the role of expectancies is thereby underestimated.

Conclusion

In this chapter, essentially, I have been asking how much modern medicine is still infused by 'quackery'. I know there will be objections. After all, quacks

were transparent impostors and charlatans and knew their cures were fraudulent. There is no such obvious deceit in modern medicine.

However, the sharp division between mainstream medicine and quackery is misleading (Porter, 2000). Regular practitioners have cashed in on commercial practices barely distinguishable from what has been regarded as quackery. The example of the Kaadt brothers, that started the chapter, shows that to some extent quacks may have believed in their remedies. Do the modern pharmaceutical companies really believe in their marketable drugs, or even care whether they are effective? If they did, would they not be concerned to eliminate the bias that is still present in clinical trials? It is widely accepted that clinical trials cannot be conducted double-blind, but the pretence continues that the effectiveness of modern medicines has been proven.

I have suggested that medicine's concern with physical causes produces a relative neglect of personal and psychosocial aspects of illness. This attitude reinforces medicine's tendency to deny its placebo effect and, in practice, leads to a bias for over-diagnosis and over-treatment of physical conditions.

Despite my critique, there may be some reason for optimism. Over recent years, there have been attempts to transform the clinical method and develop the patient-centred model of care (Stewart *et al.*, 2003). The aim is to replace the traditional disease-centred method of care. Of course, being patient-centred does not mean doctors giving up being experts in the pathophysiology of disease. But patients also expect doctors to be experts in the experience of illness.

In a way, what I am saying is that clinician bias in diagnosis and treatment may be counteracted by patient-centred medicine. The influence of the doctor–patient relationship needs to become more open, so that doctors are not deceiving their patients. This has to start with them becoming more aware of their own bias. The aim of this chapter has been to try and improve that awareness.

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