Table 1—Interpretation of the common patterns of serological markers of hepatitis B virus infection

	Hepatitis B surface		Hepatitis B core		Hepatitis B 'e'	
	Antigen	Antibody	Antibody (IgG)	Antibody (IgM)(*)	Antigen	Antibody
Never infected	—	—	—	—	—	—
Vaccinated	—	+	—	—	—	—
Immune by natural infection	—	+(†)	+	—	—	—
Acute infection:						
Early	+(‡)	—	—	—	+/-	—
Late	+	—	+	+++	+	—
Carrier(§):						
High infectivity	+	—	+	+/-	+	—
Low infectivity	+	—	+	—	—	+

(*)Tests for IgM are usually strongly reactive during acute infection; weaker reactivity may also be present in carriers, particularly if they are also positive for e antigen.

(†)Not detectable in 10-15% of those who have had hepatitis B in the past; core antibody may be the only marker detectable.

(‡)The first marker to become detectable during acute infection, and before any symptoms.

(§)Someone with detectable surface antigen more than six months after acute hepatitis B or first detection of antigen.

whether or not hepatitis B e antibody is detected, there should be no restriction on students' activity, unless they have been associated with transmission of hepatitis B to a patient. Transmissions from health care workers who are negative for hepatitis B e antigen have been reported, associated with mutations in the precore gene of the hepatitis B virus, which permits viral replication in the absence of e antigen expression.⁷⁻⁹ In the future, recommendations may be amended to take this into account, but it has not yet been agreed what criteria should be used for infectivity in the absence of e antigen. Those advising prospective medical students might therefore include a caveat about such a change in the future.

The Committee of Vice-Chancellors and Principals should provide more detailed guidance if its policy is to have credibility. Universities should ensure that their policies are appropriate, and some need to take advice—discussing policy with their own departments of virology and occupational health would seem to be a good start. Some may yet consider that excluding all students positive for hepatitis B virus e antigen is not necessary. None would disagree with the committee that medical students, like health care workers, have a duty of care to their patients, including a duty not to expose them to hepatitis B virus infection—but are they necessarily a hazard to patients? There have been no reported cases of hepatitis B transmission from medical students to patients in Britain. Provided there is the safeguard that the hepatitis B virus status of all medical students is known, a more flexible approach should be possible, especially if the universities and the General Medical

Council accept that it is not essential for medical students to carry out exposure prone procedures in order to qualify and complete a preregistration year. Might hepatitis B virus not be considered along with other disabilities which may lead to a limited career choice but which leave open the possibility that those affected can safely qualify and contribute to medicine in one of its many fields?

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Chronic fatigue syndrome

"Biopsychosocial approach" may be difficult in practice

This week a joint working group of the Royal Colleges of Physicians, Psychiatrists, and General Practitioners in Britain issued a report on chronic fatigue syndrome.¹ The report constitutes, arguably, the finest contemporary position statement in the field, and physicians and patients are well advised to read it, but it is sure to engender disagreement on both sides of the Atlantic.

The term chronic fatigue syndrome is relatively new. It first appeared in the 1988 proposal by the United States Centers for Disease Control² to formalise a working case definition for symptoms that had been variously named and attributed to numerous causes for over two centuries. Through field testing, the case definition was revised and simplified in 1994.³ In essence, it classifies a constellation of prolonged and debilitat-

ing symptoms as worthy of medical attention and study (see box). Related case criteria were developed by consensus at Oxford in 1991.⁴ Neither the American nor the Oxford criteria assume the syndrome to be a single nosological entity. As the royal colleges' report concludes, the term chronic fatigue syndrome is appropriate because it carries none of the inaccurate aetiological implications of the alternative acronyms—myalgic encephalomyelitis, chronic fatigue syndrome, and immune dysfunction syndrome.

The new report reviews the epidemiology of chronic fatigue syndrome. It notes that chronic fatigue syndrome describes only the minority of the fifth or so of patients under primary care who present with chronic fatigue. Several perceived socioeconomic correlates of chronic fatigue syndrome that

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spawned colloquial names for the syndrome, such as "yuppie flu," have been dismissed by proper study. Only its greater prevalence in women has been confirmed, as in related syndromes like fibromyalgia.

There is no credible support for outbreaks or the transmissibility of chronic fatigue syndrome. The report addresses this vexing issue too tangentially, but through its comprehensive review of the data it does pointedly dismiss claims that chronic fatigue syndrome is a chronic viral infection. In the United States, the viral hypothesis of chronic fatigue syndrome has been a moving target, with new herpesviruses and putative retroviruses displacing in turn the association with chronic fatigue originally noted for Epstein-Barr virus.

In Britain, the pre-eminence of a neuromuscular hypothesis of chronic fatigue syndrome sustained a preoccupation with enteroviruses as aetiological factors for two decades; the weight of evidence stands largely against this now. The report does note that one blinded study,⁵ in which enteroviral sequences were detected more often in sera from patients than from healthy controls, still awaits repetition. Our own blinded study using polymerase chain reaction found no enteroviral RNA in sera or other specimens from patients or control subjects (H Rotbart *et al*, unpublished observations).

Although the persistence of known microbes does not explain chronic fatigue syndrome, the report nicely summarises recent British studies which confirm that acute infections can precipitate the syndrome.⁶⁻⁷ The mechanism is not known, but the cumulative data over several decades show that fatigue from an acute infection (or other acute stresses perhaps) can be sustained in certain predisposed individuals.⁸

Studies purporting to demonstrate immunological abnormalities in patients with chronic fatigue syndrome are justifiably criticised in the report for inconsistency, lack of standardisation of the laboratory methodologies, and non-specificity of findings.⁹ The report is more charitable towards recent neuroendocrine data, possibly because these are too preliminary to be either accepted or dismissed. The existing data suggest subtle abnormalities in the hypothalamic-pituitary-adrenal axis.¹⁰

It will prove difficult to implement the report's recommendation that patients be assessed and managed using a biopsychosocial approach—that is, one which stresses the complex interplay of social, behavioural, and emotional factors in the presentation and perpetuation of symptoms. The report declares that, over multiple sessions, a trusting and non-authoritarian physician can engage a patient in a

constructive therapeutic alliance in which there is a thoughtful application of a few key laboratory tests, administration of a few symptomatic medications, encouragement of very graded exercise, and progressive re-entry into school or work.

The report acknowledges "a number of difficulties in achieving this in practice," such as the resistance of some patients to psychosocial assessment and management. There are also important limitations for primary care physicians wishing to employ this approach. Few will have been properly trained, and few primary care settings are structured to facilitate the multidisciplinary collaborations necessary for a formal biopsychosocial intervention. In addition, increasing emphasis on cost containment by the NHS and by the United States' burgeoning managed care industry creates financial disincentives to such intensive regimens.

A more practical recommendation might be to study whether key elements of the biopsychosocial approach can be efficiently and effectively incorporated into the traditional health care environment. Here the report is resolute, as it should be: advances in the management of chronic fatigue syndrome must be based on careful research. Three well chosen areas of research are proposed: the neurobiology of fatigue, controlled therapeutic trials, and the assessment and management of children and adolescents.

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Quality of care through the patient's eyes

Satisfaction surveys are just the start of an emerging science

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As techniques to measure the quality of health care proliferate and improve, health professionals are beginning to understand that patients and their families hold unique vantage points as expert witnesses to care. For some time, hoteliers, bankers, car manufacturers, and politicians have been enthralled by information about the public's view of their services, including anecdotes, insights offered by focus groups, and data gathered from large scale surveys. Slow to turn to new fashions, health professionals are now learning that those they serve can make important suggestions as individuals, generate worthy hypotheses in small groups, and provide aggregate data through surveys that describe what is and is not going well and that can document the impact of efforts to improve.

Unfortunately, "satisfaction surveys" are fraught with hazards. As Cohen and colleagues show (p 841), surveys may

produce widely varying data depending on how questions are framed and when and how they are asked.¹ Moreover, uncertainty is compounded when one problematic set of data is compared to another obtained with even slightly differing techniques or from a different population of respondents.

Even if questions are skilfully framed, administered in a standardised way, and used on similar populations, asking individuals to evaluate their care can be problematic. Consider two patients I may see in a morning. Both are young men starting treatment with an antihypertensive drug that in some patients induces impotence. One is a highly educated, contemplative man who wants his doctor to share decision making and to inform him fully of benefits and risks. The other is hot blooded, less educated, and convinced that doctors know best. In the spirit of informed consent, I explain to both