dation that plasma volume estimations should be a part of routine clinical investigation cannot be accepted.

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Changing American medicine

Dramatic changes are taking place in American medicine. In October 1983 the United States government changed the way it reimburses hospitals for Medicare patients (those aged over 65), but the change will eventually affect patients of all ages. The full effects of this new method of reimbursement will become apparent only with time, but the initial reaction of the health professions does allow speculation on the future of medicine in the United States.

By tradition doctors have been accustomed to using their discretion and judgment both in diagnosing and treating patients and in billing for their services. Hospital charges were designed to cover their costs and to generate a modest surplus. In 1965 the United States government introduced Medicare. Hospitals were reimbursed under part A, "covering reasonable costs," and doctors were allowed to make a "reasonable charge" under part B. As might have been predicted, the absence of reimbursement ceilings led to inflation at a rate considerably greater than in other sectors of the economy—though much of the increased cost was due to increased services. In 1983 health care costs in the United States had risen to \$300 billion (£200 000 million) a year, over 10% of the gross national product. The United States government pays for 40% and large employers 30% of the total bill for health care.

Recent changes in the health market place are now exerting pressure on the providers. The demand for hospital beds is diminishing; fewer were occupied in 1982 than 1981. Hospitals generally are losing their monopoly on many forms of health care—and thus are experiencing an erosion of their economic base. For example, much simple surgery is now performed in "surgicenters," which are not necessarily affiliated with hospitals. There is now an excess of doctors in the United States, 18 000 new graduates having entered medical practice in 1983 alone. Doctors' net disposable incomes have declined steadily since 1975. American consumers believe that they have a right to good health care and a right to live. They have come to expect expensive, high technical diagnostic procedures (such as computed tomography) and therapeutic measures such as coronary bypass surgery, renal dialysis, and transplants. Malpractice suits are increasing, pushing insurance premiums ever higher. Doctors are being forced to practise expensive defensive medicine. The United States population is aging and so making increasing demands on the delivery of health care.

In 1982 the United States government responded to pressure to control the costs of health care by passing the Tax Equity and Financial Responsibility Act, which—for the first time—placed a ceiling on reimbursement of hospital costs and redefined the doctors' services which were reimbursable as a hospital cost. The mechanism chosen to accomplish this goal was a system of prospective payments based on diagnosis related groups—a comprehensive set of 467 medical classifications initially developed at Yale University. Hospitals will now be reimbursed for each individual patient's stay at a rate determined by the discharge diagnosis; the actual length and cost of the stay are not taken into account. The sum paid for each diagnostic group is determined by a branch of the United States government, the Health Care Financing Administration. A three year phasing in period has begun, during which reimbursement will be shifted gradually from an emphasis on the hospital's costs, via a rate structure based on nine geographic regions, to a strict

dependence on a national scale allowing only for differences in rural and urban costs. The Department of Health and Human Services is studying the extension of the prospective payment approach to include doctors' fees and reimbursement by private insurers.

All the services provided to a patient in hospital will be included under the diagnosis related group payment. No separate charges can be made. Professional review organisations will be required to monitor unnecessary readmissions and other abuses of the diagnosis related group programme. The cost of medical education and of capital equipment will be a "pass through" cost for the first three years, but eventually these costs, too, seem likely to be reimbursed under diagnosis related groups.

The central concept in this new system is that a hospital will be allowed to keep the difference if its costs are less than the reimbursement calculated for the diagnosis related group—but it will have to absorb any excess costs. The belief is that hospitals will be forced to improve the efficiency and cost effectiveness of their services. Radiology departments, for example, which were previously revenue generating areas will now become closely scrutinised cost centres. Attempts will be made to limit the excessive use of laboratory tests, and laboratories should become much more cost efficient. The emphasis in laboratory testing will be on producing a diagnosis rather than a test result. The clinical pathologist should have a key role in developing new attitudes and approaches. Hospitals will also seek sources of revenue outside direct patient care. They will attempt to pool their resources with other health care delivery systems to improve their productivity and cost efficiency. The mix of different diagnoses in patients will be critical, since reimbursement on diagnosis related

groups varies with discharge diagnosis. Administrators and hospital staffs will have to work closely together to meet these challenges. The hospitals will closely monitor the type of patient admitted, the length of stay, and the performance of each member of the attending staff.

Preadmission laboratory testing is likely to be used more widely, for it is not reimbursed under diagnosis related groups, and the patient's stay in hospital will not be prolonged by waiting for laboratory results. Testing after discharge is also likely to increase for the same reasons. Laboratories will be forced to operate 24 hours a day, seven days a week to accommodate shorter hospital stays.

There will be more competitive bidding for services throughout the health care system in order to cut costs. This may lead to a decline in the quality of care, because fewer skilled workers will be hired, costly quality control activities will be curtailed, continuing medical education will be limited, and test development will become too costly.

Americans have become increasingly aware of the cost of medicine in the past decade. In the next few years they are likely to have greater flexibility in choosing methods for paying for this care. They will continue to demand high quality but affordable medicine.

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Regular Review

Hyperbaric oxygen for patients with multiple sclerosis

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Multiple sclerosis is still poorly understood and has no established treatment. Disturbances in immunoregulatory mechanisms have been thought to indicate that autoimmunity may play an important part in the pathogenesis. Over the past two decades attempts at devising curative treatment have concentrated on trials of immunosuppression or immunopotentialisation. Recently, however, claims have been made for treatment with hyperbaric oxygen. The rationale for this approach is, in part, the superficial similarity between the clinical features of decompression sickness and multiple sclerosis—but the range of symptoms which arise from dysfunction of the central nervous system is narrow, and similarities in clinical symptoms do not imply pathogenetic identity.

The partial pressure of oxygen in the arterial and venous blood may be raised substantially by breathing pure oxygen above normal atmospheric pressure. Such hyperoxygenation may be achieved with the help of hyperbaric oxygen pressure chambers, of which there are two types. In monoplace chambers a single patient can be bathed in pure oxygen but is removed from the direct attention of medical personnel, which might have serious implications if the patient developed complications, such as a convulsion. Another disadvantage is that some patients develop severe claustrophobia.¹ Several patients may be treated in walk in multiplace chambers, and they may be accompanied by trained attendants. In such chambers oxygen is delivered with the help of facemasks—but these often leak in the sealing area around the face and