The need for standards and audit measures in the treatment of patients with renal failure

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Recently the Renal Association and the Royal College of Physicians of London published a document recommending the standards of care for the management of patients with renal failure [1]. One may well ask why there is a need to produce such a document. The first impetus to do so came from the nephrologists themselves, who wanted to know what was accepted practice in various areas of this specialty and how their own outcomes matched those of the nation as a whole and other nations performing dialysis. Another stimulus was the significant changes in the National Health Service in the UK by which purchasers have had to try to identify best value in terms of quality and quality of care. The new contractual arrangements between providers and purchasers entail cost for a volume of work undertaken to achieve a certain level of quality. Who then sets the standard or quality to be attained for patient care? In the UK the Renal Association felt that the nephrologist ought to do this. The final reason in public health terms is that much of renal failure medicine deals with relatively uncommon conditions for which the cost per patient is very high. The need for evaluation and comparative audit is therefore paramount.

The purpose of the document was to propose a framework of quality standards and guidelines on patient specific indicators which may be relevant in determining the well-being of, and outcomes in, patients with renal failure. The document considered...
in detail end-stage renal failure (HD and PD) and to a lesser extent transplantation, acute renal failure, and predialysis care. The ultimate aim was to protect the patient from substandard treatment.

Standards by definition are based on evidence in the literature of outcomes from therapy delivered. These apply to aspects such as survival, technique failure, hospitalization, level of nutrition and biochemical control as well as control of blood pressure, fluid status and so forth. The subcommittee debated whether to recommend minimum or optimal standards and decided to define the minimum standards where there was evidence for this in the literature; it was urged that higher standards should be the aim. The standard document also states that the initial recommendation would need to be refined in the light of the results of research and audit and would need to be linked to a renal registry which has now been created in parallel to collect patient data nationally.

Standards and comparative audit are really only meaningful if applied to a well-defined population of patients. Two points are relevant. The first is the point at which the patient is deemed to have started on renal replacement therapy. This is poorly defined because of the variation in mode of presentation and the time spent in resuscitation and decision about suitability for long-term treatment. In the United States to overcome this problem, the patients are regarded as having entered the programme 90 days following the transfer to a free-standing renal unit. Early deaths are therefore not part of the survival statistics. The standards document deemed the date of first dialysis as the point of entry into the ESRF programme.

The second point relates to survival and rehabilitation, which are heavily influenced by factors such as age, race and medical comorbidity. The Standard Document grouped patients according to age, diabetes, and cardiovascular disease, based on data from the EDTA Registry. In this respect it is interesting that a paper published in this issue of the Journal raises important issues regarding comorbidity and concludes that for valid comparison for survival there is a need for a uniformed method of data collection which takes into account case-mix variation, the effect of early death and long-term survival, and a centre effect which could be fairly readily discerned through a registry database. A minimum data set needs to be defined for collection via National and International Registry together with more valid comparison of patient survival among centres. Multivariate analysis will need to evolve to allow for the development of a scoring system to help individual centres identify patients likely to have a poor prognosis.

In line with this argument the Renal Association Standards are the first step in the production of a fully comprehensive document based on data collected on a national basis in parallel with the UK Renal Registry. It is hoped that the data collected will be presented as cumulative frequency curves to illustrate the distribution of the outcome variables in patient population, which would be suited for audit purposes and demonstrating the quality of care given.

The document lays down minimal standards for acceptance of new patients, point of entry into a renal replacement programme, and comorbidity scoring (standard, medium and high risk). The recommended minimal targets for haemodialysis include water purity, targets of adequacy of dialysis, nutritional status, biochemical control, blood pressure monitoring and transmission of infections. Similar standards are given for peritoneal dialysis, which in addition sets minimum peritonitis standards. Audit is recommended in the above areas to ascertain level of care given and assess the reasons of a patient not achieving the target. This document will be revised in 1996 to include more detailed methodology and enhanced section on renal transplantation and acute renal failure.

How do other countries monitor levels of therapy and standards of care? In the United States, if one looks at the reasons for the increasing mortality of haemodialysis patients [2,3], it is apparent that this was related to uncontrolled slippage in the amount of dialysis delivered. This has resulted in a review of recommendations for monitoring by HCFA [4,5]. The 1994 ESRD core indicators project was set up to assist providers of ESRD services to improve care for dialysis patients (Healthcare Quality Improvement Programme). The results of In Centre HD patient in the various networks are available for urea reduction rates (URR), blood pressure, serum albumin and haematocrit. Only 43% were receiving adequate dialysis (URR >0.65), one in five had serum albumin <35 g/l and half the patients were regarded as having hypertension. The outcome of this was to help renal units develop intervention activities and document improved care in subsequent years. More recently HCFA have released a second draft on the conditions that dialysis facilities must fulfill to qualify for Medicare funding. Included in this is a measure of dialysis adequacy of Kt/V not less than 1.2 or URR not less than 65%. Haematocrit needs to be between 30 and 36%.

Other European countries may find this UK standard document useful as a pointer to setting their own standards and guidelines. It is important in our practice that we are able to achieve and define standards which have to be attained in a large percentage of our patients. The aim is to improve the outcomes and justify the enormous cost. In order to see that we are doing so regular audit is necessary. We do need to justify the expense of the therapy, and in doing so we will be enhancing the outcome of patients, which at the end of the day is the aim of therapy.

References
Points to remember when dialysing the patient with coronary disease

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Introduction

Coronary artery disease (CAD) is very common in dialysis patients and is definitely more prevalent than reflected by clinical signs and symptoms. It is well established that many patients have asymptomatic CAD. Screening by angiography revealed that the prevalence ranges from 20% in relatively young and non-diabetic patients to 88% in diabetic transplant candidates over the age of 45. We shall not touch upon medical therapy [1], and interventional cardiac therapy. Suffice it to mention that surgical revascularization is apparently superior in reducing the frequency of cardiac events, at least in diabetic patients, as compared to medical therapy [1] or percutaneous coronary angioplasty [2].

In the following we shall focus on the effects of haemodialysis per se in the patient with CAD. It is true that reliable data assessing the specific influence of dialysis therapy on the outcome of CAD are nonexistent. Nevertheless the nephrologist in charge of such patients cannot wait until definitive scientific evidence is available. We feel that sound medical reasoning and common sense permit us to give reasonable practical recommendations. In the following we shall discuss the effects of haemodialysis on haemodynamics and its repercussions on CAD.

Determinants of coronary perfusion

For clinical purposes the driving forces of coronary perfusion can be envisaged as the net result of the pressure gradient between aortic pressure and left ventricular (LV) pressure during diastole (Table 1). In haemodialysis patients, three conditions influence this gradient. All three are affected by the mode of dialysis therapy.

Shortening of duration of diastole

Since coronary perfusion takes place almost exclusively during diastole and since duration of systole is virtually constant, tachycardia must lead to shortening of the diastolic period. This will cause reduction of the effective perfusion time.

Anaemia is probably the most frequent condition causing tachycardia in dialysis patients. In haemodialysis patients without CAD it has been shown that increasing haematocrit from 25 to 35% is associated with a reduction of heart rate at rest and particularly during exercise [3]. The same is true in haemodialysis patients with angiographically confirmed CAD: In such patients an increase in haematocrit was further associated with a reduction of exercise-induced ST segment shift in ECG and with a considerable increase in symptom-limited duration of exercise [4]. In unselected haemodialysis patients, disappearance of angina pectoris and normalization of ST-segment shifts was described after erythropoietin therapy. Maintenance of adequately high haematocrit levels is probably the single most important factor in the management of the haemodialysis patient with CAD. Of course, reduction of tachycardia is only one of the several beneficial cardiac effects of erythropoietin therapy, but we think it is the most important one. Although the optimal level of Hct has yet to be established, we propose a predialysis Hct of 35% for the CAD patient. Of course, careful attention to volume control is necessary to prevent erythropoietin-induced hypertension.

A second condition that frequently leads to tachycardia is rapid ultrafiltration during haemodialysis sessions. Tachycardia in response to plasma volume depletion is one of the compensatory mechanisms to counteract incipient LV underfilling [5], at least in patients without advanced autonomous polyneuropathy. A further factor causing tachycardia is the use of acetate-containing dialysis fluids. The safest way to prevent LV underfilling is to use low ultrafiltration rates.

Reduction of diastolic aortic pressure

This diminishes the pressure gradient responsible for coronary perfusion. Dialysis-associated hypotension is...