Chapter 14 International Comparisons with UK Renal Registry Data

Introduction

There are very few contemporary sources dealing with clinical variables on a large scale. The data derived from National Medical Care by Lowrie et al is now less current. The most comparable data are collected annually by the Healthcare Finance Administration (HCFA) in the USA as part of the now superseded ESRD Clinical Indicators Project (CIP) and material is available from the 1998 Report, which encompasses the past five years. The Registry presents here some selected comparative data that will form the basis of a more extended treatment in future.

Scope of the international comparison

The ESRD CIP was a large-scale data collection from a random sample of 400 prevalent dialysis patients from each of 18 Regional 'Networks' (approximately 4-9 patients from each chosen centre) serving the End Stage Renal Disease programme in the US. This gave a study population of over 9000 patients to compare with the UK Renal Registry dialysis patient group (which includes all patients at participating centres) of nearly 5300. The HCFA return was on paper and the sample included haemodialysis and peritoneal dialysis patients, in the ratio of 5:1. The data were focused on dialysis solute clearance, renal anaemia (haematocrit / haemoglobin, serum ferritin, EPO administration), serum albumin and blood pressure. Dialysis dose was calculated as URR, and as Kt/V from dialyser characteristics, treatment time and blood flow data. The method for serum albumin measurement is indicated to allow for the variation between bromocresol green and bromocresol purple.

It is important to note that the HCFA results are the means of three, monthly records (allowing for incompleteness of return), whereas the UK data are single point values. The figures show comparative data for the UK and the HCFA random sample in several categories. The range of renal unit size and funding regulations for reimbursement may be relevant factors in determining standards of care, but comparative data on these are not presented here.

The HCFA data are a series of cross-sectional studies. Sequential data on individual patients are not collected. Thus data relating to time on dialysis are from patients all alive at the date of data collection who have been on renal replacement therapy for variable periods of time. There are no data from the same patient at different time points.

Urea reduction ratio in haemodialysis

The URR ranges for the USA bear comparison with the distributions of England and Wales, and Scotland. There is a shift of the curve to the right in the US data, with a more pronounced truncation of high values in the 'snail' shaped distributions. The US

data is more comparable to the data from Scotland and this may reflect the cycles of comparative audit of dialysis adequacy carried out in over the last 5 years in Scotland. More than a quarter of the mean URRs in the HCFA data are below 65%, but this percentage is reduced when calculated for Kt/V > 1.2, since URR 65% and Kt/V 1.2 are not exactly equivalent. Since 1993 the annual US data collection has shown a steady increase in URR values, with the use of longer dialysis times and dialysers of greater clearance.

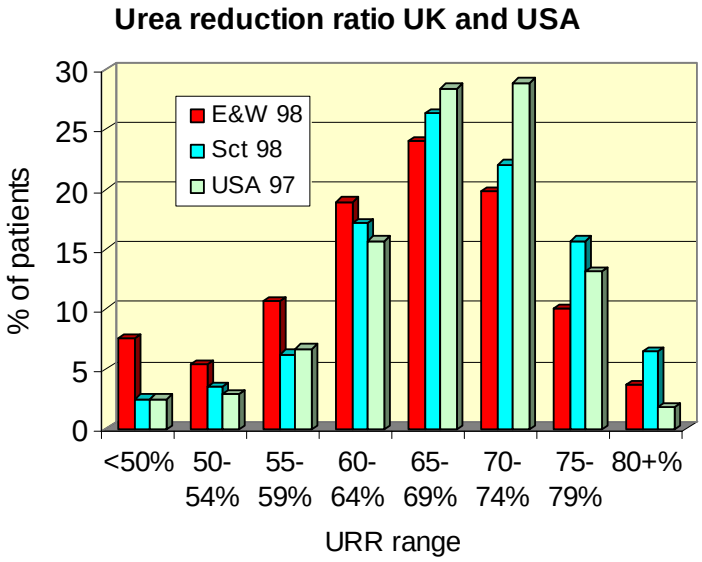

Figure 14.1 URR in the UK and USA

Renal Anaemia

Haemoglobin / haematocrit

Haemoglobin data from the USA are often presented in terms of haematocrit, and 30% has been used as a criterion of adequate treatment there, just as 10g/dl was used in the Renal Association Standards Document. These two values are not identical. The 30% haematocrit is comparable with haemoglobin of 9.7g/dl and figure 14.2 shows the UK data compared with the HCFA data at that level.

The duration of renal replacement therapy is also relevant, since figures 14.2 and 14.3 show anaemia is more severe in patients in the first few months of renal replacement therapy than in those who have received renal replacement therapy for over one year.

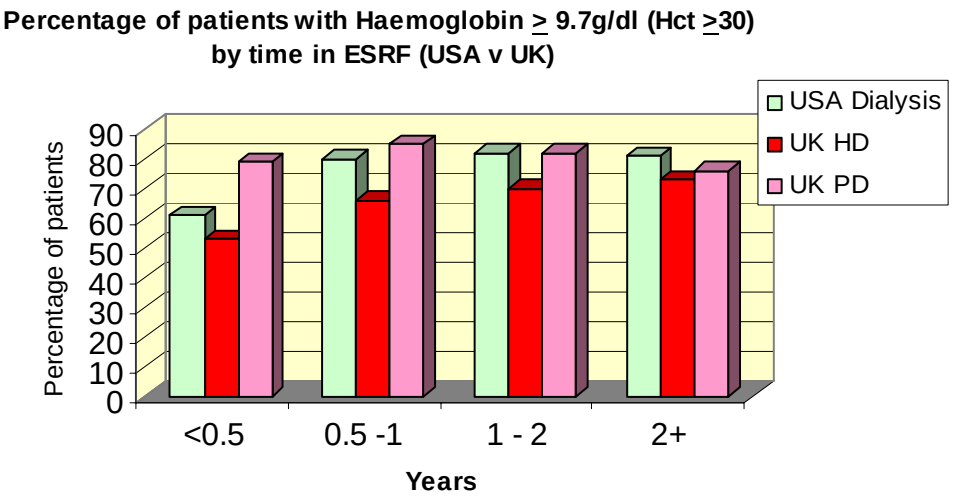

Figure 14.2 Haemoglobin > 9.7 g/dl comparison of UK vs. USA by time in ESRF

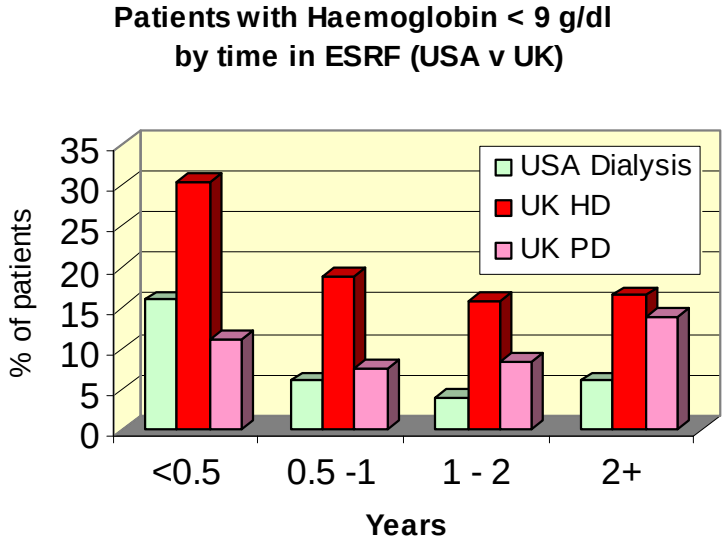

Figure 14.3 Haemoglobin < 9 g/dl comparison of UK vs. USA by time in ESRF

Serum ferritin

HCFA reports 81% of haemodialysis patients having a serum ferritin > 100 mcg/L, and this is comparable to 84% of UK Registry haemodialysis patients with a serum ferritin > 100 mcg/L. The distribution of serum ferritin for these patients is not available from HCFA

For patients on peritoneal dialysis, the distribution of serum ferritin of patients in the UK and US were very similar (figure 14.4).

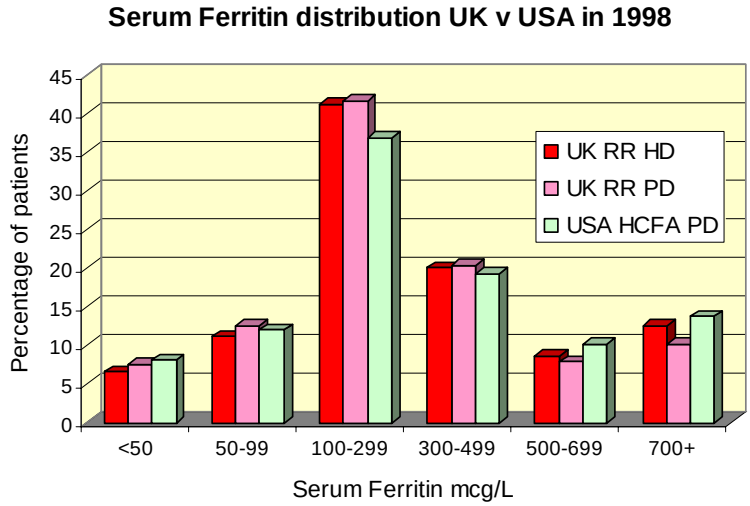

Figure 14.4 Serum Ferritin distribution UK vs. USA in 1998

Erythropoietin prescription data for the UK are not widely available from clinical databases as yet. In any event, the use of intravenous dosing in the US would make comparison with the subcutaneous administration typical of the UK less interpretable. There is a restriction on reimbursement for EPO for patients with higher haematocrits in the USA, which has a strong influence on prescribing protocols. This operates at haemoglobin levels which are not even reached in many UK renal units that are cash-limited.

Serum Albumin Concentration

The HCFA data show that US patients have relatively low serum albumin levels over the first year on renal replacement therapy. Haemodialysis patients in the UK do not show such a low serum albumin in this period (figure 14.5).

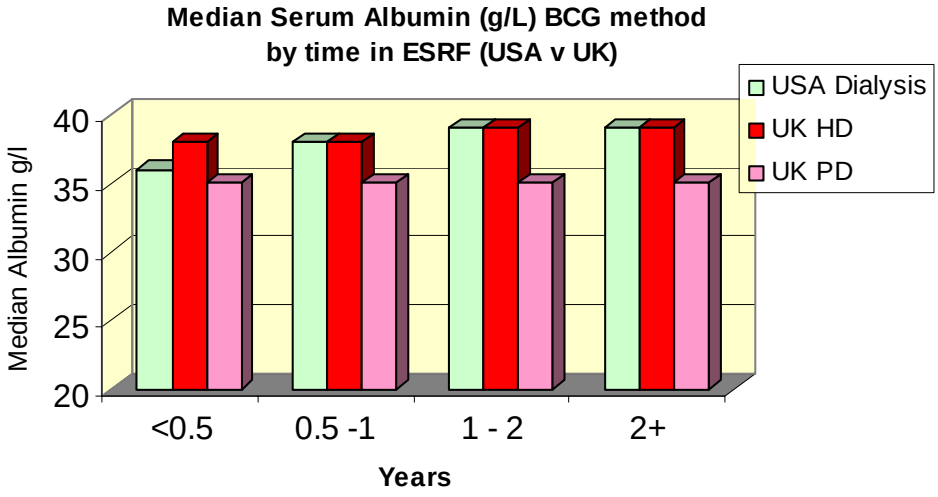

Figure 14.5 Median Serum Albumin BCG method by time in ESRF (USA vs. UK)

Transplantation

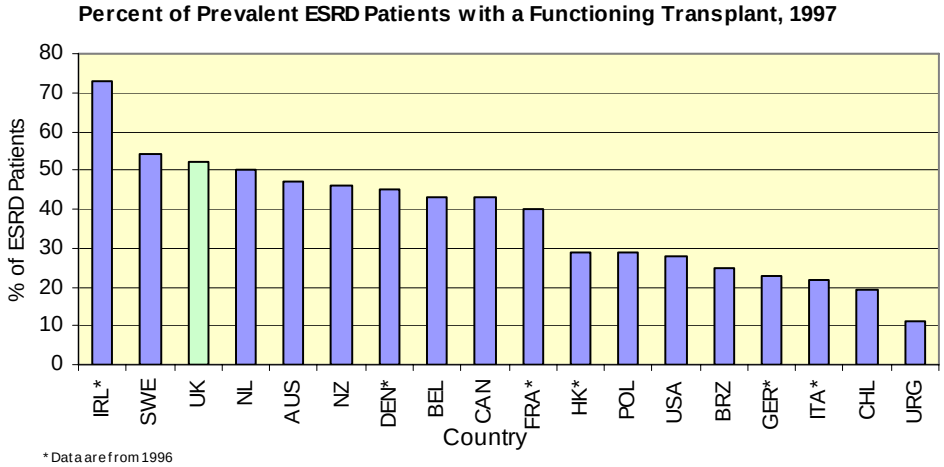

Figure 14.6 % prevalent CSRD patients with a functioning transplant in 1997

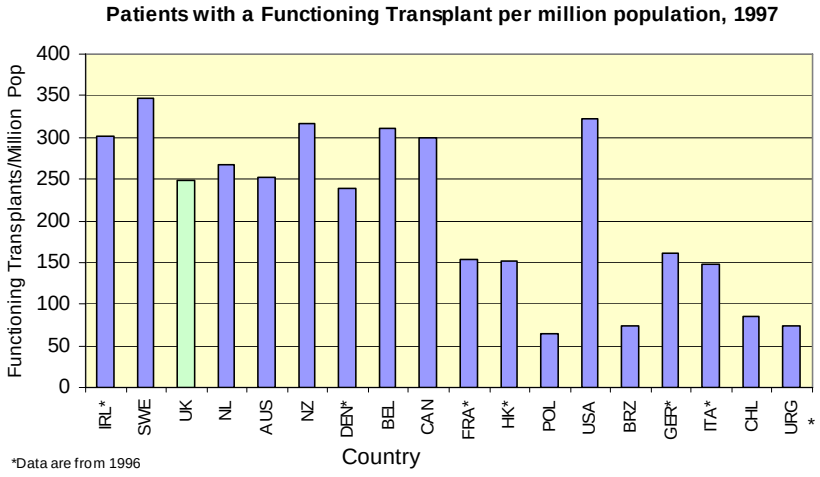

Figure 14.7 Patients with a functioning transplant per million population, 1997

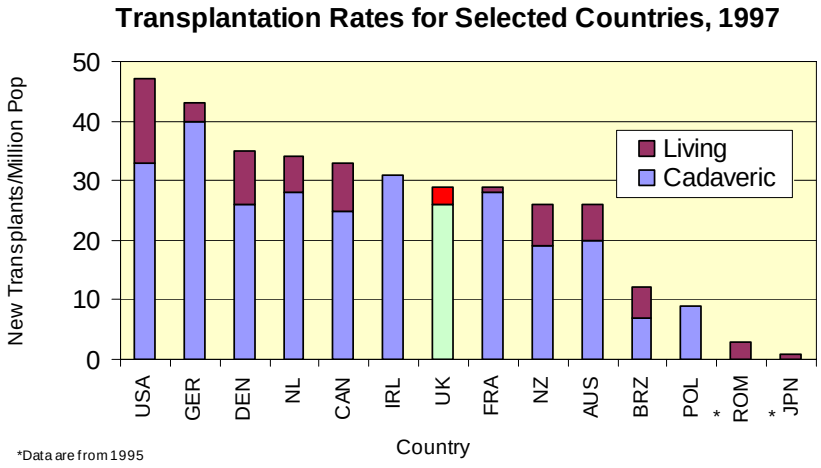

Figure 14.8 Transplantation rates for selected countries, 1997

The above figures rely heavily on the data presented in the 1999 USRDS Report. The USA has the highest transplant rate per million population (figure 14.8), but in spite of this, has one of the lowest percentages of renal replacement therapy patients with a functioning transplant (figure 14.6). This is the result of the large end stage renal failure

programme in the US. When analysed on the basis of function transplant per million population (figure 14.7) the US has one of the highest rates. In contrast, the UK has a high percentage of renal replacement therapy patients with a functioning transplant and this is mainly a legacy of the previously low percentage of patients starting renal replacement therapy compared with other countries. With the increase in these numbers and the acceptance of both older and less fit patients who are unsuitable for transplantation, the percentage of patients transplanted in the UK will decline. In addition there has also been a reduction in the number of cadaver donors in the UK with only a small compensatory increase in living related donors.

Conclusions

The clinical variables presented here show a picture that is very comparable between the random US sample of mean data and UK Registry single point values. This is despite major differences in the health care systems, if not in fundamental principles of treatment.

There is achievement of higher URR and haemoglobin in the US but the degree of difference between the UK and US is perhaps less than might have been expected. There is a significant non-compliance with Standards in each country. The HCFA data show a progressive improvement in URR from 1993 to 1997. How far this is the consequence of comparative audit or other factors that may have changed the aspirations of clinical staff is unknown.

The importance of adequate iron replacement appears to have been learned.

A more detailed analysis will be of interest in regard to gender, age and race. The availability of data from the new HCFA Clinical Performance Measures Project in 2000 will be of interest and the Renal Registry will work to broaden the scope of the variables that will be available for comparison with them.

References

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3. Owen WF, Lew NL, Liu Y. Lowrie KG, Lazarus JM. The urea reduction ratio and serum albumin as predictors of mortality in patients undergoing haemodialysis. N Engl J Med 1993; 329: 1001-1006.
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