Chapter XII

International Comparisons of ESRD Therapy

A growing number of national and regional registries for treated ESRD patients has come into existence. This invites international comparisons of treated ESRD incident rates per million population, prevalent rates and differences in the use of various treatment modalities. While the Medicare counts for the United States cover approximately 93 percent of all patients treated for ESRD (see Chapter III), few registries have this level of completeness or a count of virtually all patients. Many are based on voluntary submission of data and are therefore less complete. The international data in this chapter are based on reports from the following ESRD patient registries: the Australian and New Zealand Dialysis and Transplant Registry (ANZDATA), the Canadian Organ Replacement Register (CORR), the European Dialysis and Transplant Association (EDTA) Registry (Raine), the Japanese Registry

Treated ESRD Incidence Rate for Selected Countries, 1981-1991

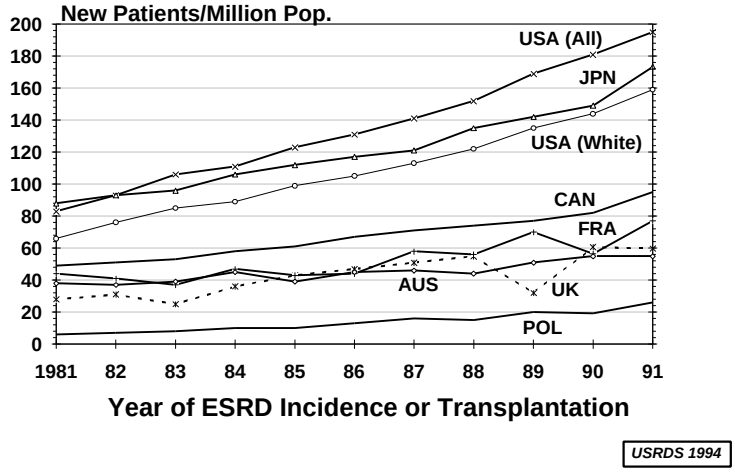

Figure XII-1

Treated ESRD incidence rates per million population (unadjusted) for Australia, Canada, selected European countries, Japan, and the U.S. (total and white patients only) for 1981-1991.

Treated ESRD Prevalence Rates per Million Population for Selected Countries, 1991

Country	Code	Prevalence Counts (n)	Rate (pmp)
Japan	JPN	123,236	994
U.S.A.	USA	183,483	735
Israel	ISR	2,526	545
Spain	SPA	20,963	533
Canada	CAN	13,190	489
Germany	FRG	26,939	439
France	FRA	23,529	417
Australia	AUS	6,658	384
United Kingdom	UK	20,327	354
Italy	ITA	18,799	326
Sweden	SWE	2,791	326
Argentina	ARG	7,986	244
Netherlands	NL	3,459	232
Czechoslovakia	CZE	2,485	159
Brazil	BRA	18,700	122
Poland	POL	3,861	102

Table XII-1

and the relatively new Latin American Registry.

Incidence and Prevalence

Since the last Annual Data Report, the number of patients registered as starting ESRD therapy per year increased in all countries. Treated ESRD incidence rates (counts of new patients per million population) by year are shown in Figure XII-1. The patterns in growth are somewhat variable by country. The United States and Japan have the highest incidence rates of treated ESRD per million population. Canada has the next highest rate, which is by comparison approximately half as high as the overall figures for the United States in 1991. Incidence rates in European countries are lower. For better comparison with European countries, the United States incidence rates are shown not only for the total but also for the white-only subpopulation.

These rates are not adjusted for international differences in age distributions. Treated ESRD incidence rates by country likely depend on the practice of accepting into therapy patients with older age and those with severe comorbid conditions such as diabetes. In the United States, the median age among new patients has been increasing from 55 years in 1980 to 62 years in 1991. Other countries have also had dramatic increases in median age, but as reported in the *1990 USRDS Annual Data Report*, the median age in

1987 was highest in Sweden and the United States.

The prevalence counts of ESRD patients alive and registered on therapy as of December 31, 1991 are described for selected countries in Table XII-1. This table also lists the point prevalence rates of treated ESRD patients per million population. Since these statistics include registered patients only, they reflect undercounts of the true patient populations in many registries. The contrast of a lower incidence and higher prevalence for treated ESRD in Japan compared to the U.S. suggests a better survival among Japanese ESRD patients, as has been shown in two recent studies (Held 1990; Held 1994).

Dialysis Modalities

The utilization of ESRD treatment modalities varies widely by country. CAPD and CCPD have become the most commonly used form of home dialysis. Figure XII-2 shows the percent of all prevalent dialysis patients treated by CAPD or CCPD on December 31, 1991 for selected countries in the order of highest to lowest percentage utilization. Figure XII-3 similarly describes patients on home hemodialysis as a percentage of all dialysis patients in decreasing order for selected countries. Note that the scale is less than half that used in Figure XII-2. Countries using CAPD/CCPD at the highest frequency include the United Kingdom, Canada, and Australia (29-49 percent). The same countries also have the highest percentages for home hemodialysis (11-19 percent). Otherwise, there appears to be no apparent correlation between the frequencies of use for the two modalities.

The two methods of home dialysis combined account for 61 percent of all dialysis in the United Kingdom and for 46-48 percent in Australia and Canada as compared to 15 percent in the U.S. and

Percent of Prevalent Dialysis Patients Receiving CAPD or CCPD for Selected Countries, 1991

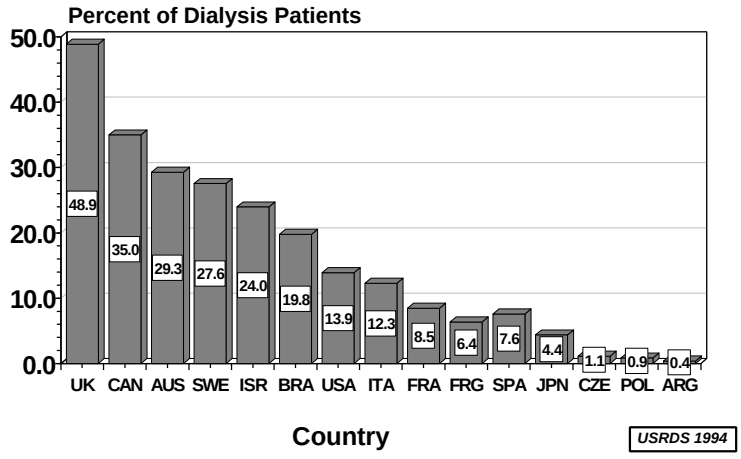

Figure XII-2

Percent of prevalent ESRD patients (dialysis only) receiving CAPD or CCPD for selected countries, 1991.

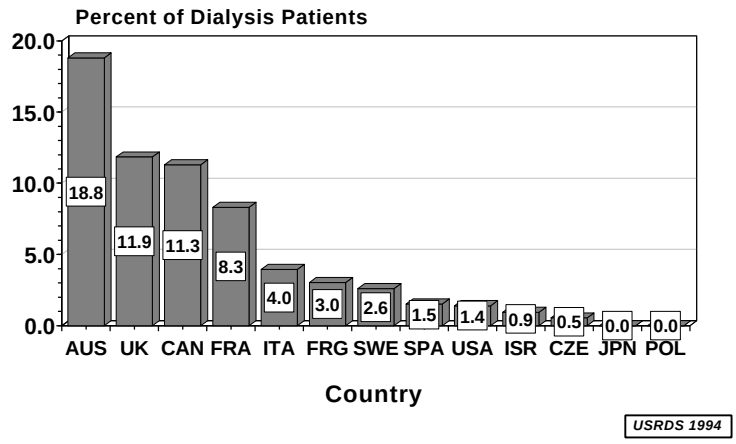

Figure XII-3

Percent of prevalent ESRD patients (dialysis only) receiving CAPD or CCPD for selected countries, 1991.

less then 2 percent in several other countries. Continuous peritoneal dialysis is by far the predominant mode of home dialysis therapy except in France, where both modalities are used at virtually the same frequency. Reasons for these differences in the approach to ESRD treatment modalities have been discussed recently by Nissenson et al (Nissenson).

Utilization of Transplantation

Although there has been a trend towards transplanting older patients (see Chapter VIII), geriatric patients are rarely eligible for transplantation. Therefore, analysis of the fraction of ESRD patients transplanted may give low figures for countries with relatively higher fractions of geriatric ESRD patients. To avoid the problem of variable acceptance of older patients for ESRD therapy, this report uses the general population as the denominator (Webb).

Figure XII-4 shows the number of patients receiving a renal transplant during 1991; the number is calculated per million total population as a transplantation rate. Sweden and the United States have the highest percentage of transplantation rates. Japan has a much lower reported percentage.

The results of a separate analysis assessed the number of transplant patients with functioning grafts on December 31, 1991 per million population for selected countries, as shown in Figure XII-5. Since Figure XII-5 and Figure XII-4 use the same rank order of countries, comparison of these two figures is facilitated. Discrepancies by country between the transplantation rate and the functioning graft rate reflect in part the transplantation activity during the previous decade (Figure XII-5) versus that during the most recent available year (Figure XII-4). Additionally, graft survival may vary somewhat by country

Transplantation Rate for Selected Countries, 1991

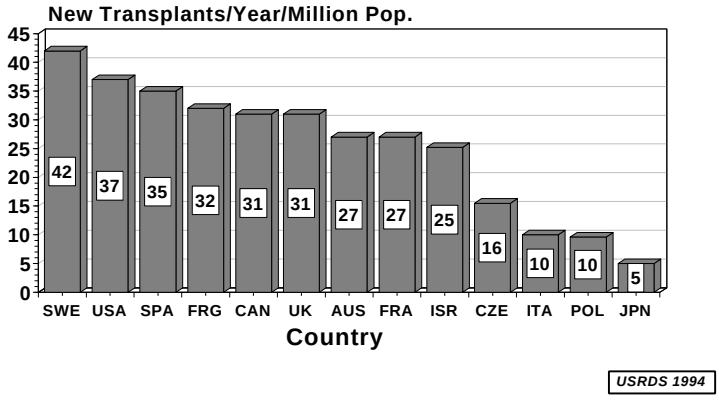

Figure XII-4

Number of transplantations performed per million population for selected countries, 1991

and there may be a varying undercount by country of long-term survivors with a functioning renal transplant.

Patient Survival

Since large differences exist between countries in the utilization of treatment modalities and in the acceptance of patients, particularly for diabetics and geriatric age groups (Kjellstrand), it is difficult to interpret observed differences in mortality rates. In a recent study, Held and coworkers described the comparison of survival among U.S. and Japanese dialysis patients and also reported the results for all ESRD patients combined (Held 1994). The comparative survival probabilities showed similarly worse outcomes for all ESRD patients as for dialysis patients in the older adult age group studied. Presumably, the large differences by patient group would be even larger in younger patient groups, since the difference in transplantation rates between Japan and the United States would be more pronounced.

In another international comparison, five-year mortality rates were evaluated for all ESRD patients combined (dialysis *and* transplant), analyzing diabetic patients separately from non-diabetic patients and using many separate age categories. Overall, this analysis showed favorable results in the United States for pediatric patients and unfavorable United States results for adult patients over the age of 15-30 years when compared to findings from the EDTA and the Japanese registries (Held 1990) and to those of the Canadian registry (Held unpublished). This observation is striking because a relatively high fraction of U.S. patients receives renal transplants, which should lead to superior results (Port). One may speculate that these findings are in part explained by differences in the completeness of reporting of deaths, since the USRDS uses, in addition to the Death Notification Form, two other

Functioning Graft Rate for Selected Countries, 1991

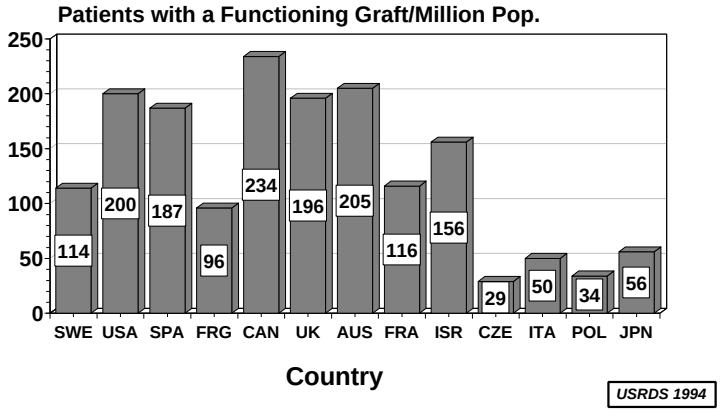

Figure XII-5

Number of patients alive with functioning graft per million population for selected countries, 1991.

sources to capture patient deaths as discussed in Chapter VII. For those registries that have complete data reporting, such analyses need to be pursued further. Important insight can be provided from international comparisons across different health care systems (Held 1990, Nissenson 1993) and from differences in the average dose of dialysis (Held 1992). Much can be learned from future comparative studies of different approaches, health systems, and ESRD prescriptions.

References

ANZDATA Report 1992. Australia and New Zealand Dialysis and Transplant Registry. Disney APS (ed), Adelaide, South Australia.

Canadian Organ Replacement Register (CORR). 1992 Annual Report. Canadian Institute for Health Information, Don Mills, Ontario, March 1994.

Held PJ, Akiba T, Stearns NS, Marumo F, Turenne MN, Maeda K, Port FK. Survival of middle aged dialysis patients in Japan and the U.S. In: Friedman EA, ed. Death on Dialysis. Kluwer Academic Publishers Hingham, MA 1994 pp 13-23..

Held PJ, Blagg, CR, Liska DW, Port FK, Hakim R, Levin NW. The dose of hemodialysis according to dialysis prescription in Europe and in the United States. Kidney Int 1992; 42 (Suppl 38): S16-S21.

Held PJ, Brunner F, Odaka M, Garcia JR, Port FK, Gaylin DS. Five-year survival for end-stage renal disease patients in the United States, Europe, and Japan, 1982 to 1987. Am J Kidney Dis 1990; 15: 451-457.

Held PJ et al. Unpublished data.

Japanese Registry: Personal Communication, T. Akiba, 1994.

Kjellstrand CM, Hylander B, Collins AC. Mortality on dialysis—on the influence of early start, patient characteristics, and transplantation and acceptance rates. Am J Kidney Dis 1990; 15:483-490.

Nissenson AR, Prichard SS, Cheng IKP, Gokal R, Kubota M, Maiorca R, Riella MC, Rottembourg J, Stewart JH. Non-medical factors that impact on ESRD modality selection. Kidney Int 1993; 43 (Suppl 1):S1-S8.

Port FK, Wolfe RA, Mauger EA, Berling DP, Jiang K. Comparison of survival probabilities for dialysis patients versus cadaveric renal transplant recipients. JAMA 1993; 270:1339-1343.

Raine AEG, Margreiter R, Brunner FP, Ehrich JHH, Geerlings W, Landais P, Loirat C, Mallick NP, Selwood NH, Tufveson G, Valderrabano F. Report on management of renal failure in Europe, XXII, 1991. Nephrol Dialysis Transpl 1992; 7(Suppl. 2): 7-35.

Registro Latinoamericano de Diálisis y Trasplante Renal: Informe de diálisis AÑO 1991; Sociedad Latinoamericana de Nefrología. 1992

United States Renal Data System. USRDS 1990 Annual Data Report, National Institutes of Health, National Institutes of Diabetes and Digestive and Kidney Diseases, Bethesda, MD, 1990, and Am J Kidney Dis 1990; 16(Suppl.2):i-106.

Webb RL, Port FK, Gaylin DS, Agodoa LYC, Greer J. Recent trends in cadaveric renal transplantation. In: Terasaki P, ed. Clinical Transplants 1990. UCLA Tissue Typing Laboratory, Los Angeles, CA. pp 75-87.