

Chapter XII

International Comparisons of ESRD Therapy

Over the last decade a growing number of national and regional registries dealing with treated ESRD patients have been created. The existence of these registries allows an international comparison of incidence and prevalence rates, and a description of differences in the use of the various treatment modalities for patients treated for ESRD. The USRDS covers 93 percent of all patients treated for ESRD in the United States through mandatory counts of patients whose treatment is paid for by Medicare (see Chapter III). Several registries are equally or more complete (D'Amico 1995), many others 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 (Teraoka) and the relatively new Registro Latinoamericano for Dialysis and Transplantation. Proceedings from the "Symposium on Renal Replacement Therapy Throughout the World" of 1993 were recently published (D'Amico) and provide further information, mostly based on more detailed reports of the registries.

Incidence and Prevalence

During 1992 the number of patients registered as starting ESRD therapy per year was higher than in 1991 for 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 were somewhat variable by country, although the percent increase per year was more similar than

may be apparent in this figure (the lines were almost parallel on a semilogarithmic plot).

The United States and Japan have the highest incidence rates of treated ESRD per million population. Canada had the next highest rate, which was by comparison approximately half as high as the overall figures for the United States in 1992. Incidence rates in European countries were 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 (mostly of European descent) subpopulation.

These rates are not adjusted for international differences in age distributions. Treated ESRD incidence rates by country likely depend on differing acceptance practices for older patients and those with severe comorbid conditions such as diabetes. In the United States, the median age among new patients has been increased from 55 years in 1980 to 62 years in 1992. Other countries have also had dramatic increases in median age (USRDS 1990). The median and mean ages for incident patients by country are shown in Figure XII-2. The mean age in 1992 was highest in the United States, followed by Canada. The large differences in mean age (by as much as 12.5 years) point to difficulties in international comparisons, particularly among older age groups where acceptance criteria for ESRD therapy may differ greatly.

The prevalence counts of ESRD patients alive and registered on therapy as of December 31, 1992 are described for selected countries in Table XII-1. This table also lists the point prevalence rates for treated ESRD patients per million population. Since these statistics include registered patients only, they reflect undercounts of the true patient populations in many registries. In Japan incidence rates were lower and

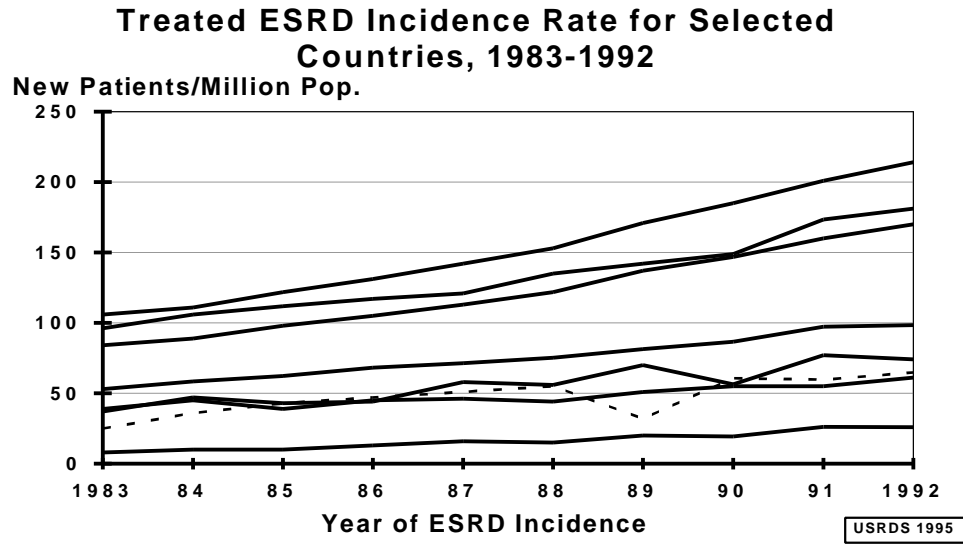


Figure XII-1

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 1983-1992.

prevalence rates higher for treated ESRD as compared to corresponding numbers in the U.S. This observation suggests a better survival among Japanese ESRD patients, as has been reported 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-3 shows the percent of all prevalent dialysis patients treated by CAPD or CCPD on December 31, 1992 for selected countries in the order of highest to lowest percentage utilization. Figure XII-4 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-3. The United Kingdom, Canada, and Australia continue to

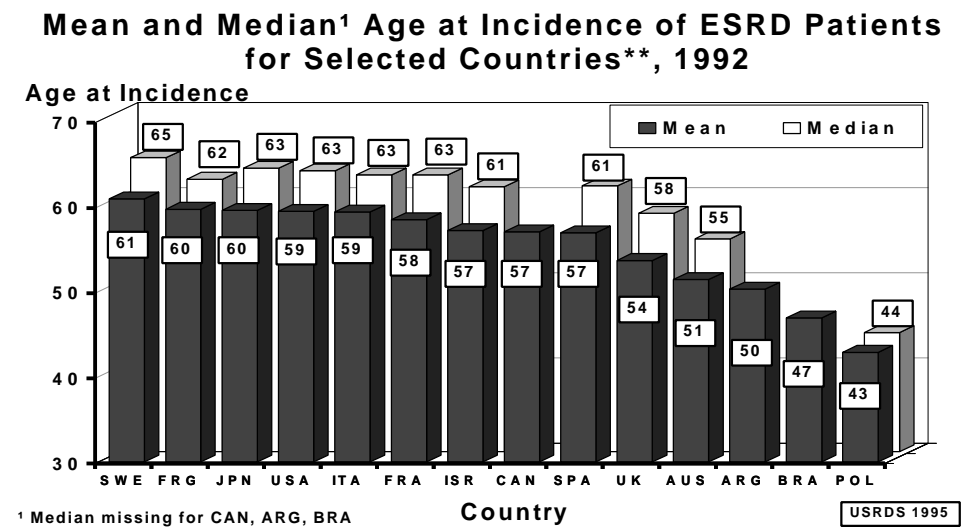


Figure XII-2

* See table XII-1 for Country Codes.

**Treated ESRD Prevalence Rates per Million
Population for Selected Countries, 1992**

Country	Code	Prevalence	Rate
		Counts (n)	PMP ¹
Japan	JPN	123,926	996
U.S.A.	USA	205,911	802
Spain	SPA	22,300	571
Canada	CAN	14,211	518
Sweden	SWE	4,371	509
Israel	ISR	2,326	476
Netherlands	NL	6,666	444
France	FRA	23,182	409
Australia	AUS	7,059	403
Germany	FRG	23,763	387
United Kingdom	UK	21,995	382
Italy	ITA	17,614	305
Argentina	ARG	8,018	244
Czechoslovakia	CZE	3,662	159
Brazil	BRA	17,196	110
Poland	POL	3,566	93

¹ Patients per million population

Table XII-1

be the countries using CAPD/CCPD at the highest frequency (30.5 - 48.9 percent). These countries also have the highest percentages for home hemodialysis (10.2 - 18.1 percent). Otherwise, there appears to be no correspondence between the frequencies of use of the two modalities but rather that the observed

differences reflect varying patterns of preference in individual countries.

The two methods of home dialysis combined account for 59 percent of all dialysis in the United Kingdom, for 49 percent in Australia and for 44 percent in Canada as compared to 16 percent in the

**Percent of Prevalent Dialysis Patients Receiving
CAPD or CCPD for Selected Countries*, 1992**

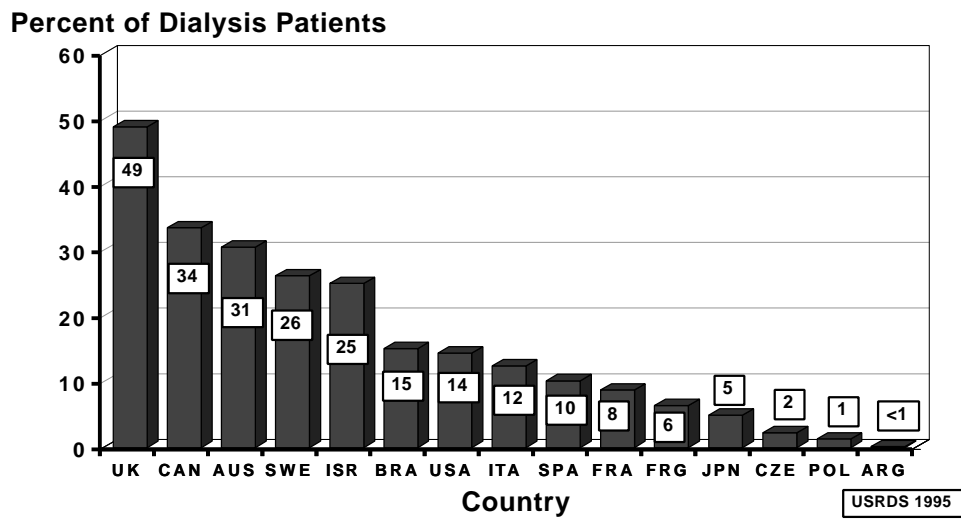


Figure XII-3

* See table XII-1 for Country Codes.

Percent of Prevalent Dialysis Patients Receiving Home Hemodialysis for Selected Countries*, 1992

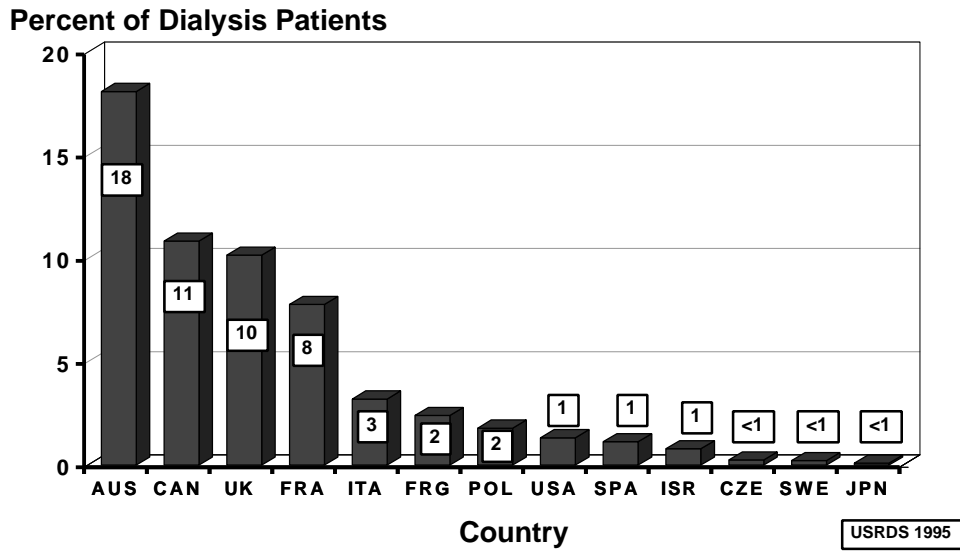


Figure XII-4

* See table XII-1 for Country Codes.

U.S. and less than 4 percent in Poland, Czechoslovakia and Argentina. Continuous peritoneal dialysis is by far the predominant mode of home dialysis therapy except in France, where both modalities are used at almost the same frequency. Reasons for these differences in the approach to ESRD treatment modalities have been discussed

recently (Nissenon).

Utilization of Transplantation

Although there has been a trend towards transplanting older patients (see Chapter VIII), a small fraction are currently transplanted. Therefore, analysis of the fraction of ESRD patients transplanted

Transplantation Rate for Selected Countries*, 1992

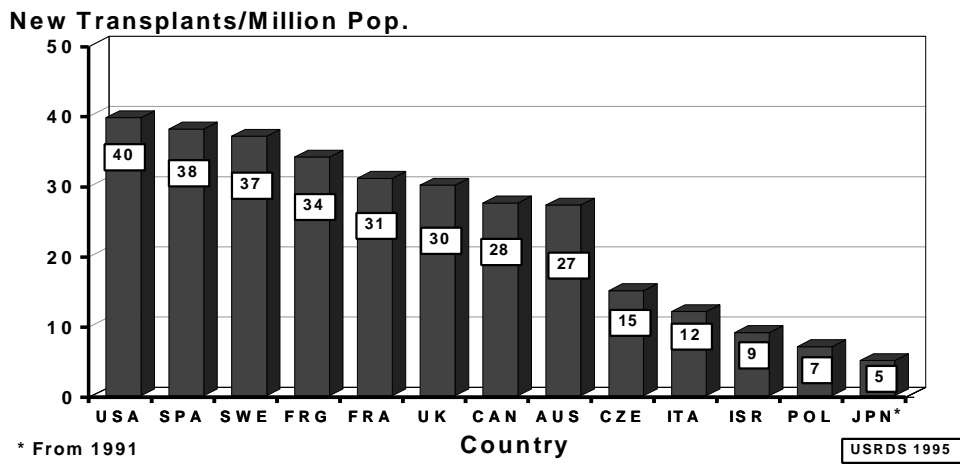


Figure XII-5

* See table XII-1 for Country Codes

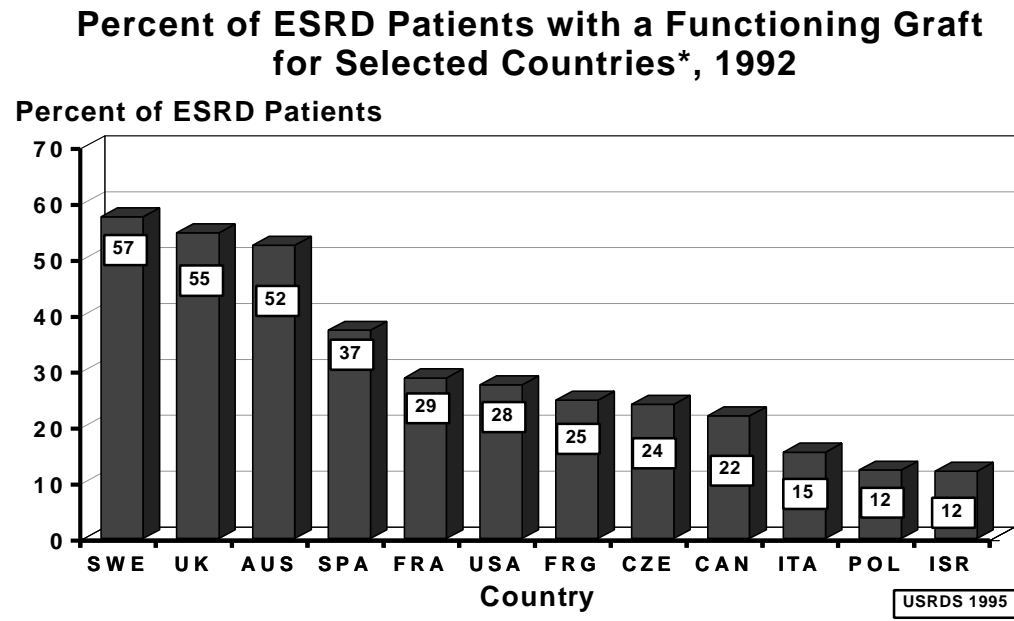


Figure XII-6

* See table XII-1 for Country Codes

may give low figures for countries with higher proportions of older 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 transplantation rate as the number of patients receiving a renal transplant during 1992 per million total population. The United States, Spain and Sweden have the highest transplantation rates. Japan has a very low reported transplantation rate.

The results of a separate analysis assessing the percent of ESRD patients with functioning grafts on December 31, 1992 is shown in Figure XII-6 for selected countries. The rank order of countries in Figure XII-6 differs from that in Figure XII-5. The transplantation rates reflect in part the transplantation activity during 1992, while the fraction of ESRD patients with a functioning transplant indicates both the transplantation activity over several years and the graft survival. It is also possible that there may be an undercount of long-term survivors with a functioning renal transplant in certain countries.

Patient Survival

Since large differences exist between countries in the utilization of treatment modalities and in the acceptance of patients, particularly for diabetics and older age groups (Kjellstrand), it is difficult to interpret observed differences in mortality rates. In a recent study, Held and coworkers compared survival among U.S. and Japanese dialysis patients and also reported the results for all ESRD patients combined (Held 1994). When converting the percent survival to a mortality risk analysis, the risk was more than two fold greater for corresponding U.S. dialysis patients in the adult age groups studied (45 - 54 and 55 - 64 years), both among male and female diabetic and non-diabetic patients.

In another international comparison, five-year mortality rates were evaluated for all ESRD patients (combining dialysis and transplant patients), analyzing diabetic patients separately from non-diabetic patients and using many separate age categories. This analysis showed that the probability of survival in the United States was greater in pediatric patients and lower in patients over 24 years of age when compared to corresponding findings from the EDTA and the Japanese registries (Held 1990). Similar comparative outcomes were observed for US data compared to those of the Canadian

registry (Held et al, unpublished data). These observations are 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 could be due in part to a more complete reporting of deaths in the USRDS. In fact, the USRDS captures only about 90 percent of death through reporting from ESRD facilities (Death Notification Form), but supplements information on patient deaths from two additional other sources for a remarkably complete reporting as discussed in Chapter VII.

For international comparisons of survival, potential problems outlined by Kjellstrand (1994) need to be considered. For those registries that have similarly complete data reporting, comparative analyses will be valuable and deserve to be pursued further. Important insights have already been learned from international comparisons of different health care systems (Held 1990, Nissenson 1993) and health care delivery (Held 1992). More could be learned from future comparative studies of different approaches, health systems, and ESRD prescriptions.

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