

Chapter XII

International Comparisons of ESRD Therapy

Key Words:

ESRD registry
 ESRD prevalence
 Dialysis modality

Renal transplantation
 ESRD incidence
 ESRD-International comparisons

There are a growing number of national and regional registries throughout the world collating information on treatment of ESRD. 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 ESRD.

comparison of ESRD therapy is that the quality of the available data vary considerably between registries. The USRDS covers at least 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 II). As of April 1995 dialysis facilities in the United States have completed a HCFA Medical Evidence Form on all incident

An important caveat to any international

Treated ESRD Incidence Rate for Selected Countries, 1984-1995

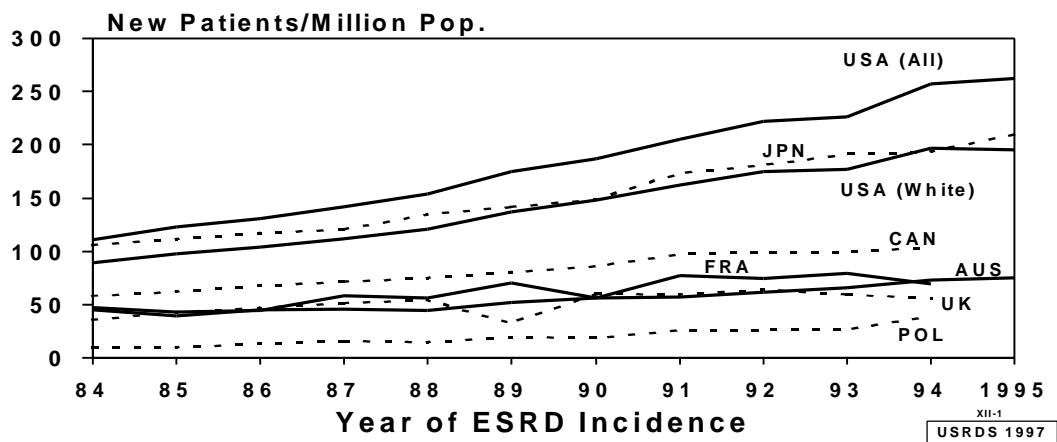


Figure XII - 1

Treated ESRD incidence rates per million population (unadjusted) for Australia, Canada, selected European countries, Japan (dialysis patients only), and the U.S. (total and white Medicare patients only) for 1984-1995.

**Treated ESRD Prevalence Rates
(Unadjusted) per Million Population
for Selected Countries, 1994/95**

Country	Code	Prevalence	Rate
		Counts (n)	PMP ¹
Japan ^{2,3}	JPN	154,413	1,230
U.S.A. ³	USA	257,266	975
Spain	SPA	24,894	635
France	FRA	36,437	628
Germany ⁴	GER	49,824	614
Austria	ÖST	4,615	577
Canada	CAN	16,727	572
Sweden	SWE	5,004	569
Netherlands	NL	7,531	489
Australia ³	AUS	8,703	482
Israel	ISR	2,386	442
Italy	ITA	22,315	390
Czechoslovakia	CZE	4,764	305
United Kingdom	UK	15,815	271
Chile ²	CHL	3,424	245
Poland	POL	6,078	157

¹ Patients per million population
² Dialysis Patients only
³ Data for 1995
⁴ Estimate (EDTA Report XXV, 1994)

Table XII - 1

ESRD patients. These data are now included in the USRDS database, allowing the USRDS to gather information on non-Medicare patients as well. USRDS data are also gathered from multiple sources which allows cross-checking to ensure accuracy.

In some other countries submission of data is voluntary and not linked to reimbursement. Questionnaire response rates to registries with voluntary submission of data are more variable. In some instances these registries may be equally or

**Percent of Prevalent Dialysis Patients Receiving
CAPD or CCPD for Selected Countries, 1994**

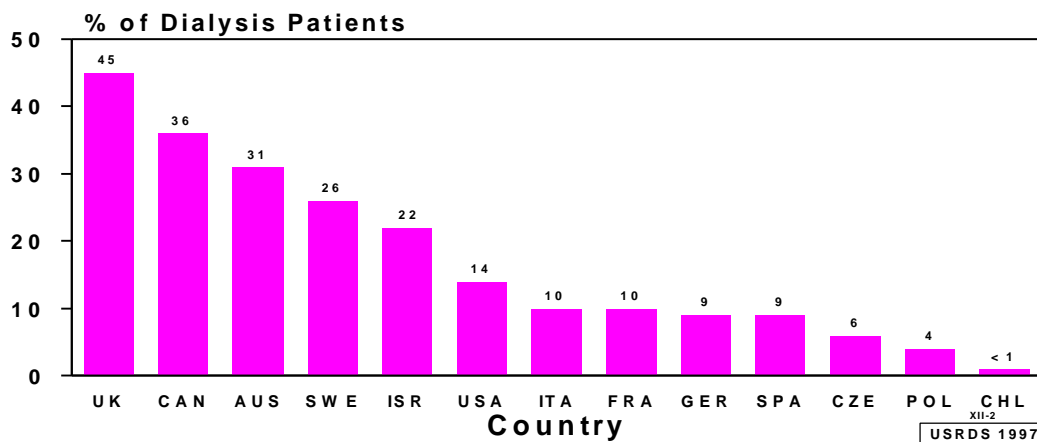


Figure XII - 2

Percentage of all prevalent dialysis patients being treated with CAPD or CCPD in Australia, Canada, selected European countries, and in the U.S. on December 31, 1994. See table XII-1 for Country Codes.

Percent of Prevalent Dialysis Patients Receiving Home Hemodialysis for Selected Countries, 1994

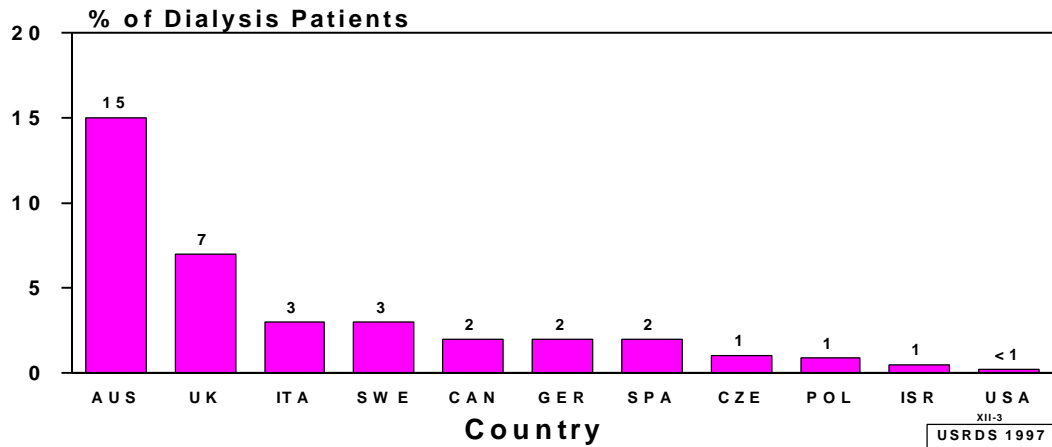


Figure XII - 3

Percentage of all prevalent dialysis patients being treated with home hemodialysis in Australia, Canada, selected European countries, and in the U.S. on December 31, 1994. See table XII-1 for Country Codes.

more complete. The Japanese Society of Dialysis Therapy report a 99.8 percent response to their 1994 survey. Response rates to other registries are lower. The European registry had an overall response rate to a center questionnaire of 66 percent, and to a patient questionnaire of 55 percent in 1994 (Valderrábano 1996).

The international data in this chapter are based on reports from the following ESRD patient registries: the Australia and New Zealand Dialysis and Transplant Registry (ANZDATA), the Canadian Organ Replacement Register (CORR), the European Dialysis and Transplant Association (EDTA) Registry, the Chilean Dialysis Registry, and the

Change in Utilization of CAPD/CCPD for Selected Countries, 1984 versus 1994

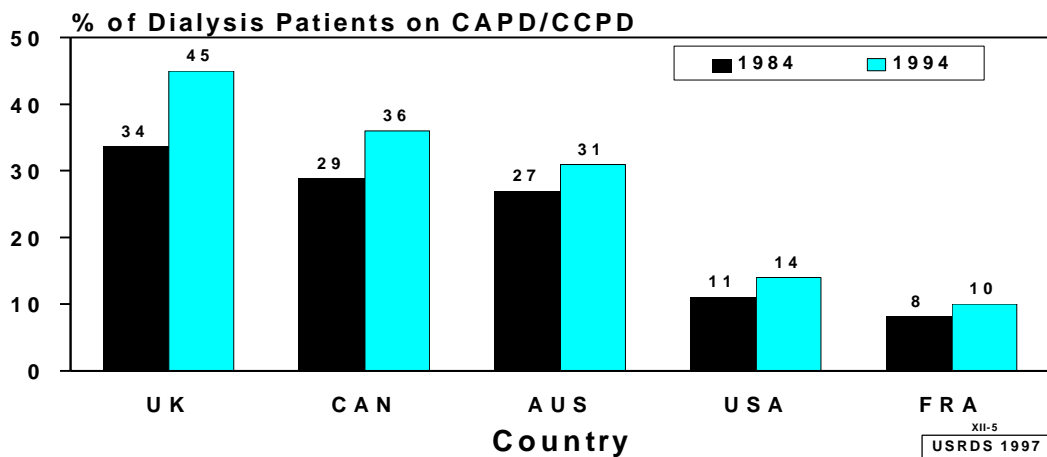


Figure XII - 4

Percentage of total dialysis patients treated with CAPD or CCPD for Australia, Canada, selected European countries, and in the U.S. on December 31, 1984 and 1994 (Australian data for October 31, 1984). See table XII-1 for Country Codes.

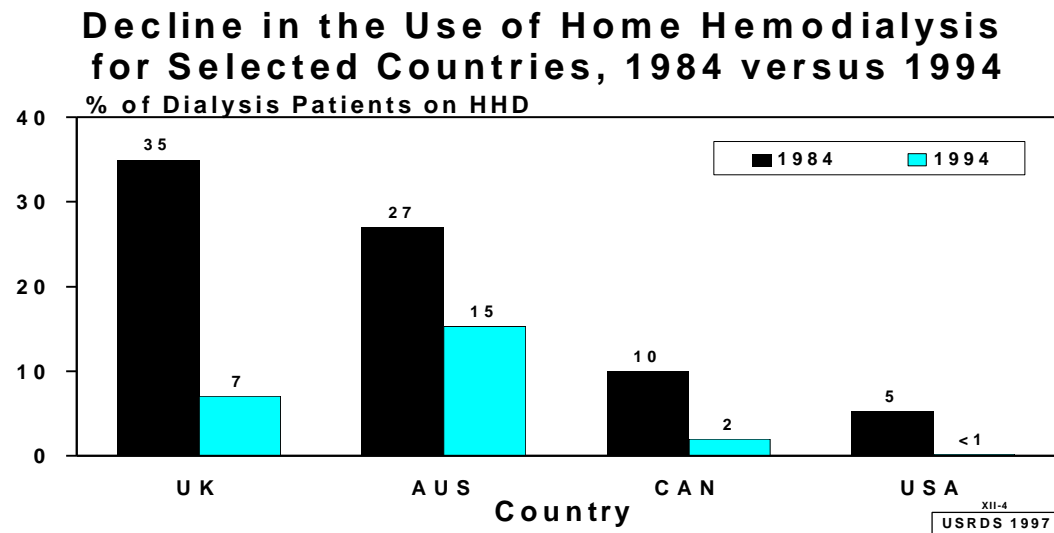


Figure XII - 5

Percentage of total dialysis patients treated with home hemodialysis for Australia, Canada, the UK, and in the U.S. in 1984 and 1994. See table XII-1 for Country Codes.

registry of the Japanese Society of Dialysis therapy.

Incidence and Prevalence

In general, through 1995, treated ESRD incidence rates (counts of new patients per million population) continued to increase (Figure XII-1). The patterns in growth were somewhat variable by country, although the percent increase per year for each country over the last decade is more similar than may be apparent in this figure since the lines were almost parallel on a semi-logarithmic plot (Port 1995).

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 less than half as high as the overall figures for the United States in 1994. Incidence rates in other 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) sub-population. These rates are not adjusted for international differences in age distributions. In the United States, the median age among new patients has increased from 55 years in 1980 to 63 years in 1995. Other countries have also had dramatic increases in median age (USRDS 1995). Treated ESRD incidence rates by country likely depend on differing acceptance practices for older patients and those with diabetes or severe comorbid conditions.

The prevalence counts of ESRD patients alive and registered on therapy as of December 31, 1994 and 1995 are described for selected countries in Table XII-1. This table also lists the point prevalence rates for treated ESRD patients per million population (pmp). Since these statistics include registered patients only, they reflect undercounts of the true patient populations in many registries and must be interpreted with caution. For example, in the United Kingdom the apparent prevalence rate of treated ESRD fell from 382 to 271 pmp between December 31, 1992 and 1994 (EDTA 1994, EDTA 1996). However, the response rate to the EDTA center questionnaire fell from 95 percent to 65 percent during this time period in the United Kingdom, so a substantial undercount of patients may now obscure an actual increase in prevalence rate.

In Japan incidence rates were lower and point prevalence rates higher for treated ESRD as compared to corresponding rates in the United States. This observation suggests a better survival among Japanese ESRD patients, as has been reported in two previous studies (Held 1990; Held 1994).

Dialysis Modalities

The utilization of ESRD treatment modalities varies widely by country. Figure XII-2 shows the percent of all prevalent dialysis patients treated by CAPD or CCPD on December 31, 1994 for selected countries in the order of highest to lowest percentage utilization. Figure XII-3 similarly describes patients

Transplantation Rates for Selected Countries, 1994

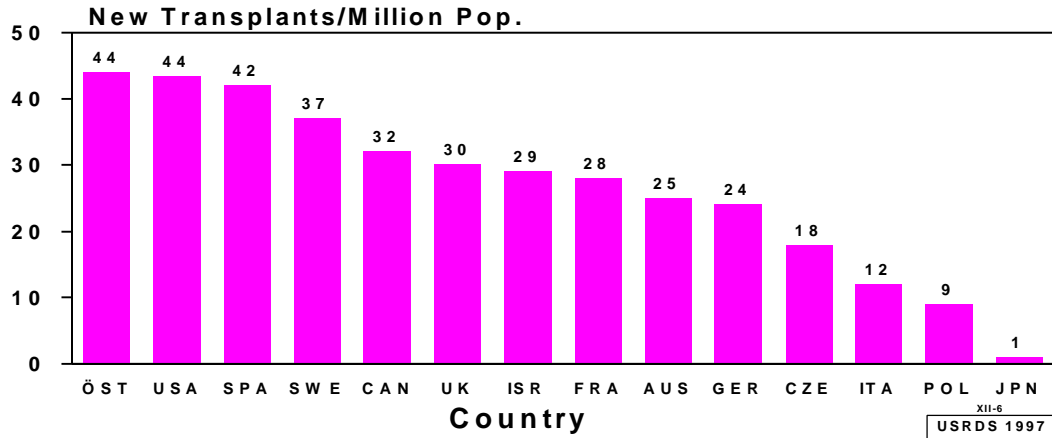


Figure XII - 6

Transplantation rate (count of new renal transplants per million total population) in Australia, Canada, selected European countries, Japan, and in the U.S. during 1994. See table XII-1 for Country Codes.

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. Australia and the United Kingdom have the greatest proportion of patients treated with home hemodialysis (15 and 7 percent respectively); however, even in these countries, the proportion of dialysis patients using this modality has declined considerably since 1984 (Figure XII-4).

Peritoneal dialysis has replaced home hemodialysis as the most common form of dialysis at home in the last decade. Figure XII-5 shows that the utilization of CAPD/CCPD increased in all the selected countries 1984 to 1994. Home dialysis therapies (home hemodialysis and CAPD/CCPD) account for 52 percent of all dialysis in the United Kingdom, for 46 percent in Australia and for 38 percent in Canada as compared to 16 percent in the

Percent of Transplants of Live Donor Origin for Selected Countries, 1994

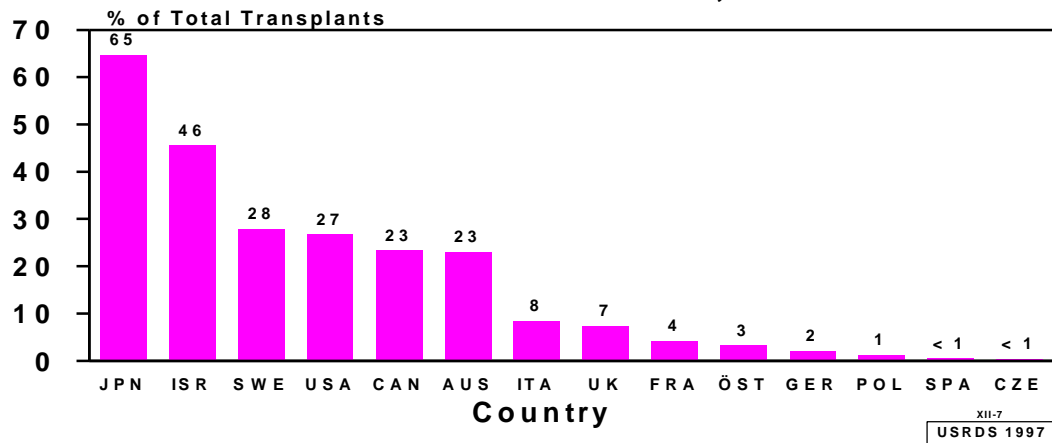


Figure XII - 7

Percentage of transplants of live donor origin for Australia, Canada, selected European countries, Israel, and the U.S. in 1994. See table XII-1 for Country Codes.

Change in Utilization of Living Donor Transplantation for Selected Countries, 1988 - 1994

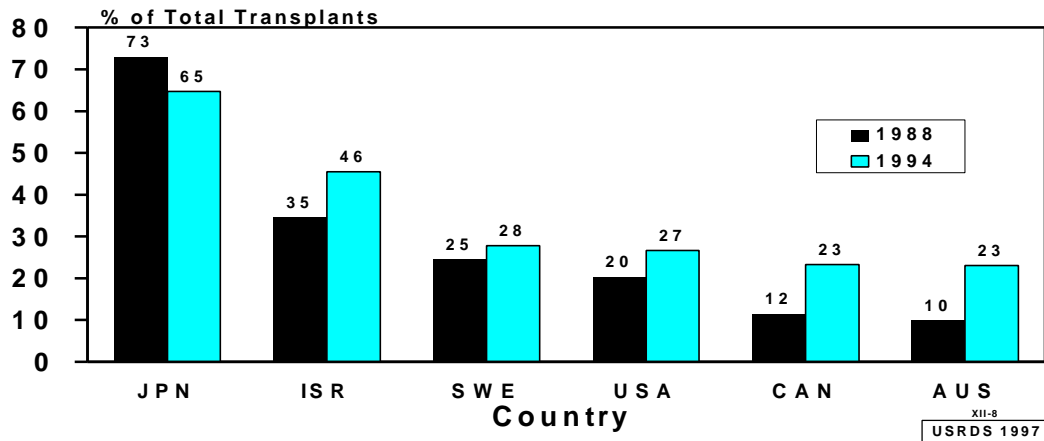


Figure XII - 8

Change in the utilization of living donor transplants in Australia, Canada, Israel, Japan, and the U.S., 1988-1994.

United States and less than 8 percent in Poland and Czechoslovakia.

Utilization of Transplantation

This report uses the general population as the denominator for transplantation rates to allow better comparison of the rate between countries which accept different proportions of older patients for ESRD treatment. Although there has been a trend towards transplanting older patients (see Chapter VII), a small fraction are currently transplanted. If the count of prevalent ESRD patients was used as the denominator for the transplantation rate, countries which accept higher proportions of older patients for ESRD treatment would have a lower rate.

Figure XII-6 shows the transplantation rate as the number of patients receiving a renal transplant during 1994 per million total population for selected countries. Austria, the United States, Spain and Sweden have the highest transplantation rates while Italy, Poland and Japan have low reported transplantation rates. Austria and Spain have been particularly successful at increasing their rates of transplantation; for Austria this dramatic increase may be related to an assumed consent law for cadaveric organ donation.

There are pronounced international differences in the proportion of transplants which come from living donors (Figure XII-7). Some countries, such as Spain, Austria, and the United Kingdom have achieved high

transplantation rates from cadaveric donors alone. Other countries such as Sweden, Israel, and Japan rely extensively on living donor transplantation. This may be because the overall transplantation rate is low in Japan, or because of a shortage of cadaveric donor organs. As shown in Figure XII-8, in the United States, Canada, and Australia there has been a progressive increase in use of live donor organs since 1988 likely due to such a shortage of cadaveric organs for kidney transplantation.

The results of a separate analysis assessing the percent of ESRD patients with functioning grafts on December 31, 1994, are shown in Figure XII-9 for selected countries. The rank order of countries in Figure XII-9 differs from that in Figure XII-6. The transplantation rates reflect in part the transplantation activity during 1994, 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. The fraction of ESRD patients with a functioning graft is also influenced by the average age of dialysis patients in each country; a large denominator of elderly patients may result in a low percentage of patients with a transplant.

Patient Survival

Since large differences exist between countries in the utilization of treatment modalities and in the

Percent of ESRD Patients with a Functioning Renal Transplant for Selected Countries, 1994

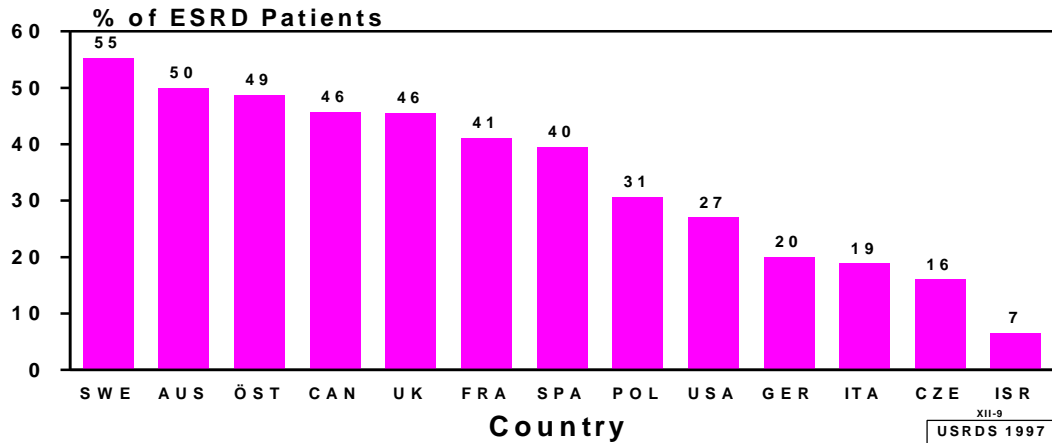


Figure XII - 9

Percentage of all patients with treated ESRD with a functioning renal transplant on December 31, 1994 for Australia, Canada, selected European countries, and in the U.S. See table XII-1 for Country Codes.

acceptance of patients, particularly for diabetics and older age groups, it is difficult to interpret observed differences in mortality rates (Kjellstrand). It is possible to attempt to adjust statistically for such differences in patient characteristics and comorbid conditions as in a study comparing patient survival between patients with treated ESRD in the USRDS and Lombardy Dialysis and Transplant Registry (Marcelli).

Future international comparative studies of survival will require a similar multivariate analysis with adjustment for patient characteristics, known risk factors and comorbid conditions. The accuracy of such adjustment is fundamentally dependent on the quality and uniformity of the data collected. There is increasing information about what data need to be gathered in order to predict mortality among dialysis patients (Wolfe). Future studies of this type will mandate prospective data collection with close participation between collaborating registries.

Important insights have already been learned from international comparisons of different health care systems (Held 1990, Nissenson) 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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