

EXPLOSION OF RENAL REPLACEMENT THERAPY AFTER THE IMPLOSION OF THE SOVIET EMPIRE

Boleslaw Rutkowski, MD; Eberhard Ritz, MD

After the implosion of the Soviet Empire, renal replacement therapy in Central and Eastern Europe has undergone dramatic transformation and improvement with respect to quantity and quality. While the prevalence (ie, the number of patients on renal replacement therapy) is still lower than in Western Europe, the incidence (ie, the number of patients accepted for renal replacement therapy) has by now reached on average the level seen in Western Europe, albeit with wide differences between the individual countries. The rate of renal transplantation is still highly variable. Substantial differences of organizational structures for renal replacement therapy exist, with private organizations gradually taking over from public services. (*Ethn Dis.* 2006;16[suppl 2]:S2-17–S2-19)

Key Words: Renal Replacement Therapy, Hemodialysis, Peritoneal Dialysis, Renal Transplantation, Central and Eastern Europe

INTRODUCTION

The political structures of Eastern Europe, decided upon during the Jalta conference, underwent a dramatic change in 1989 with the crumbling of the Warsaw Pact and the collapse of the Soviet Empire. Although renal replacement therapy (RRT) had been available in Eastern Europe before this point in time, albeit on a relatively modest level, it has seen an astonishing upswing ever since¹ and in many countries has by now reached the rates seen in the Western world,² although large differences exist between individual countries.³

PREVALENCE OF RRT IN CENTRAL/EASTERN EUROPE

Compared to the prevalence in countries such as United States (1147 per million population [pmp]), Japan (1465 pmp), Canada (610 pmp), or countries in Western Europe, eg, Germany (546 pmp), the prevalence of RRT reported from Central and Eastern Europe is still lower, with a few exceptions, mainly the former Yugoslavia (Table 1). The countrywide prevalence rates may hide, however, enormous differences within countries, eg, in Russia, where according to some local reports the prevalence of hemodialysis in Moscow (129 pmp) and St. Petersburg (97 pmp) vastly exceeds that in eastern Siberia (10.5 pmp). The continuous growth of the number of patients on dialysis in Central and Eastern Europe is illustrated by the representative figures of the number of prevalent patients in Poland, which increased continuously from 67 pmp in 1990 to 295 pmp in 2002, a 4.8-fold increase (Figure 1).

INCIDENCE OF RRT IN CENTRAL/EASTERN EUROPE

The incidence, or more strictly speaking the annual acceptance rate, which has been 320 pmp in the United States, 152 pmp in Canada, 234 pmp in Japan, and 128 pmp in Germany, has been 80 pmp in Central and Eastern Europe—again with considerable variations between countries as illustrated by Table 2.

CAUSES OF END-STAGE RENAL DISEASE IN CENTRAL AND EASTERN EUROPE

Although the reported causes may admittedly differ from the true diagnoses, the percentage of patients admitted with the diagnosis of glomerulonephritis has decreased, as shown by the representative data from Poland between

Table 1. The prevalence of renal replacement therapy in Central and Eastern Europe

	pmp (patients per million population)
Russia	60
Belarus	92
Estonia	115
Latvia	141
Romania	135
Lithuania	204
Poland	296
Bulgaria	278
Bosnia-Herzegovina	361
Hungary	381
Yugoslavia	435
Slovakia	488
Czech Republic	429
Macedonia	484
Croatia	581
Slovenia	622

From the Department Nephrology, Transplantology and Internal Medicine, Medical University, Gdansk, Poland (BR); Ruperto-Carola University, Department Internal Medicine, Nierenzentrum, Heidelberg, Germany (ER).

Address correspondence and reprint requests to Professor Eberhard Ritz; Ruperto Carola University; Department Internal Medicine; Nierenzentrum; Im Neuenheimer Feld 162; D 69120 Heidelberg (Germany); 0049-6221-601705; 0049-6221-603302; prof.e.ritz@t-online.de

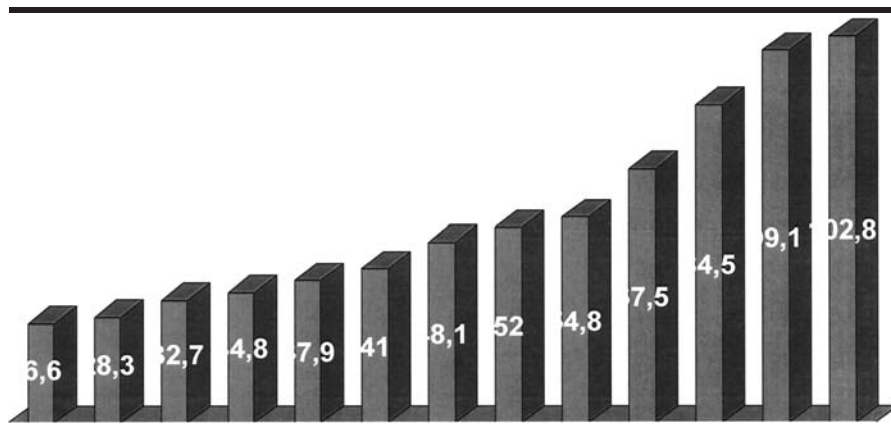


Fig 1. Acceptance rate (incidence) for dialysis in Poland, 1991–2003 (pmp)

1992 and 2003, from 52.1% to 23.7%, while the percentage of patients admitted with the diagnosis of diabetic nephropathy increased from 4.7% to 19.8% and that of patients admitted with the diagnosis of hypertensive nephropathy from 2% to 10.2%.

A similar trend for the increase of diabetic nephropathy has been reported from the Czech Republic, where it went from 10% in 1991 to 24% in 1995 to 31% in 1998. Nevertheless, the per-

Table 2. Incidence of patients admitted for renal replacement therapy in Central and Eastern Europe (data refer to the figures reported in 2003 with the exception of Slovenia, Croatia, Bulgaria, and Lithuania, which were reported in 2001)

	pmp
Russia	15
Estonia	28
Belarus	31
Yugoslavia	37
Romania	53
Latvia	59
Macedonia	73
Bulgaria	77
Lithuania	77
Poland	103
Bosnia-Herzegovina	110
Croatia	118
Hungary	128
Slovakia	139
Slovenia	144
Czech Republic	171

centage of patients admitted with the diagnosis of diabetic nephropathy varies strikingly between the different countries of Central and Eastern Europe, as summarized in Table 3, and this issue may be interesting to study with more sophisticated methods.

Overall, however, the analysis of the data of the Pre-Dialysis Survey on Anaemia Management (PRESAM)⁴ has shown no major differences in the percentage of the patients' primary renal diseases who were reported from Western versus Central/Eastern Europe: for diabetic nephropathy, 22.4% in Western Europe versus 24.3% in Central/Eastern Europe; for glomerulonephritis, 17.8% versus 21.9%; and for autosomal dominant polycystic kidney disease, 7.1% versus 7.6%. The only major differences concern vascular nephropathy (15.1% versus 7%) and tubulointerstitial nephropathy (9.1% versus 17.4%), which may also reflect differences in diagnostic criteria.

AGE OF SUBJECTS ENTERING RRT PROGRAMS IN CENTRAL AND EASTERN EUROPE

A striking feature of the epidemiology in Central and Eastern Europe is the observation that the subjects entering RRT tend to be younger than in

Table 3. Percentage of patients admitted for renal replacement therapy with the diagnosis of diabetic nephropathy

Russia	5.3%
Belarus	5.5%
Bulgaria	7.0%
Bosnia-Herzegovina	8.0%
Serbia-Montenegro	9.4%
Macedonia	11.3%
Latvia	13.8%
Slovenia	14.9%
Croatia	17.0%
Lithuania	18.0%
Poland	19.8%
Slovakia	20.3%
Hungary	21.5%
Czech Republic	34.0%

Western Europe. According to the results of the PRESAM study in Western Europe versus Central and Eastern Europe respectively the following percentages were found in the different age categories: 16–50 years, 23.1% vs 36.4%; 51–64 years, 27.6% vs 33.8%; 65–74 years, 28.5% vs 22.3%; 75–84 years, 18.3% vs 6.8%; >85 years, 2.2% vs 0.7%.

Nevertheless, from 1991 to 1998, the proportion of elderly patients (defined as >65 years of age) has slowly increased in Central and Eastern Europe: in Belarus from 9.5% in 1991 to 12.7% in 1998, in Poland from 5.0% to 13.6%, in the Czech Republic from 0% to 46%, and in Croatia from 16.9% to 24.5%.

The age distribution of prevalent and incident dialysis patients is illustrated by Figure 2, which shows prevalence and incidence according to patient age in Poland in the year 2002.

TREATMENT MODALITIES IN CENTRAL AND EASTERN EUROPE

The proportion of patients on peritoneal dialysis is relatively low in Central and Eastern Europe. The prevalence averages 8% and varies from 1%

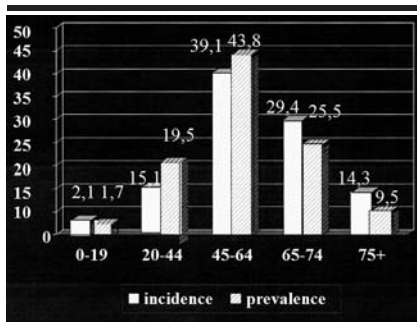


Fig 2. Age distribution of dialysis patients, Poland 2002

in Macedonia to 41% in Estonia. The frequency is 4% in Bulgaria, 6% in Belarus, 6.1% in Russia, 6.2% in Lithuania, 6.7% in Croatia, 7% in Hungary, 7.6% in the Czech Republic, 7.8% in Serbia and Montenegro, 9.5% in Slovenia, 10.2% in Poland, 13.2% in Romania, and 15.8% in Latvia.

As a result the relative contributions of hemodialysis, peritoneal dialysis and transplantation vary considerably as exemplified by the data in Figure 3.

THE HEALTHCARE STRUCTURE

Political and economic changes have led to the involvement of private capital in the healthcare system. Hemodialysis units were privatized quite early in Hungary,⁵ followed by other countries in the past three to five years. Currently in three countries (Hungary, Slovakia, Lithuania) >50% of patients are dialyzed in private (non-public) dialysis units, and in 5 countries (Czech Republic, Poland, Estonia, Slovenia, Lat-

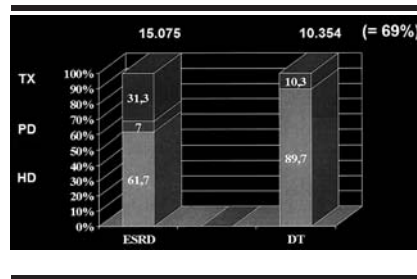


Fig 3. Modality of renal replacement treatment, Poland 2002

via) this proportion of patients is 15%–25%. In most countries, privatized dialysis units are in the hands of internationally recognized medical companies, eg, Fresenius Medical Care, Gambro Healthcare, or Braun (Avitum).⁶

In many countries of this region, privatization of dialysis units provided the opportunity to obtain new investment and to introduce modern techniques. Because of inadequate public resources, such progress would otherwise have been impossible. Furthermore, privatization permits more rational use of the money reimbursed to the units; in underfunded public hospitals, by contrast, the money is often used to cover expenditures unrelated to dialysis.⁶

CONCLUSIONS

The gap concerning the number of patients and the relative contribution of different treatment modalities between Western and Central/Eastern Europe has progressively closed, particularly with respect to the increasing admission of elderly and diabetic patients. Notable differences still exist between countries

concerning the availability of renal transplantation, the rate of which has traditionally been high in the Czech Republic and former Yugoslavia and which saw a remarkable recent increase in the Baltic countries, particularly Estonia and Lithuania, as well as in Poland. The evolution of renal replacement therapy has been heavily influenced by the changes in the healthcare system and by the progressive involvement of private healthcare providers.

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AUTHOR CONTRIBUTIONS

Design concept of study: Ritz
Acquisition of data: Rutkowski
Data analysis interpretation: Rutkowski, Ritz
Manuscript draft: Ritz
Statistical expertise: Rutkowski
Administrative, technical, or material assistance: Rutkowski