

# EPIDEMIOLOGICAL CONSIDERATIONS ON PATIENTS UNDERGOING RENAL REPLACEMENT THERAPY IN ROMANIA

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**Abstract:** In the case of chronic renal failure, the three main methods of renal function replacement therapy - haemodialysis (and related methods), peritoneal dialysis (various methods) and kidney transplantation are used, both as mutual complements and in an integrated manner in such a way that, based on each specific indications and contraindications, as well as on their advantages and disadvantages, treatment extent relies on longest expectable results. Since 1996, the total number of patients having received treatment at the end of each year (prevalent patients) has increased steadily, amounting to 10 470 in 2012. Most prevalent patients on haemodialysis and peritoneal dialysis originate in the North-East, the area average being of 602.8 people per million population (pmp), whereas the lowest average patients number of prevalent patients per thousand population is specific to the Bucharest area, amounting to 351.1 pmp. The national average is 533.8 pmp. Of the total number of prevalent patients, 1.3% has received kidney transplant in Romania. Most often, the primary disease triggering renal transplant is unknown.

## INTRODUCTION

Extra or intra-corporal cleaning methods address chronic renal failure (CRF) - the terminal stage in the progress of many kidney conditions, as well as acute renal failure (ARF) of various etiologies. For chronic renal insufficiency, the three main methods of renal function replacement therapy - haemodialysis (and related methods), peritoneal dialysis (various methods) and renal transplantation - are used in mutual complementarity, as well in an integrated manner, in such a way that, based on each specific indications and contraindications, as well as on their advantages and disadvantages, treatment extent relies on longest expectable results. The final stage of chronic renal disease is known as end-stage renal disease, when the kidneys are no longer able to remove waste and excess fluid from the body. For proper survival, patients need to undergo dialysis (artificial kidney treatment) or kidney transplantation from a living donor or cadaver.(1)

Chronic renal failure is usually diagnosed tardily, when the body is already seriously affected. Renal replacement therapy is prescribed according to circumstances, and patient's needs are not adequately assessed, most often for lack of time and his life already threatened.

### Morbidity and mortality in chronic kidney disease

In terms of hospitalised morbidity in Romania, according to the data reported by Romanian hospitals, 100 139 cases with chronic renal failure as a primary or secondary diagnosis (including diabetic patients) were hospitalised in 2012, responsible for 143 480 care episodes through ongoing hospitalisation in 399 hospitals, as reported by the Diagnosis-Related-Group (DRG) system.(2)

The mortality rate in such cases was approx. 5%, and, for the patients discharged from acute hospital care, the National Health Insurance House reimbursed the equivalent of approx. 76 448 778 Euro nationally (less than 1% of the total funds

available for acute care).(3)

Additionally, 11 837 patients were treated as day hospital care, in 189 facilities. No data are available on costs reimbursed for this type of hospitalisation in 2012.

Across the world, renal transplantation is considered a procedure of high morbidity (17% - 60%) and mortality (1.5% - 14%), mainly because of immunosuppressive therapy, associated co-morbidities and procedure specific technical difficulties.(4) On the other hand, dialysis is also associated with a high morbidity and mortality and a significant consumption of resources for anaemia therapy, laboratory investigations, monitoring and, last but not least, because of special dietary requirements.

In Romania, in Bucharest only, 1 608 patients were dialysed in 2012, of which 50% were men, mostly in the 30-64 years age group.

Regarding renal transplant, 163 cases were reported in total, of which 107 in Cluj and 56 in Bucharest. Of these, 60% were men, displaying the highest percentage of kidney transplants, aged 30-64 years old (70%). Of all cases, 2 deaths were reported in the same care episode.(2) Since the start of the transplantation procedure, no longitudinal studies have been undertaken on organ rejection.

## MATERIALS AND METHODS

The Romanian Renal Registry collects data on renal replacement therapy by dialysis in Romania, based on data collected online using the Hippocrates computer system. Data come from active dialysis centres.

Data we have processed in this paper come from the 2012 Report of the Romanian Renal Registry (Dialysis Renal replacement Therapy in Romania, 2012, the Romanian Renal Registry, the Ministry of Health).(5,6)

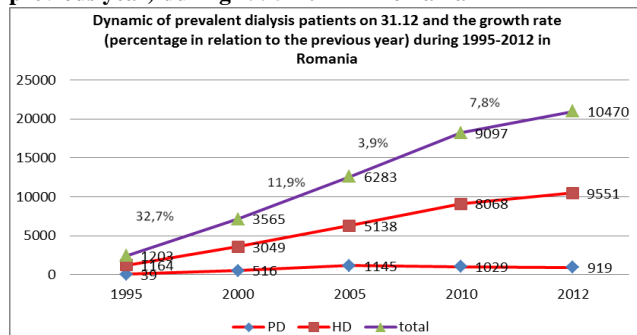
As of 1996, the total number of patients under

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treatment at the end of each year (prevalent patients) has continuously increased, amounting to 10 470 in 2012 (figure no. 1). The growth rate has not been constant, however: the rapid growth initial period (+32.7%/ year in 1996-2000) was followed by a slower growth period (11.9% and 3.9%, respectively, for 2001-2006), for the rate to rise again to 7.8%/year in 2007-2012, in result of the privatisation process. There is an inverse relation between the annual growth rate and the total number of prevalent patients (as an indicator of the population covered by dialysis services): the better coverage of the need for dialysis services (i.e., the greater number of patients treated), the lower the growth rate.

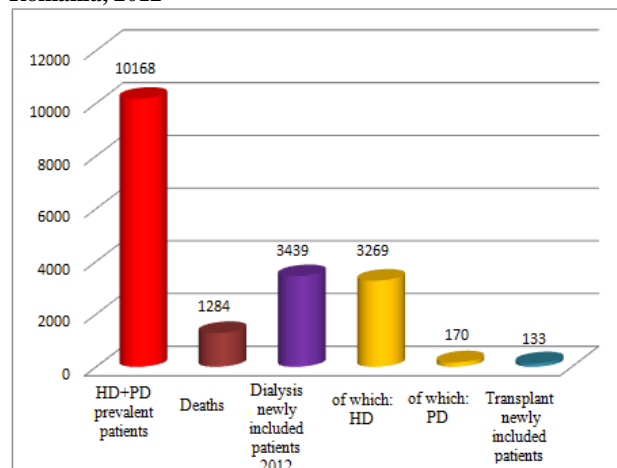
**Figure no. 1. Dynamics of prevalent dialysis patients on 31.12 and the growth rate (percentage in relation to the previous year) during 1995-2012 in Romania**



Source: The Romanian Renal Registry

The Romanian Renal Registry shows that, in 2012, of a total number of 10 168 prevalent patients under haemo-and peritoneal dialysis, 1 284 died. In the same year, 3 439 patients were new inclusions in dialysis, of which 3 269 underwent haemodialysis and 170 peritoneal dialysis. Regarding renal transplant in 2012, a total of 133 patients were newly included (see figure no. 2).

**Figure no. 2. Incidence of dialysis and transplantation in Romania, 2012**



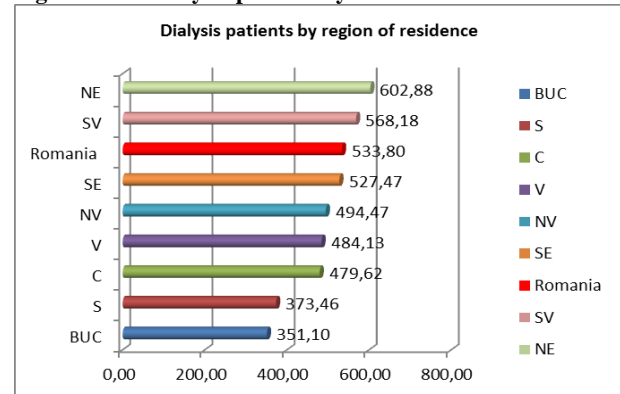
Source: The Romanian Renal Registry

As far as developing patient areas of origin are concerned, it may be noted that most prevalent patients on haemo-and peritoneal dialysis come from the North-East (NE) area, with an area average of 602.8 people per million population (pmp), whereas the lowest average patients number of prevalent patients per thousand population is specific to the Bucharest area, amounting to 351.1 pmp. The national average stands at 533.8 pmp average.

Of prevalent patients in 2012, a national average

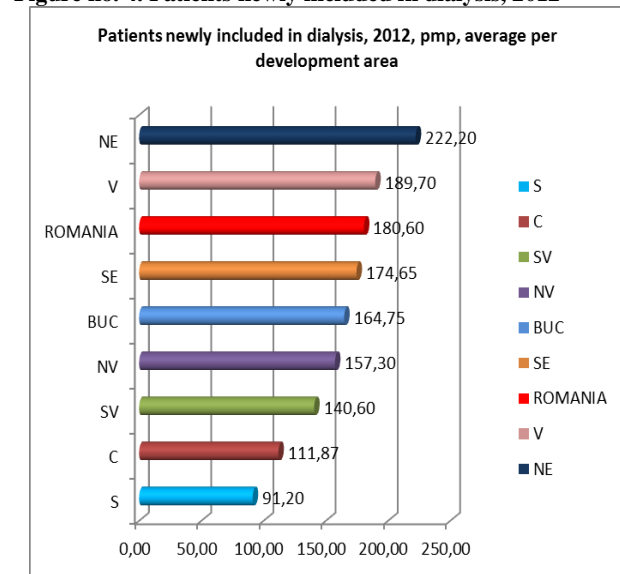
number of 180.6 pmp were newly included in renal replacement therapy. Most newly included patients originated from the NE area, namely 222.2 pmp, whereas the lowest number resided in the South area, i.e. an average of 91.2 pmp. The Bucharest-Ilfov area has 164.75 pmp newly included in renal replacement therapy.

**Figure no. 3. Dialysis patients by area of residence**



pmp = no. of people per million population;  
Source: The Romanian Renal Registry

**Figure no. 4. Patients newly included in dialysis, 2012**



Source: The Romanian Renal Registry

## Renal transplantation - newly included patients, 2012 - pmp per million population

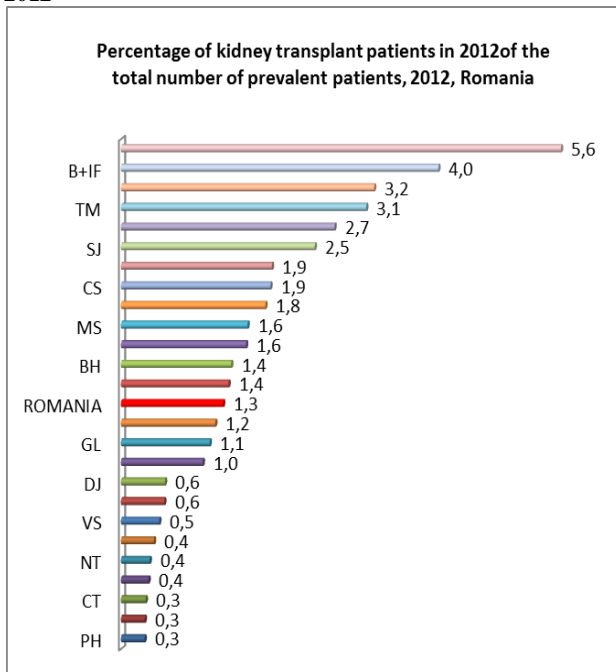
In Romania, 1.3% of prevalent patients received renal transplant. The highest percentage of renal transplants, i.e. 5.6%, were performed in the patients from Bistrița Năsăud (BN), followed by Bucharest - Ilfov (4%), Sibiu (3.2%), Timiș, Harghita and Sălaj (3.1%). The fewest patients came from Constanța, Suceava and Prahova (0.3% each). The following 16 counties received no renal transplant: Arad, Bacău, Brăila, Buzău, Călărași, Covasna, Dâmbovița, Gorj, Giurgiu, Mehedinți, Maramureș, Olt, Tulcea, Teleorman, Vâlcea, Vrancea.

Among the main primary renal diseases in incident renal replacement patients, progress of unknown causes may be noted starting with 2007 to 2010 (i.e. 31.1% to 43.3%, respectively), followed by a slight decrease to 30.9% in 2012. This points to a large majority of patients directly ending in renal transplantation without prior kidney complaints. The next

## CLINICAL ASPECTS

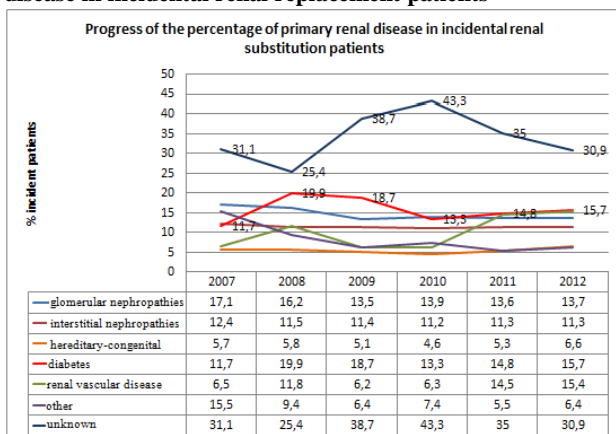
triggering illness as percentage is diabetes, responsible for 19.9% of cases in 2008 and 15.7% in 2012. Glomerular nephropathies rank 3<sup>rd</sup>, with a percentage between 17.1% in 2007 and 13.7% in 2012, followed by interstitial nephropathy, with 11.3% in 2012. Renal vascular diseases are responsible for a growing number of kidney transplants, from 6.5% in 2007 to 15.4% in 2012. Congenital hereditary diseases and other causes display a rate of about 6% each in 2012.

**Figure no. 5. Percentage of kidney transplant patients in 2012**



Source: The Romanian Renal Registry

**Figure no. 6. Progress of the percentage of primary renal disease in incidental renal replacement patients**



## DISCUSSION AND CONCLUSIONS

During 1995 - 2012, the number of dialysis patients underwent a steady increase in Romania, rising from 1 203 patients in 1995 to 10 470 patients in 2012. The growth dynamic ranged from rapid growth initially (1996- 2000: + 32.7% / year) to slower growth in subsequent periods, reaching 7.8% / year in 2007-2012.

In 2012, 3 439 patients were newly included in dialysis in total, of which 3 269 were entered on haemodialysis and 170 on peritoneal dialysis. Regarding renal transplant in

2012, 133 patients were newly included in all.

Most prevalent haemodialysis and peritoneal dialysis patients originate from the NE area, with an average of 602.8 pmp per area, whereas the lowest average number of prevalent patients per thousand population is specific to the Bucharest area (351.1 pmp). The national average stands at 533.8 pmp.

13% of the total of prevalent patients received renal transplant in Romania. The highest percentage of renal transplants, i.e. 5.6%, were performed in patients from Bistrița Năsăud (BN), followed by Bucharest - Ilfov 4%, Sibiu 3.2%, 3.1% Timiș, Harghita and Sălaj. The fewest kidney transplant patients came from Constanța, Suceava and Prahova (0.3% each).

Sixteen counties have received no kidney transplant.

Among the main primary renal disease in incident renal replacement therapy patients, it may be noted that, in 2012, most cases (43.3%) have unknown causes, 15.7% are generated by diabetes and 13.7% are triggered by glomerular nephropathies. This draws the attention on the fact that a large majority of patients are directly ending in renal transplant without prior kidney complaints.

The proportion of patients not diagnosed with primary renal disease diagnosis is still too high, highlighting the need for programmes addressing patients with chronic kidney disease under pre-dialysis, as well as for early detection and treatment of primary renal diseases and diabetes, as an effective method to prevent late complications, leading to the need for renal replacement therapy.

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