



# **SOUTH AFRICAN RENAL REGISTRY ANNUAL REPORT 2012**

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# INTRODUCTION

This first report of the new South African Renal Registry provides data on renal replacement therapy (RRT) for patients with end-stage renal disease (ESRD) in South Africa. Our previous registry, the South African Dialysis and Transplantation Registry, last reported data from 1994 and we have had a lack of reliable data on RRT in South Africa for the past two decades.

We are therefore extremely excited at the establishment of the new registry and at the release of this report which summarises the provision of RRT across South Africa as at 31 December 2012. We offer our sincere thanks to all who contributed to its success.

Our first report provides a cross-sectional snapshot and focuses on the provision of RRT and its distribution. To encourage participation, we deliberately kept the required dataset small. Future reports will provide more data on clinical parameters, treatment quality and survival.

The simple numbers we present here tell a story of many striking changes since 1994. The population of the country has increased by around 12 million people, with certain provinces showing massive increases compared to others. The prevalence of patients on RRT in South Africa is 164 per million population (pmp). There is an uneven distribution of RRT across provinces and large differences in treatment rates between the public and private sectors. Overall, the provision of RRT has increased, but remains below the rates seen in other countries with similar or lesser incomes per capita. The growth in RRT is mainly due to an increase in patients on haemodialysis in the private sector; the provision of RRT in the public sector has not increased substantially since 1994. The numbers of patients with functioning kidney transplants are similar to those reported in 1994. Transplanted patients now constitute less than 20% of the patients on RRT, as compared to more than 50% in 1994.

We trust that the data will be of value to many different role players in the area of nephrology and that it will spark much discussion, and additional research. Ultimately, our hope is that it will contribute to improving both the quantity and the quality of treatment being offered to our patients with ESRD.

**Razeen Davids and Julian Jacobs**

South African Renal Registry

# ACKNOWLEDGEMENTS

We wish to thank the following for contributing to the success of our 2012 data collection:

The doctors, nurses, technologists, support staff and management of all the participating treatment centres.

The National Kidney Foundation of South Africa for seed funding and ongoing support.

Our partners from the private sector for generous financial and logistical support -

- Adcock Ingram Critical Care (Renal Division)
- Amgen
- Litha Pharma
- National Renal Care
- Roche

Nicola Marais, our national registry manager, for her tireless efforts, and her team of data capturers, including the late Living Shivambu and his wife, Suzan Baloyi.

Living was a patient on chronic haemodialysis and sadly passed away during the course of last year. He was an enthusiastic member of our team and played a key role in travelling to treatment centres around the country to assist with data collection. He is missed, and remembered with much fondness.

# PARTICIPATING TREATMENT CENTRES

## EASTERN CAPE

### PUBLIC

Frere Hospital  
Livingstone Hospital  
Nelson Mandela Hospital Mthatha

### PRIVATE

Jeffreys Bay Kidney and Dialysis Centre (FMC)  
NRC Butterworth  
NRC East London HD  
NRC East London PD  
NRC King Williamstown  
NRC Kwadwesi  
NRC Mthatha  
NRC Port Elizabeth HD  
NRC Port Elizabeth PD  
NRC Queenstown  
NRC Uitenhage  
Port Elizabeth Kidney and Dialysis Centre (FMC)

## FREE STATE

### PUBLIC

Boitumelo Regional Hospital (Kroonstad)  
Bongani Regional Hospital (Welkom)  
Dihlabeng Regional Hospital (Bethlehem)  
Mofumahadi Manapo Mopeli Regional Hospital (Qwa-Qwa)  
Pelonomi Regional Hospital  
Universitas Academic Hospital

### PRIVATE

B. Braun Avitum Bethlehem  
B. Braun Avitum Bloemfontein  
B. Braun Avitum Welkom  
Bloemfontein Kidney and Dialysis Centre (FMC)  
Netcare Transplant Centre Universitas Private Hospital  
NRC Bloemfontein HD  
NRC Bloemfontein PD  
NRC Kroonstad  
Sasolburg Kidney and Dialysis Centre (FMC)

## GAUTENG

### PUBLIC

Charlotte Maxeke Johannesburg Academic Hospital  
Chris Hani Baragwanath Hospital  
Dr George Mukhari Hospital  
Helen Joseph Hospital  
Leratong Hospital  
Steve Biko Academic Hospital

### PRIVATE

Arcadia Kidney and Dialysis Centre (FMC)  
B. Braun Avitum Benoni  
B. Braun Avitum Emfuleni  
B. Braun Avitum Medforum (Pretoria)  
B. Braun Avitum Midvaal  
B. Braun Avitum Sandton  
Hibiscus Kidney and Dialysis Centre (FMC)  
Kempton Kidney and Dialysis Centre (FMC)  
Lesedi Kidney and Dialysis Centre (FMC)  
Morningside Children's Kidney Treatment Centre  
Morningside Kidney and Dialysis Centre (FMC)  
Morula Kidney and Dialysis Centre (FMC)

Abbreviations: FMC = Fresenius Medical Care, MRC = Melomed Renal Care, NRC = National Renal Care

Naledi Kidney and Dialysis Centre (FMC)
Netcare Transplant Centre Garden City Hospital
Netcare Transplant Centre Jakaranda Hospital
Netcare Transplant Centre Milpark Hospital
NRC Akasia
NRC Alberton
NRC Arcadia
NRC Garden City
NRC Johannesburg PD
NRC Krugersdorp
NRC Lenasia (Lenmed)
NRC Lenasia South (Daxina)
NRC Linksfield
NRC Lyttleton
NRC Mayfair
NRC Milpark
NRC Montana
NRC Mulbarton
NRC Olivedale
NRC Parktown West
NRC Pretoria East
NRC Pretoria PD
NRC Rynfield
NRC Sebokeng
NRC Sedibeng
NRC Sunninghill
NRC Sunward Park
Phoenix Kidney and Dialysis Centre (FMC)
Pretoria Kidney and Dialysis Centre (FMC)
Randfontein Private Hospital Dialysis Unit
Sasolburg Kidney and Dialysis Centre (FMC)
Soweto Kidney and Dialysis Centre (FMC)
Tshepo-Themba Kidney and Dialysis Centre (FMC)
Tshwane Kidney and Dialysis Centre (FMC)
Vaal Kidney and Dialysis Centre (FMC)
Vosloorus Kidney and Dialysis Centre (Clinix)
Wits Donald Gordon Kidney and Dialysis Centre (FMC)
Wits Donald Gordon Medical Centre Transplant Division

## KWAZULU-NATAL

### PUBLIC

Addington Hospital  
 Greys Hospital  
 Inkosi Albert Luthuli Hospital  
 King Edward VIII hospital

### PRIVATE

B. Braun Avitum Chatsworth  
 B. Braun Avitum Dundee  
 B. Braun Avitum Emfuleni  
 B. Braun Avitum Empangeni  
 B. Braun Avitum Howick  
 B. Braun Avitum Newcastle  
 B. Braun Avitum Pietermaritzburg

**PUBLIC****PRIVATE**

	B. Braun Avitum Scottburgh
	Dialysis for You Chatsworth
	Dr Parag and Raghubir Kidney Care Centre
	Durban Kidney and Dialysis Centre (FMC)
	Empangeni Kidney and Dialysis Centre (FMC)
	Entabeni Kidney and Dialysis Centre (FMC)
	Ethekwini Kidney and Dialysis Centre (FMC)
	Hibiscus Kidney and Dialysis Centre (FMC)
	Kokstad Kidney and Dialysis Centre (FMC)
	Kwazulu Dialysis Chatsmed Renal Unit
	Kwazulu Dialysis Shifa Renal Unit
	Kwazulu Dialysis Umlazi Megacity Renal Unit
	Kwazulu Dialysis Westville Renal Unit
	Meredeac Dialysis Durban
	Meredeac Dialysis Pinetown
	Mount Edgecombe Kidney and Dialysis Centre (FMC)
	Netcare Transplant Centre St Augustine's Hospital
	NRC Ballito
	NRC Berea
	NRC Chatsworth
	NRC Durban PD
	NRC Greyville
	NRC Hillcrest
	NRC Isipingo
	NRC Ladysmith
	NRC Margate
	NRC Pietermaritzburg (Midlands)
	NRC Pietermaritzburg CBD
	NRC Pietermaritzburg PD
	NRC Pinetown
	NRC Richards Bay
	NRC Umhlanga
	Pinetown Kidney and Dialysis Centre (FMC)
	Richards Bay Kidney and Dialysis Centre (FMC)
	Stanger Kidney and Dialysis Centre (FMC)
	Victoria Kidney and Dialysis Centre (FMC)

**LIMPOPO****PUBLIC****PRIVATE**

	B. Braun Avitum Louis Trichardt
	B. Braun Avitum Mokopane
	B. Braun Avitum Polokwane
	B. Braun Avitum Tzaneen
	NRC Polokwane
	NRC Venda



## MPUMALANGA

### PUBLIC

	B. Braun Avitum Ermelo
	B. Braun Avitum Nelspruit
	B. Braun Avitum Trichardt
	Middelburg Kidney and Dialysis Centre (FMC)
	Mpumalanga Kidney and Dialysis Centre (FMC)
	NRC Nelspruit

### PRIVATE

## NORTH WEST

### PUBLIC

Job Shimankana Tabane Hospital  
Klerksdorp Hospital  
Mafikeng Provincial Hospital

### PRIVATE

B. Braun Avitum Vryburg  
Carletonville Kidney and Dialysis Centre (FMC)  
Mafikeng Kidney and Dialysis Centre (FMC)  
NRC Rustenberg  
NRC Rustenberg PD  
Potchefstroom Kidney and Dialysis Centre (FMC)  
Rustenburg Kidney and Dialysis Centre (FMC)

## NORTHERN CAPE

### PUBLIC

Kimberley Hospital

### PRIVATE

B. Braun Avitum Kimberly  
B. Braun Avitum Upington  
NRC Kimberley  
NRC Kimberley PD

## WESTERN CAPE

### PUBLIC

George Hospital  
Groote Schuur Hospital  
Red Cross War Memorial Childrens Hospital  
Tygerberg Hospital  
Worcester Hospital

### PRIVATE

Athlone Kidney and Dialysis Centre (FMC)  
B. Braun Avitum Bellville  
B. Braun Avitum Cape Gate  
B. Braun Avitum Mossel Bay  
B. Braun Avitum Oudtshoorn  
B. Braun Avitum Worcester  
Cape Town Kidney and Dialysis Centre (FMC)  
Hermanus Kidney and Dialysis Centre (FMC)  
MRC Gatesville  
MRC Gatesville PD  
MRC Mitchells Plain  
Netcare Transplant Centre Christiaan Barnard Memorial Hospital  
NRC Blaauwberg  
NRC Cape Town CBD  
NRC Cape Town PD  
NRC George  
NRC Goodwood  
NRC Kuilsriver  
NRC Paarl

---

**PUBLIC**

---

**PRIVATE**

---

NRC Plettenburg Bay

---

NRC Plumstead

---

NRC Swellendam

---

NRC Vredenburg

---

Panorama Kidney and Dialysis Centre (FMC)

---

UCT Kidney and Dialysis Centre (FMC)

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Winelands Kidney and Dialysis Centre (FMC)

## SOUTH AFRICA IN 2012

Since 1994, the population of South Africa has increased from 40.4 to 52.3 million people. Black/African individuals constitute 79.6% of the population, with those of mixed ethnicity (Coloureds) making up 9.0%, Whites 8.8% and Indian/Asians 2.5%. The province of Gauteng has the largest population, and has also seen the greatest percentage increase since 1994.

South Africa is classified as an upper-middle income country by the World Bank, with a GNI per capita by the Atlas method of \$7 610 and by the purchasing power parity (PPP) method of \$11 010. Most of the population (83.4%) relies on the public health sector for services, with only a small proportion (16.6%) having medical insurance and covered by the private sector. The total spend on health is approximately 8.5% of GDP.

Figure 1: Provinces and major cities of South Africa



**Table 1. Population data for 1994 and 2012 by ethnic group**

	1994	2012
Black	30.746	41.625
Coloured	3.461	4.716
Indian/Asian	1.038	1.311
White	5.191	4.622
<b>Total</b>	<b>40.436</b>	<b>52.275</b>

Mid-year estimates in millions, from Stats SA.

**Table 2. Population data for 1994 and 2012 by province**

	1994	2012	2012 %
Eastern Cape	6.400	6.586	12.6
Free State	2.740	2.748	5.3
Gauteng	6.910	12.464	23.8
KwaZulu-Natal	8.533	10.346	19.8
Limpopo	5.227	5.452	10.4
Mpumalanga	2.934	4.075	7.8
North West	3.306	3.547	6.8
Northern Cape	0.737	1.153	2.2
Western Cape	3.649	5.904	11.3
<b>Total</b>	<b>40.436</b>	<b>52.275</b>	<b>100.0</b>

Mid-year estimates in millions, from Stats SA.

## TREATMENT CENTRES FOR DIALYSIS AND TRANSPLANTATION

**Table 3. Number of centres reporting data**

	1994	2012
Public sector	26	28
Private sector	5	163
<b>Total</b>	<b>31</b>	<b>191</b>

**Table 4. Number of centres by province and sector**

	EC	FS	GT	KZ	LP	MP	NW	NC	WC	ALL
Public	3	6	6	4	0	0	3	1	5	28
Private	12	9	50	43	6	6	7	4	26	163
<b>Total</b>	<b>15</b>	<b>15</b>	<b>56</b>	<b>47</b>	<b>6</b>	<b>6</b>	<b>10</b>	<b>5</b>	<b>31</b>	<b>191</b>

# PREVALENCE OF RENAL REPLACEMENT THERAPY

**Table 5. Prevalence of RRT in 1994 and 2012**

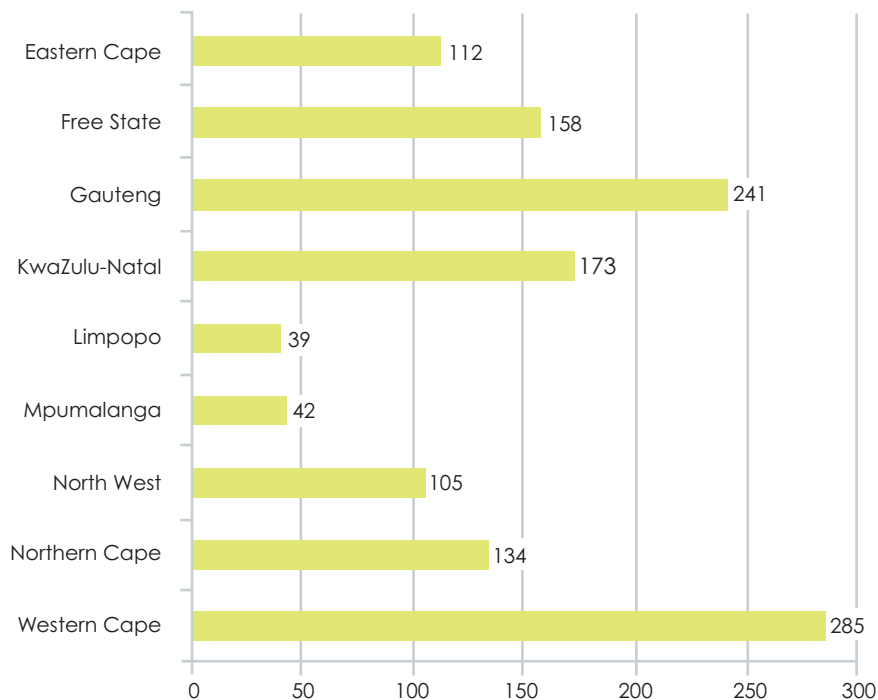
	1994	2012
Population in millions	40.4	52.3
ESRD patients on treatment	2 843	8 559
<b>Treatment rate per million population (pmp)</b>	<b>70</b>	<b>164</b>

The prevalence for 1994 has been recalculated using the 1994 mid-term population estimates from Stats SA, rather than the 1991 census data.

**Table 6. Numbers of patients on RRT by province**

	EC	FS	GT	KZ	LP	MP	NW	NC	WC	ALL
Patients	737	433	3 002	1 788	215	172	373	154	1 685	8 559

**Figure 2. Prevalence of RRT by province (pmp)**



**Table 7. Prevalence of RRT by sector**

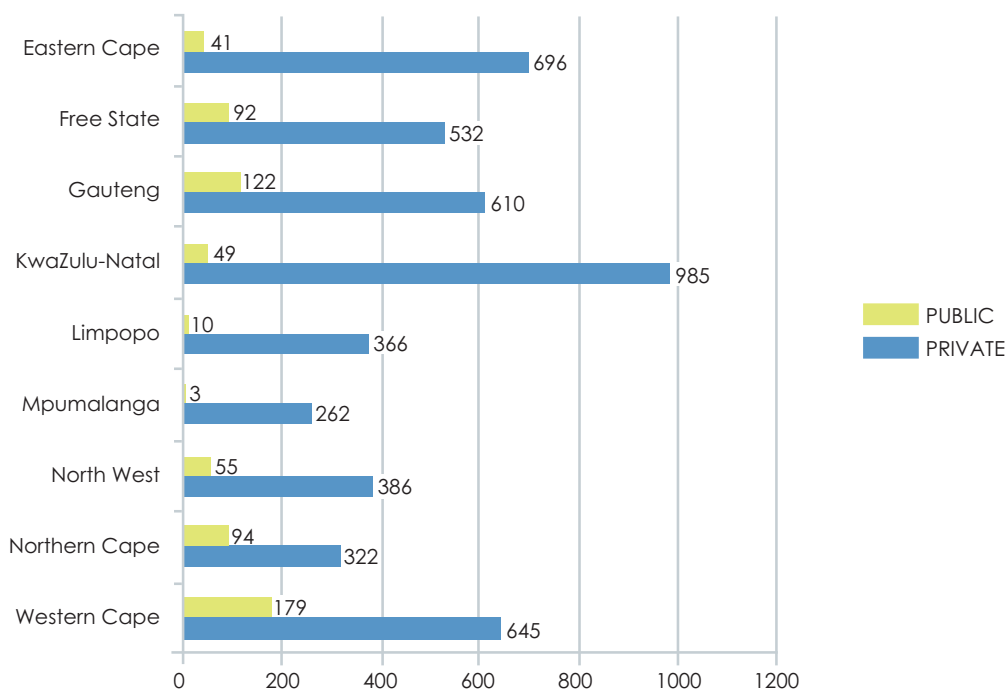
	PUBLIC	PRIVATE
Population in millions	43.604	8.671*
ESRD patients on treatment	3 182	5 377
<b>Treatment rate (pmp)</b>	<b>73</b>	<b>620</b>

\* Council for Medical Schemes 2012-2013 Annual Report.

**Table 8. Number of patients by province and sector**

	EC	FS	GT	KZ	LP	MP	NW	NC	WC	ALL
Public	243	216	1 151	442	49	9	167	90	815	3 182
Private	494	217	1 851	1 346	166	163	206	64	870	5 377
<b>Total</b>	<b>737</b>	<b>433</b>	<b>3 002</b>	<b>1 788</b>	<b>215</b>	<b>172</b>	<b>373</b>	<b>154</b>	<b>1 685</b>	<b>8 559</b>

**Figure 3. Prevalence (pmp) by province and sector**



Denominators for prevalence calculations are based on Stats SA mid-term estimates and the Council for Medical Schemes 2012-2013 Annual Report.

# TREATMENT MODALITY

**Figure 4: Distribution of patients by treatment modality**



Modality	Patients 1994	%	Patients 2012	%
Haemodialysis	846	29.8	5 746	67.1
Peritoneal dialysis	419	14.7	1 206	14.1
Transplant	1 578	55.5	1 607	18.8

**Figure 5. Treatment modality by sector**



Modality	Public sector patients	%	Private sector patients	%
Haemodialysis	1 522	47.8	4 224	78.6
Peritoneal dialysis	823	25.9	383	7.1
Transplant	837	26.3	770	14.3

**Table 9. New kidney transplants in 2012**

	DECEASED DONOR		LIVING RELATED		LIVING UNRELATED		TOTAL
	C	A	C	A	C	A	
Western Cape - Public	5*	21	4	21	1		52
Western Cape - Private		22	1	20		8	51
Gauteng - Public	2	22		1			25
Gauteng - Private	8*	45#	5	25	1	8	92
KwaZulu-Natal - Public				3			3
KwaZulu-Natal - Private		6		11		3	20
Free State - Public				2			2
Free State - Private		2				1	3
<b>Total</b>	<b>15</b>	<b>118</b>	<b>10</b>	<b>83</b>	<b>2</b>	<b>20</b>	<b>248</b>

C=recipient <18 years; A=recipient 18 years and older

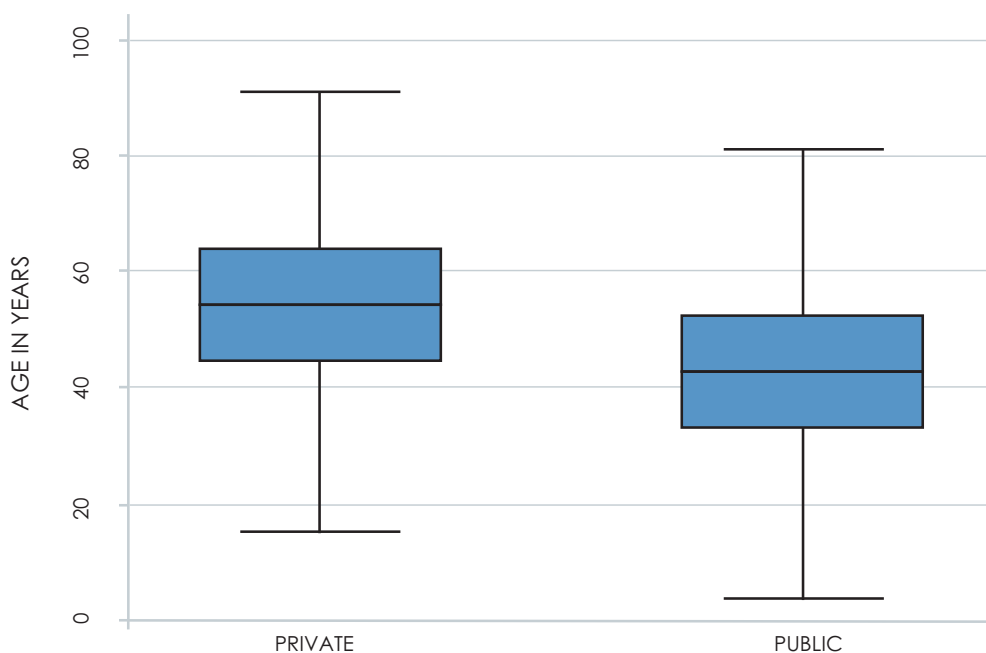
\* includes 1 kidney-liver transplant # includes 8 kidney-pancreas transplants

Data supplied by the SA Organ Donor Foundation

The transplant rate for 2012 is 4.7 pmp, while the prevalence of patients with functioning grafts is 30.7 pmp.

## DEMOGRAPHIC AND CLINICAL DATA

**Figure 6. Age of patients in public and private sectors**



The mean age for all patients was  $49.3 \pm 15.1$  years. For patients treated in the public sector it was  $42.3 \pm 13.6$  years and in the private sector  $53.6 \pm 14.3$  years.



Figure 7. Gender distribution

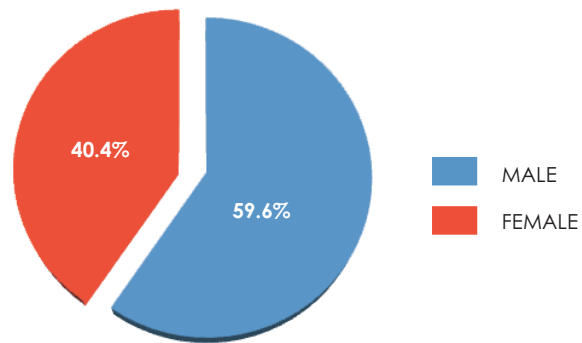
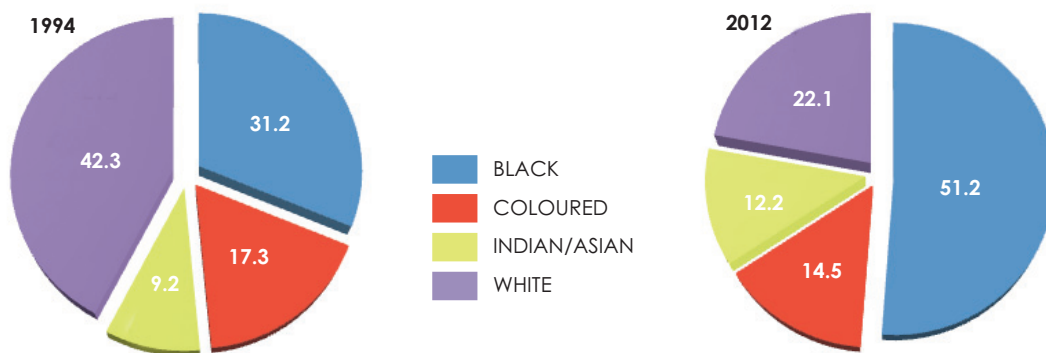
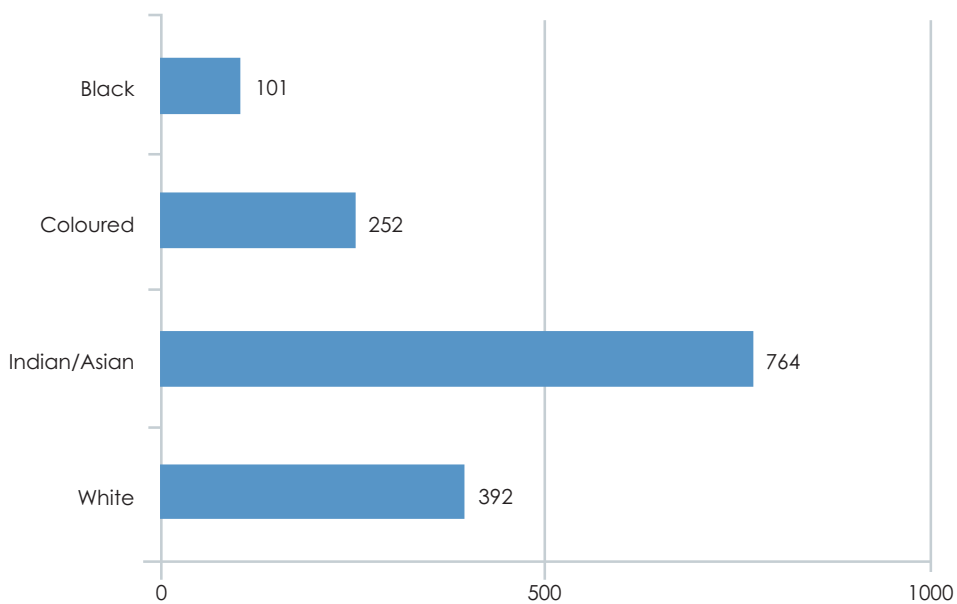


Figure 8. Distribution (%) by ethnicity in 1994 and 2012



Data on ethnicity for 1994 based on total patients on file (n=7 331). Data for 2012 available for 8 204 prevalent patients.

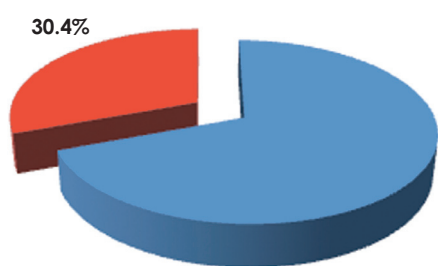
Figure 9. Prevalence of RRT (pmp) by ethnicity



**Table 10. Most common reported causes of ESRD**

	% of total
Unknown or not stated	36.1
Hypertensive renal disease	32.5
Diabetic nephropathy	12.4
Glomerulonephritis	9.5
Cystic kidney disease	3.3

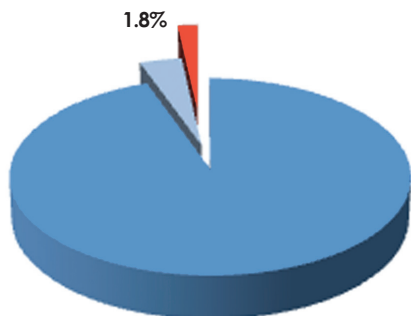
**Figure 10. Patients with diabetes**



	Diabetics	%
Public sector (2 426)	177	7.3
Private sector (4 882)	2 048	42.0
<b>All sectors (7 308)</b>	<b>2 225</b>	<b>30.4</b>

The numbers of patients with data on diabetes are indicated in brackets.

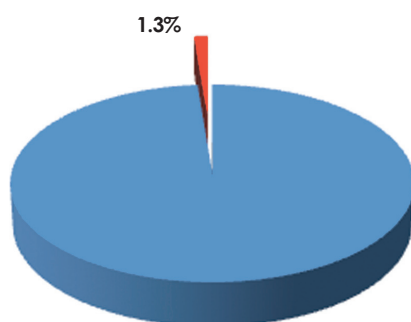
**Figure 11. Hepatitis B status**



- Negative (94.5%)
- Immune (3.7%)
- Positive (1.8%)

No. of patients with data = 5 177.

**Figure 12. Hepatitis C status**



- Negative
- Positive

No. of patients with data = 4 865.

Figure 13. HIV status

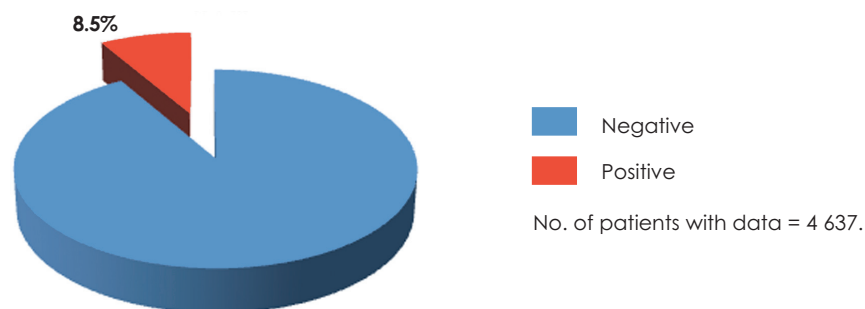


Table 11. Serum albumin concentration (g/L)

	Public (2 056)	Private (3 925)	All sectors (5 981)
Haemodialysis (4538)	35.2 ± 15.3	34.1 ± 13.6	34.3 ± 14.0
Peritoneal dialysis (1027)	32.3 ± 6.6	30.4 ± 6.7	31.7 ± 6.7
Transplant (416)	41.4 ± 5.4	34.9 ± 4.2	39.4 ± 5.9
<b>All modalities (5981)</b>	<b>35.1 ± 12.2</b>	<b>33.7 ± 13.0</b>	<b>34.2 ± 12.7</b>

The numbers of patients with data are indicated in brackets.

Table 12. Vascular access in patients on haemodialysis

	Public	Private	All sectors
AV fistula	476 (45.6%)	1 863 (52.4%)	2 339 (50.9%)
AV graft	17 (1.6%)	262 (7.4%)	279 (6.1%)
Tunnelled catheter	516 (49.5%)	1 230 (34.6%)	1 746 (38.0%)
Temporary catheter	34 (3.3%)	200 (5.6%)	234 (5.1%)
<b>All access types</b>	<b>1 043</b>	<b>3 555</b>	<b>4 598</b>

No. of patients with data = 4 598.

## MORE ABOUT THE REGISTRY

The South African Renal Society has mandated the Registry to collect, analyse and publish information on the treatment of patients with ESRD in South Africa.

### Ethics approval

It is vital that a complete picture of renal replacement therapy across the country is obtained and we therefore need the inclusion of all patients. Obtaining individual consent from each patient would present an insurmountable task. The risks for the patients are negligible, involving mainly the accidental disclosure of personal information. There are many precedents where registries have been allowed to collect identifiable data without individual patient consent. These include the UK Renal Registry, the Scottish Renal Registry, and the French Renal Epidemiology and Information Network (REIN).

Our Registry has been registered as a longitudinal study with ethics approval from the Health Research Ethics Committee of Stellenbosch University (reference no. N11/01/028). A waiver of individual informed consent has been granted, and the approval includes country-wide data collection on adults and children, public and private sectors, and the tapping of various data sources to improve the accuracy and completeness of data. These include records available through doctors' practices, dialysis and transplant centres, provider companies, and medical aid funds.

### Registry platform

The Registry has been developed using Clarion. Users interface with the central database server via a downloadable client application. Password protection ensures that doctors and treatment centres have access to their own data only.

While this platform has served us well, we have had difficulties working across firewalls, especially in certain public sector institutions. We are now in the process of redeveloping our platform to be completely browser-based. This will improve access and provide a user-friendly interface which should speed up data entry considerably.

### Data collection for December 2013

Our next round of data collection is well under way. This will describe the state of RRT as at 31 December 2013. Treatment centres should re-check their patients' core data, such as demographic data, the date on which treatment was started and the primary renal disease. Any deaths, transfers or changes to another modality need to be recorded. Please contact Nicola Marais if any assistance is required.