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SCIENTIFIC REPORTS AND GUIDELINES

South African Renal Registry Annual Report 2021

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ABSTRACT

This is the tenth consecutive annual report of the South African Renal Registry since it was re-established and launched with the publication of the December 2012 data on kidney replacement therapy (KRT) in South Africa. The December 2021 data reported here indicate a stabilisation of the COVID-19-related decrease in patient numbers which was recorded in the previous report.

There were 849 patients who started KRT in 2021, an incidence of 14.1 per million population (pmp). Most of these patients (80%) were treated in private centres. In December 2021, the total number of patients on treatment with chronic dialysis or transplantation stood at 8 866, up from 8 734 in 2020, an overall prevalence of 147 pmp. The prevalence was 736 pmp in the private healthcare sector. In the public sector, the overall prevalence was 45 pmp, with the Western Cape being the province with the highest prevalence (166 pmp) and Mpumalanga the province with the lowest (3 pmp).

Keywords: renal registry; South Africa; haemodialysis; peritoneal dialysis; transplantation.

INTRODUCTION

The South African Renal Registry (SARR) collects, analyses and publishes information on kidney replacement therapy (KRT) for patients with kidney failure in South Africa. The registry, a project of the South African Nephrology Society, was re-established almost two decades after the failure of the previous registry, the South African Dialysis and Transplant Registry [1]. This is the tenth consecutive annual report, which summarises the data on record for December 2021.

The COVID-19 pandemic resulted in many deaths among our patients on KRT, a suspension of transplantation programmes and a decrease in the access to KRT for patients with kidney failure [2-4]. In the 2020 report [5], we documented a decline in total patient numbers of more than 10%. The December 2021 data indicate that this downward trend has stabilised, although we are not yet back to the numbers recorded for previous years.

METHODS

Registry platform

Our current platform was developed using the Webdev programming environment (www.windev.com) and resides on a secure, dedicated, Windows 10 server at a South African internet hosting company. It runs Windows Internet Information Services (IIS) and uses the client/server version of HFSQL (formerly Hyperfile SQL) as its relational database management system. Data capturers interface with the central database via user-friendly web pages from any device with internet access. The platform uses end-to-end encryption and full backups are made daily.

To confirm vital status, we cross-check the identity numbers of our patients with the Department of Home Affairs database of births and deaths, which is accessible via the South African Medical Research Council. This has allowed us to analyse and report on patient survival [6,7]. Over the past few years, the technology platform of the

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SARR has been expanded to serve as the backbone of the African Renal Registry. Botswana, Burundi, Ghana, Kenya, Nigeria and Zambia have joined the African Renal Registry and have commenced data collection with the aid of our platform [8,9].

Definitions

Kidney failure and start date of KRT. Kidney failure refers to advanced, irreversible kidney disease which requires the initiation of KRT. The start date is the date of first haemodialysis (HD), the date of the first peritoneal dialysis (PD) flushes or exchanges, or the date of pre-emptive transplantation (where there is no prior dialysis). For patients who are initially thought to have acute kidney injury (AKI) and are dialysed but who do not recover function and then continue KRT, the start date is the date of the first dialysis, even though the diagnosis at that time was AKI and not kidney failure.

Initial KRT modality. This is the intended first modality and should normally be the modality being used on day 91 of KRT. This means that someone who presents late and who is started on urgent HD but is soon established on PD, will have PD recorded as the initial modality.

Changes in the responsible treating unit. This refers to a change in the dialysis unit, PD follow-up unit/clinic or transplant follow-up unit/centre/practice. A transfer entry in the registry is required to record this. This is not done for short-term transfers when the intention is that the patient will return to the "home" unit, for example, for holiday dialysis, temporary transfer to a unit with isolation facilities, etc.

Primary kidney disease. Responsible nephrologists/physicians should assist their data-capturers to ensure that this critical information is accurate. We are using the diagnostic codes of the ERA registry [10]. If there is uncertainty about the diagnosis, as is often the case with patients who present late, then it should be recorded as **"chronic kidney disease (CKD) – aetiology uncertain/unknown"**. In patients who present with kidney failure, small kidneys and hypertension, there should not be an automatic default to labelling such patients as having "chronic glomerulonephritis" or "hypertensive kidney disease".

Chronic hypertensive nephropathy or **malignant hypertensive nephropathy.** This should be selected as the primary kidney disease only if there is no reason to suspect that the hypertension is secondary to pre-existing kidney disease. We suggest that the following criteria be met: hypertension known to precede kidney dysfunction, left ventricular hypertrophy, proteinuria <2 g/day and no evidence of other kidney diseases [11,12].

Lost to follow-up. The SARR assumes that a functioning transplant is maintained unless there is evidence of a "transplant failure" or death. A dialysis modality is assumed to continue for one year from the date of the last registry entry or laboratory result, in the absence of evidence of death; thereafter, the patient is considered lost to follow-up. Patients are also considered lost to follow-up one year after a "transplant failure" entry if no further entries are recorded.

Recovered kidney function. Patients on chronic HD/PD who recover kidney function and no longer require dialysis are removed from the registry. The period of dialysis-free recovery must persist for at least 90 days; if the period of recovery is less than 90 days and dialysis is restarted, there is no end of treatment entry and dialysis is considered to have been continuous. If the period of recovery exceeds 90 days and the patient restarts KRT, a new entry is recorded for the patient.

Ethical approval

The SARR operates as a longitudinal study with ethical approval from the Health Research Ethics Committee of Stellenbosch University (reference no. N11/01/028). This is renewed annually upon submission of a progress report. A waiver of individual informed consent has been granted, and the approval includes countrywide data collection on adults and children, in the 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. Ethical approval has also been granted for the use of the expanded SARR platform for the African Renal Registry.

RESULTS

South Africa in 2021

Figure 1 illustrates the provinces and major cities of South Africa. According to the Statistics South Africa (Stats SA) mid-year estimates for 2021 [13], the population of South Africa had increased to 60.14 million people. There was a slight female predominance (51.1%) and Black/African citizens constituted 80.9% of the population (Table 1). About 28.3% of the population was younger than 15 years of age and approximately 9.2% was 60 years or older. The province of Gauteng was home to 26.3% of the population, followed by KwaZulu-Natal with 19.1% (Table 2). Within South Africa, migration has a major impact on the age structure and distribution of provincial populations. For the period 2016–2021, Gauteng and the Western Cape experienced the largest net inflows of migrants, estimated at 1 564 861 and 470 657, respectively [13].

South Africa is classified as an upper-middle-income country by the World Bank, with a gross national income

per capita for 2021 by the Atlas method (current US$) of $6 530 and by the purchasing power parity (PPP) method (current international US$) of $14 340 [14]. Most of the population (85.1%) rely on the public healthcare sector for services, with only a small proportion (14.9%) having medical insurance and accessing private sector health care [15].

Life expectancy at birth for 2021 was estimated at 59.3 years for males and 64.6 years for females. The infant mortality rate was estimated at 24.1 per 1 000 live births. The overall HIV prevalence was 13.7%, and 19.5% for adults aged 15–49 [13].

Figure 1. Provinces and major cities of South Africa.

Table 1. Population data by ethnic group.

Population group	Million	%
Black	48.64	80.9
Coloured (mixed ancestry)	5.29	8.8
White	4.66	7.7
Indian/Asian	1.55	2.6
Total	**60.14**	**100**

Table 2. Population data by province.

Province	Million	%
Eastern Cape (EC)	6.68	11.1
Free State (FS)	2.93	4.9
Gauteng (GT)	15.81	26.3
KwaZulu-Natal (KZN)	11.51	19.1
Limpopo (LP)	5.93	9.9
Mpumalanga (MP)	4.74	7.9
North West (NW)	4.12	6.9
Northern Cape (NC)	1.30	2.2
Western Cape (WC)	7.11	11.8
Total	**60.14**	**100**

Treatment centres for dialysis and transplantation

The number of centres contributing data was 281; of these, 249 (88.6%) are privately owned (Table 3 and Appendix 1). Several provinces have increased access for their public sector patients by utilising spare capacity at private haemodialysis centres on a fee-per-treatment basis. There are also a few privately run centres on the premises of government hospitals which serve public sector patients.

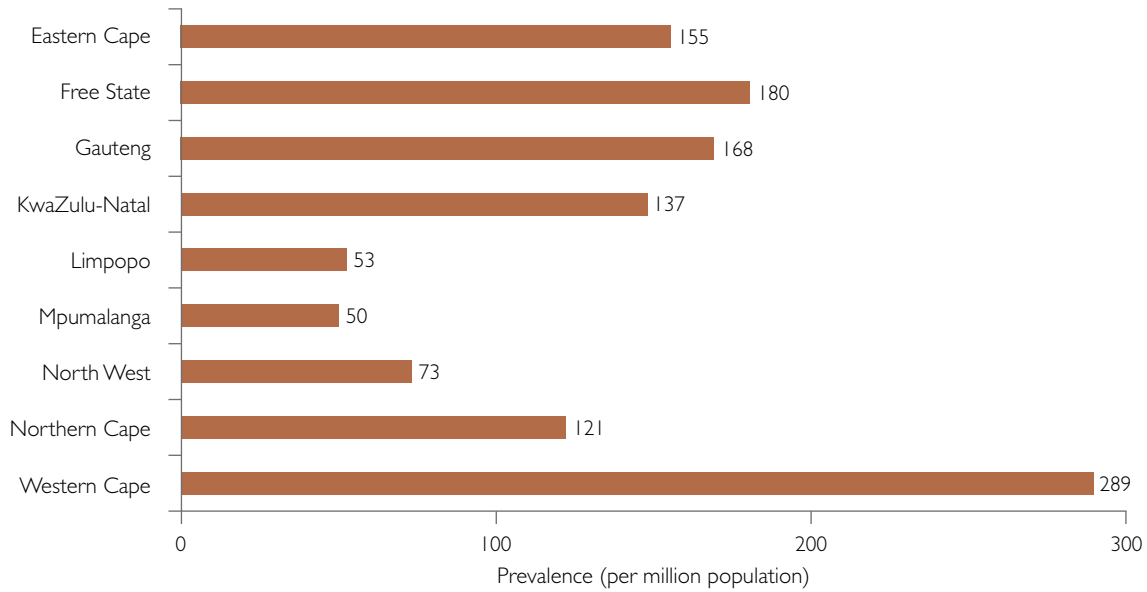
Table 3. Number of treatment centres by province and sector.

Sector	EC	FS	GT	KZN	LP	MP	NW	NC	WC	All
Public	4	6	7	5	1	0	3	1	5	32
Private	21	13	77	61	14	10	14	4	35	249
Total	**25**	**19**	**84**	**66**	**15**	**10**	**17**	**5**	**40**	**281**

Prevalence and incidence of kidney replacement therapy

The total number of patients on KRT on 31 December 2021 was 8 866. This is a prevalence of 147 per million population (pmp). The province with the highest patient numbers remained Gauteng, followed by the Western Cape and KwaZulu-Natal, whereas the province with the highest prevalence was the Western Cape, followed by the Free State and Gauteng (Figure 2).

There were 849 patients who started KRT in 2021, an incidence of 14.1 pmp. Most of these patients (79.9%) were treated in private centres. Diabetic nephropathy was recorded as the cause of the kidney failure in 115 of these incident patients.



Province	EC	FS	GT	KZN	LP	MP	NW	NC	WC	All
Patients	1 035	528	2 664	1 572	315	235	300	158	2 059	8 866

Figure 2. Prevalence and numbers of patients on KRT by province.

The number of patients treated in the public sector grew from 2 248 in 2020 to 2 290 in 2021, a prevalence of 45 pmp (Table 4). In the private sector, the number of patients increased from 6 486 to 6 576, yielding a prevalence of 736 pmp. The numbers of patients and prevalences by province and healthcare sector are shown in Table 5 and Figure 3. Denominators for prevalence calculations are based on the Stats SA mid-term estimates [13] and the Council for Medical Schemes Annual Report [15]. Medical aid beneficiaries who were unclassified with respect to province were allocated to provinces in proportion to the numbers of beneficiaries in each province.

Table 4. KRT prevalence by healthcare sector.

	Public	Private
Population in millions	51.21	8.94*
Patients on treatment	2 290	6 576
Treatment rate (pmp)	45	736

*Council for Medical Schemes Industry Report 2021

Table 5. Numbers of patients by province and sector.

Sector	EC	FS	GT	KZN	LP	MP	NW	NC	WC	All
Public	274	254	444	174	65	14	57	58	950	2 290
Private	761	274	2 220	1 398	250	221	243	100	1 109	6 576
Total	**1 035**	**528**	**2 664**	**1 572**	**315**	**235**	**300**	**158**	**2 059**	**8 866**

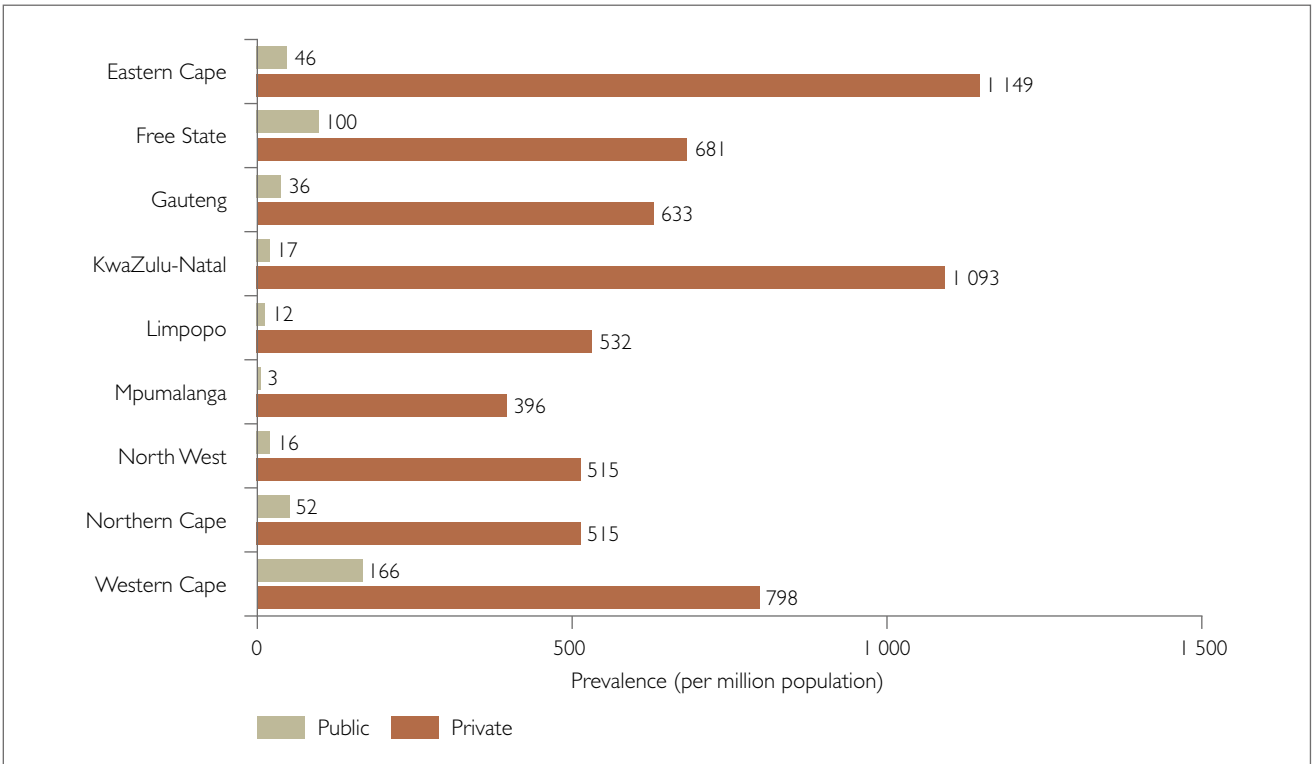
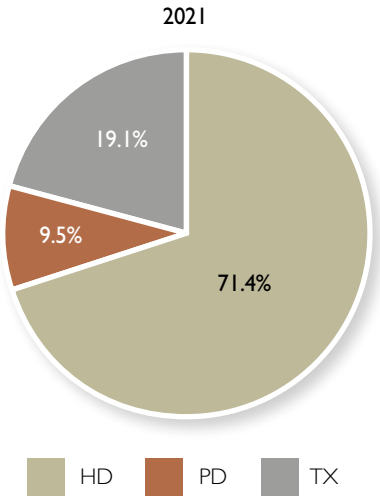


Figure 3. Prevalence of KRT by province and sector.

Treatment modality and KRT vintage

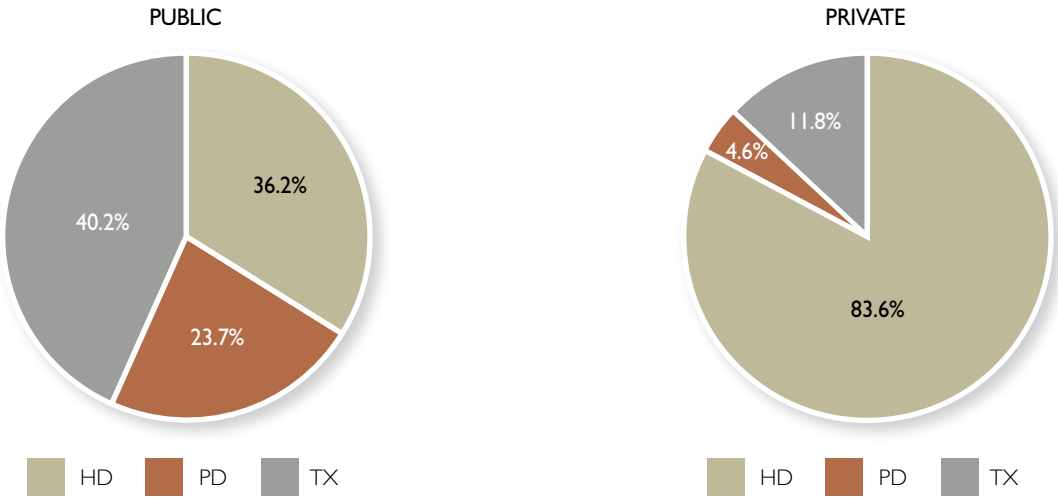
Of the patients on KRT in December 2021, 19.1% had a functioning kidney transplant. Of the patients on dialysis, 88.2% were on haemodialysis and 11.8% were on peritoneal dialysis. Most of the transplanted patients and those on peritoneal dialysis were being managed in the public sector; the private sector had much lower proportions of patients on these KRT modalities (Figures 4 and 5).

Overall, the median KRT vintage was 6.1 years [interquartile range (IQR) 3.0–9.9 years]. The median vintage was 5.2 years (IQR 2.6–8.4 years) for patients on haemodialysis, 4.0 years (IQR 1.6–7.0 years) for patients on peritoneal dialysis and 11.3 years (IQR 8.0–15.6 years) for transplant recipients.



Modality	Patients	%
Haemodialysis	6 326	71.4
Peritoneal dialysis	843	9.5
Transplant	1 697	19.1

Figure 4. Distribution of patients by treatment modality.



Treatment modality	Public sector		Private sector	
	Patients	%	Patients	%
Haemodialysis	828	36.2	5 498	83.6
Peritoneal dialysis	542	23.7	301	4.6
Transplant	920	40.2	777	11.8

Figure 5. KRT modality by sector.

Demographic and clinical data

The median age of the patients on KRT was 53.0 years (IQR 42.3–62.6 years) and 59.2% were male. Because of the rationing and selection criteria applied in public sector hospitals, patients treated there were much younger than those treated in the private sector (median age 44.2 years versus 55.9 years). Just more than half of the patients were Black. However, the prevalence was still lowest in Blacks (96 pmp) and highest in Indians/Asians (644 pmp) (Figure 6).

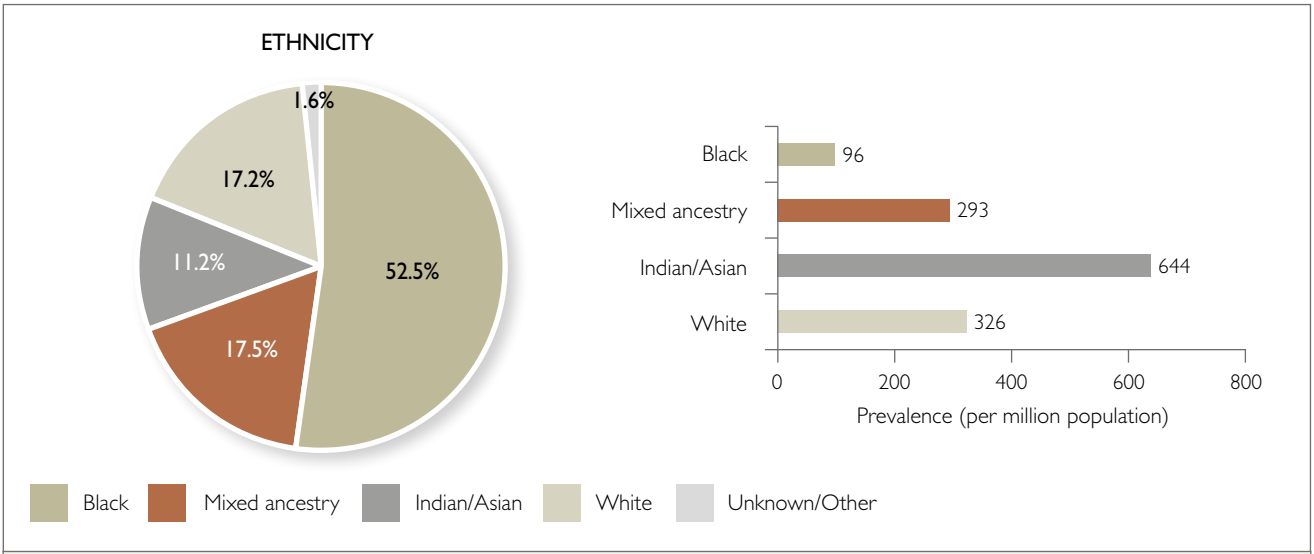


Figure 6. KRT patient numbers and prevalence by ethnicity.

The most common primary kidney disease recorded was hypertensive kidney disease, followed by CKD/kidney failure of unknown cause and diabetic nephropathy (Table 6).

Table 6. Most commonly reported causes of kidney failure.

	% of total
Hypertensive kidney disease	38.0
Cause unknown	30.2
Diabetic nephropathy	13.3
Glomerular disease	10.9
Cystic kidney disease	3.1
Obstruction and reflux	1.7

Of the patients with data on diabetes status (8 144 patients), 36.6% had diabetes, with a much higher percentage in the private than in the public sector (44.0% versus 16.0%). The seropositive rate for hepatitis B virus was 2.3% (178 of 7 751 patients), for hepatitis C virus 0.5% (37 of 7 148 patients) and for HIV 12.0% (887 of 7 422 patients).

DISCUSSION

The number of patients on KRT in South Africa stood at 8 866 in December 2021, a prevalence of 147 pmp. This is slightly higher than the 8 734 reported for December 2020, when patient numbers had declined due to COVID-19 causing many excess deaths, delayed initiation of KRT and challenges with data submission.

The public sector remains underserved with respect to KRT, with a prevalence of 45 pmp, one-sixteenth that recorded for the private sector. The Western Cape has the highest public sector prevalence (166 pmp) and Mpumalanga the lowest (3 pmp). The public sector prevalence for KwaZulu-Natal has declined substantially, from 24 pmp in 2020 to 17 pmp in 2021. The reasons for this are not clear, but may include underreporting of patients on KRT.

Acknowledgements

The SARR is an initiative of the South African Nephrology Society (http://www.sa-renalsociety.org/) and is chaired by Razeen Davids and Julian Jacobs. The SARR has been incor-

porated as a non-profit company (company registration no. 2018/401217/08, NPO no. 212-901) with Razeen Davids, Julian Jacobs and Sajith Sebastian as directors. The founding document is available from the South African Nephrology Society.

We thank the doctors, nurses, technologists, support staff and management of participating treatment centres for contributing to the 2021 data collection. These centres are listed in Appendix 1. We also thank the sponsors listed below, especially the National Department of Health, for their financial and logistical support:

- Adcock Ingram Critical Care
- Amgen
- Astellas Pharma
- National Department of Health
- National Kidney Foundation of South Africa
- Roche Products
- Stellenbosch University.

Supplementary materials

The figures in this report are available as PowerPoint slides via the supplementary materials on the *African Journal of Nephrology* website.

Usage of this report

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Conflict of interest

None to declare.

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APPENDIX 1: PARTICIPATING TREATMENT CENTRES

EASTERN CAPE		
Public	**Private**	**Private**
Dora Nginza Hospital	Jeffreys Bay Kidney and Dialysis Centre (FMC)	NRC Port Elizabeth
Frere Hospital	Life East London Private Hospital	NRC Port Elizabeth PD
Livingstone Hospital	Life Mercantile Hospital	NRC Queenstown
Nelson Mandela Academic Hospital	NRC Alice	NRC Uitenhage
	NRC Butterworth	Port Elizabeth Kidney and Dialysis Centre (FMC)
	NRC East London	Regional Renal Services Lusikisiki
	NRC East London PD	Regional Renal Services Matatiele
	NRC King Williamstown	Regional Renal Services Mount Frere
	NRC Kwadwesi	Regional Renal Services Mthatha
	NRC Mdantsane	Uitenhage Renal Care Centre
	NRC Mthatha	

FREE STATE		
Public	**Private**	**Private**
Boitumelo Regional Hospital (Kroonstad)	B. Braun Avitum Bethlehem (Hoogland)	NRC Bloemfontein
Bongani Regional Hospital (Welkom)	B. Braun Avitum Bloemfontein	NRC Bloemfontein PD
Dihlabeng Regional Hospital (Bethlehem)	B. Braun Avitum Harrismith	NRC Kroonstad
Mofumahadi Manapo Mopeli Hospital (Qua Qua)	B. Braun Avitum Welkom	NRC Pelonomi
Pelonomi Regional Hospital	Bloemfontein Kidney and Dialysis Centre (FMC)	Sasolburg Kidney and Dialysis Centre (FMC)
Universitas Academic Hospital	Bophelong Busamed Harrismith Hospital	Universitas Private Hospital
	Life Rosepark Hospital	

GAUTENG		
Public	**Private**	**Private**
Charlotte Maxeke Johannesburg Academic Hospital	Arcadia Kidney and Dialysis Centre (FMC)	Life Springs Parkland Hospital
Chris Hani Baragwanath Hospital	Atteridgeville Kidney and Dialysis Centre (FMC)	Life The Glynnwood Hospital
Dr George Mukhari Hospital	B. Braun Avitum Emfuleni (Vanderbijlpark)	Life Wilgeheuwel Hospital
Helen Joseph Hospital	B. Braun Avitum Pretoria (Kloof)	LRC Lenasia
Leratong Hospital	B. Braun Avitum Vereeniging	Mabika Renal Solutions
Sebokeng Hospital	BRC Modderfontein	Midstream Kidney and Dialysis Centre (FMC)
Steve Biko Academic Hospital	Edison Hammanskraal Centre	Morningside Children's Kidney Treatment Centre
	Edison Mamelodi Centre	Morningside Kidney and Dialysis Centre (FMC)
	Groenkloof Kidney and Dialysis Centre (FMC)	Naledi Kidney and Dialysis Centre (FMC)
	Izinso Dialysis Busamed	Nephromed Kidney Centre Kwa-Thema
	Izinso Dialysis Centre Eersterust	Netcare Transplant Centre Garden City Hospital
	Izinso Dialysis Garankuwa	Netcare Transplant Centre Jakaranda Hospital
	Izinso Dialysis Glen Austin	Netcare Transplant Centre Milpark Hospital
	Izinso Dialysis Soshanguve (Pretoria)	NRC Akasia
	Izinso Dialysis Soweto	NRC Alberton
	Kempton Kidney and Dialysis Centre (FMC)	NRC Arcadia
	Lenasia Kidney and Dialysis Centre (FMC)	NRC Johannesburg PD
	Lesedi Kidney and Dialysis Centre (FMC)	NRC Krugersdorp
	Life Bedford Gardens Hospital	NRC Linksfield
	Life Brenthurst Hospital	NRC Lyttleton
	Life Carstenhof Hospital	NRC Mayfair
	Life Fourways Hospital	NRC Montana
	Life Groenkloof Hospital	NRC Mulbarton
	Life Robinson Private Hospital	NRC Olivedale

Abbreviations: BRC, Busamed Renal Care; FMC, Fresenius Medical Care; LRC, Lenmed Renal Centre; MRC, Melomed Renal Care; NRC, National Renal Care; RCH, Renal Care Holdings.

APPENDIX 1: PARTICIPATING TREATMENT CENTRES continued

GAUTENG cont.		
Public	**Private**	**Private**
	NRC Parktown West	RCH Randfontein
	NRC Pinehaven	RCH Zamokuhle (Thembisa)
	NRC Pretoria East	Renalworx Dialysis Centre Wilgers
	NRC Pretoria PD	Rustenburg Kidney and Dialysis Centre (FMC)
	NRC Rynfield	Tshepo-Themba Kidney and Dialysis Centre (FMC)
	NRC Sedibeng	Tshwane Kidney and Dialysis Centre (FMC)
	NRC Springs	Vaal Kidney and Dialysis Centre (FMC)
	NRC Sunninghill	Von Wielligh Kidney and Dialysis Centre (FMC)
	NRC Sunward Park	Vosloorus Kidney and Dialysis Centre (Clinix)
	NRC Waterfall	Waverley Kidney and Dialysis Centre (FMC)
	Pretoria Kidney and Dialysis Centre (FMC)	Westrand Dialysis Randfontein Unit
	Q Kidney Care	Westrand Kidney and Dialysis Centre (FMC)
	Ramdial Renal Services	Wits Donald Gordon Kidney and Dialysis Centre (FMC)
	Randfontein Kidney and Dialysis Centre (FMC)	Wits Donald Gordon Medical Centre Transplant Division
	Randfontein Private Hospital Dialysis Unit	

KWAZULU-NATAL		
Public	**Private**	**Private**
Addington Hospital	B Braun Avitum Ixopo	Mount Edgecombe Dialysis Care Group
Greys Hospital	B. Braun Avitum Dundee	Mount Edgecombe Kidney and Dialysis Centre (FMC)
Inkosi Albert Luthuli Hospital	B. Braun Avitum Durban North	Netcare Transplant Centre St Augustine's Hospital
King Edward VIII Hospital	B. Braun Avitum Durdoc	Newcastle Kidney and Dialysis Centre (FMC)
Ngwelezana Hospital	B. Braun Avitum Howick	NRC Athlone
	B. Braun Avitum Newcastle	NRC Ballito
	B. Braun Avitum Pietermaritzburg	NRC Berea
	B. Braun Avitum Scottburgh	NRC Chatsworth
	B. Braun Avitum Vryheid	NRC Durban PD
	BRC Gateway	NRC Ladysmith
	BRC Hillcrest	NRC Margate
	Chatsworth Kidney and Dialysis Centre (FMC)	NRC Pietermaritzburg CBD
	Coastal Neprology Centre Nongoma	NRC Pietermaritzburg PD
	Coastal Neprology Centre Ulundi	NRC Pinetown
	Dr Parag and Raghubir Kidney Care Centre	NRC Richards Bay
	Durban Kidney and Dialysis Centre (FMC)	NRC Umhlanga
	Empangeni Kidney and Dialysis Centre (FMC)	Pinetown Kidney and Dialysis Centre (FMC)
	Ethekwini Kidney and Dialysis Centre (FMC)	RCH Ladysmith
	Hibiscus Kidney and Dialysis Centre (FMC)	RCH Shifa
	Kokstad Kidney and Dialysis Centre (FMC)	Regional Renal Services Harding
	Kwazulu Dialysis Shifa Private Hospital	Renal Care Team Durdoc
	Kwazulu Dialysis Umlazi Megacity Renal Unit	Renal Care Team Kwamashu
	KZN Nephrology and Dialysis Clinic	Renal Care Team Ladysmith
	Life Chatsmed Hospital	Renal Care Team Pinetown
	Life Empangeni Hospital	Richards Bay Kidney and Dialysis Centre (FMC)
	Life Entabeni Hospital	Stanger Kidney and Dialysis Centre (FMC)
	Life Hilton Hospital	Ultra Kidney Care City Hospital
	Life Mount Edgecombe Hospital	Umhlanga Kidney and Dialysis Centre (FMC)
	Life Westville Hospital	Verulam Dialysis Centre
	Merediac Durban	Victoria Kidney and Dialysis Centre (FMC)
	Midlands Dialysis and Kidney Centre	Vryheid Kidney and Dialysis Centre (FMC)

Abbreviations: BRC, Busamed Renal Care; FMC, Fresenius Medical Care; LRC, Lenmed Renal Centre; MRC, Melomed Renal Care; NRC, National Renal Care; RCH, Renal Care Holdings.

APPENDIX 1: PARTICIPATING TREATMENT CENTRES continued

LIMPOPO		
Public	**Private**	**Private**
Pietersberg Hospital	B. Braun Avitum Louis Trichardt	Edison Thohoyandou Centre
	B. Braun Avitum Mokopane	Medline Dialysis Centre Musina
	B. Braun Avitum Polokwane	Nephromed Kidney Centre Elim Hospital
	B. Braun Avitum Tzaneen	NRC Polokwane
	Chantel van Rooyen Bela-Bela	NRC Venda
	Chantel van Rooyen Modimolle	Phalaborwa Kidney and Dialysis Centre (FMC)
	Edison Giyani Centre	Thohoyandou Kidney and Dialysis Centre (FMC)

MPUMALANGA		
Public	**Private**	**Private**
	B. Braun Avitum Ermelo	Hazyview Dialysis Centre
	B. Braun Avitum Nelspruit	Highveld Nephrology Centre Bethal
	B. Braun Avitum Trichardt	Life Midmed Hospital
	B. Braun Avitum Witbank	Middelburg Kidney and Dialysis Centre (FMC)
	Emalahleni Kidney and Dialysis Centre (FMC)	NRC Nelspruit

NORTH WEST		
Public	**Private**	**Private**
Job Shimankana Tabane Hospital	B. Braun Avitum Vryburg	Mafikeng Kidney and Dialysis Centre (FMC)
Klerksdorp Hospital	Brits Kidney and Dialysis Centre (FMC)	North West Dialysis Klerksdorp
Mafikeng Provincial Hospital	Izinso Dialysis Mafikeng	North West Dialysis Lichtenburg
	Life Klerksdorp Dialysis	NRC Lonmin
	Life Lichtenburg Dialysis	NRC Rustenberg
	Living Waters Dialysis Taung	Potchefstroom Kidney and Dialysis Centre (FMC)
	Living Waters Dialysis Klerksdorp	Zeerust Renal Unit

NORTHERN CAPE		
Public	**Private**	**Private**
Kimberley State Hospital	B. Braun Avitum Kimberley	North West Dialysis Hartswater
	B. Braun Avitum Upington	RCH Kimberley

WESTERN CAPE		
Public	**Private**	**Private**
George Hospital	Athlone Kidney and Dialysis Centre (FMC)	NRC Eersteriver
Groote Schuur Hospital	B. Braun Avitum Cape Gate	NRC George
Red Cross War Memorial Children's Hospital	B. Braun Avitum Mossel Bay	NRC Goodwood
Tygerberg Hospital	B. Braun Avitum Oudtshoorn	NRC Kuilsriver
Worcester Hospital	B. Braun Avitum Simonstown	NRC Paarl
	B. Braun Avitum Worcester	NRC Plumstead
	Cape Town Kidney and Dialysis Centre (FMC)	NRC Vredenburg
	George Kidney and Dialysis Centre (FMC)	Paardevlei Kidney and Dialysis Centre (FMC)
	Hermanus Kidney and Dialysis Centre (FMC)	Panorama Kidney and Dialysis Centre (FMC)
	Khayelitsha Kidney and Dialysis Centre (FMC)	Rondebosch Dialysis Centre
	Life Vincent Pallotti Hospital	Stellenbosch Kidney and Dialysis Centre (FMC)
	MRC Gatesville	UCT Kidney and Dialysis Centre (FMC)
	MRC Gatesville PD	UCT Private Academic Hospital
	MRC Mitchells Plain	V & A Waterfront Kidney and Dialysis Centre (FMC)
	MRC Tokai	Winelands Kidney and Dialysis Centre (FMC)
	Netcare Transplant Centre Christiaan Barnard Memorial Hospital	Worcester Kidney and Dialysis Centre (FMC)
	NRC Blaauwberg	
	NRC Cape Town CBD	
	NRC Cape Town PD	

Abbreviations: BRC, Busamed Renal Care; FMC, Fresenius Medical Care; LRC, Lenmed Renal Centre; MRC, Melomed Renal Care; NRC, National Renal Care; RCH, Renal Care Holdings.

APPENDIX 1: PARTICIPATING TRANSPLANT CENTRES

FREE STATE	
Public	**Private**
	Universitas Private Hospital

GAUTENG	
Public	**Private**
Charlotte Maxeke Johannesburg Academic Hospital	Netcare Garden City Hospital
Steve Biko Academic Hospital	Netcare Jakaranda Hospital
	Netcare Milpark Hospital
	Wits Donald Gordon Medical Centre

KWAZULU-NATAL	
Public	**Private**
Inkosi Albert Luthuli Hospital	Life Entabeni Hospital
	Netcare St Augustine's Hospital

WESTERN CAPE	
Public	**Private**
Groote Schuur Hospital	Netcare Christiaan Barnard Memorial Hospital
Red Cross War Memorial Children's Hospital	UCT Private Academic Hospital
Tygerberg Hospital	