

COVID-19 Sentinel Hospital Surveillance

Update: Week 21, 2020

Overview of report

This report summarises data of COVID-19 cases admitted to sentinel hospital surveillance sites in all provinces. The report is based on data collected from 5 March to 24 May 2020.

Highlights

- As of 24 May, 3411 COVID-19 admissions were reported from 207 facilities (56 public-sector and 151 private-sector) in all nine provinces of South Africa. There was an increase of 1,296 new admissions reported since last report, and five additional hospitals (four public-sector and one private-sector) reporting COVID-19 admissions. There were 1615 (47%) and 1796 (53%) admissions reported in private and public sector respectively. The majority of COVID-19 admissions were reported from four provinces, 2230 (65%) in Western Cape, 347 (10%) in Eastern Cape, 346 (10%) in Gauteng and 323 (10%) in KwaZulu-Natal.
- The median age of COVID-19 admissions was 49 years; 136 (4%) admissions in patients <20 years and 475 (14%) in >70 years. Fifty five percent (1890/3411) were female.
- Among 2748 (81%) patients with data on comorbid conditions; 1742 (63%) had one or more comorbid condition, of these 52% (910/1742) had two or more comorbid conditions. Most commonly reported comorbid conditions were hypertension 1027/1742 (59%) and diabetes 824/1742 (47%). There were 307 (18%) patients admitted with HIV, 65 (4%) with active tuberculosis and 153 (9%) patients with previous history of TB.
- Of the 3411 admissions, 1856 (55%) patients were discharged alive or transferred to other facilities, 1105 (32%) patients were in hospital at the time of this report and 450 (13%) patients had died. There were 109 additional deaths since the last report. On multivariable analysis, factors associated with in-hospital mortality were older age groups, 40-64 years (233/1682, case fatality ratio 14%; aOR 4.4; 95% CI 2.8-6.9) and ≥65 years (189/696, 27%; aOR 9.0; 95% CI 5.6-14.5) as compared to <40 years (28/1033, 2.7%); male sex (238/1521, 16%; OR 1.5, 95% CI 1.2-1.9); admitted in the public sector (279/1796, 16%; aOR 1.5; 95% CI 1.1-1.9); having comorbid hypertension (232/1027 (23%; aOR 1.3; 95% CI 1.03-1.7), diabetes (192/824 (23%; aOR 1.4; 95% CI 1.1-1.7) or chronic renal disease (52/144 (36%; aOR 2.0; 95% CI 1.4-3.0). Patients who died were less likely to be admitted in Gauteng province (21/346, 6%; aOR 0.4; 95% CI 0.3-0.8) as compared to the Eastern Cape.

Methods

DATCOV19, sentinel hospital surveillance for COVID-19 admissions, was initiated on the 1 April 2020. Data are submitted by public and private hospitals that have agreed to report COVID-19 admissions through DATCOV19 surveillance in all nine provinces of South Africa. A COVID-19 case was defined as a person with a positive reverse transcriptase polymerase chain reaction (RT-PCR) assay for SARS-CoV-2 who was admitted to a DATCOV19 sentinel hospital. An individual was defined as having severe disease if treated in high care or ICU, or ventilated or diagnosed with acute respiratory distress syndrome (ARDS).

Data on hospitalised cases who were diagnosed with COVID-19 from 5 March to 24 May 2020 were collected. Data are received from all private hospitals nationally, and a subset of public hospitals in all nine provinces (data are received from all public hospitals in the Western Cape (WC) Province). As of 24 May 2020, a total of 207 facilities, 151 from private sector and 56 from public sector, submitted data on hospitalised COVID-19 cases (Table 1).

Table 1: Number of hospitals reporting data on COVID-19 admissions by province and sector, South Africa, 5 March-24 May 2020

Name of province	Public Sector	Private Sector
Eastern Cape (EC)	5	10
Free State (FS)	3	6
Gauteng (GP)	3	55
KwaZulu-Natal (KZN)	4	31
Limpopo (LP)	1	4
North West (NW)	2	7
Northern Cape (NC)	1	4
Western Cape (WC)	37	31
Mpumalanga (MP)	0	3
South Africa	56	151

Results

From 5 March to 24 May, a total of 3411 COVID-19 admissions (1,296 additional from last report) were reported from 207 facilities (five additional reporting sites since last report) in all nine provinces of South Africa. Of these admissions, 1615 (47.4%) and 1796 (52.7%) were reported in private and public sector, respectively (Figure 1). The majority of admissions (3246/3411, 95.2%) were recorded in four provinces, with the highest number (2230/3411, 65.4%) reported in Western Cape (WC), followed by (347/3411, 10.2%) in Eastern Cape (EC), (346/3411; 10.1%) in Gauteng (GP) and (323/3411, 9.5%) in KwaZulu-Natal (KZN) provinces (Figure 1).

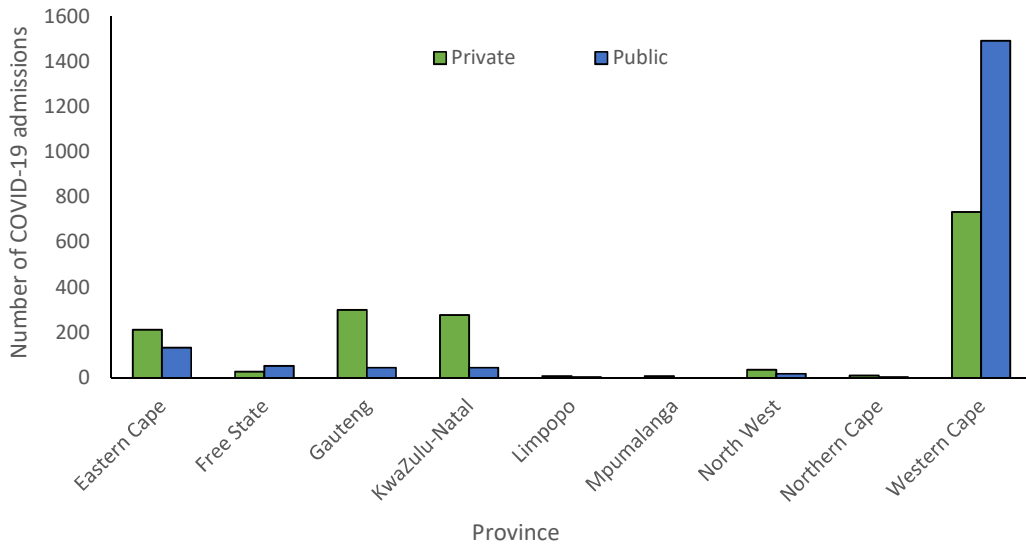


Figure 1: Number of reported COVID-19 admissions by province and health-sector, South Africa, 5 March-24 May 2020, n=3411

Initially, most reported admissions were in the private sector, however as from week 16 increasing proportion of total admissions was reported in the public sector (Figure 2).

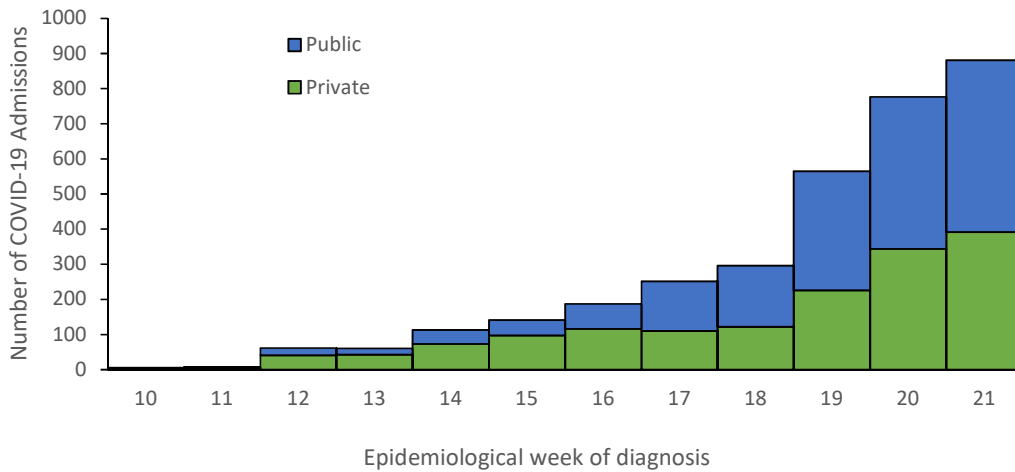


Figure 2: Number of reported COVID-19 admissions by health sector and epidemiologic week of diagnosis, 5 March-24 May 2020, n=3411

Demographic and clinical characteristics of COVID-19 admissions

The median age of COVID-19 admissions was 49 years (interquartile range [IQR] 37 – 61). There were 136 (4.0%) admissions in patients younger than 20 years and 475 (13.9%) in patients older than 70 years (Figure 3). Among admitted individuals with COVID-19, 1890 (55.4%) were female. The sex ratio varied by age group with females more common than males in all age groups except in patients younger than 20 years (Figure 3).

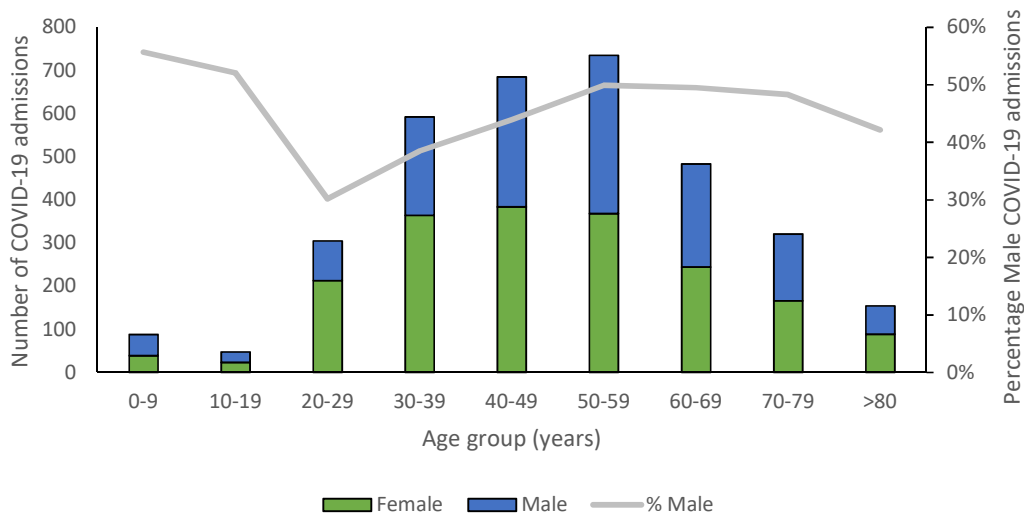


Figure 3: Number of reported COVID-19 admissions by age, gender and percentage of males, South Africa, 5 March-24 May 2020 (n=3411)

Of the 1696 (49.7%) patients for whom race was known, 1058 (62.4%) were Black African, 335 (19.8%) were Coloured, 94 (5.5%) were Indian and 209 (12.3%) were White. There were 172 (5.0%) health care workers (HCW) that were reported to be hospitalised. Among the 1890 female admissions, there were 130 (6.9%) females admitted who were pregnant or within 6 weeks post-partum.

Of the 2748 (80.6%) patients for whom comorbid disease was known, 1006/2748 (36.6%) had no comorbid disease reported, 832/2748 (30.3%) had one comorbid disease reported and 910/2748 (33.1%) had two or more comorbid diseases reported. Among the 1742 patients who had reported a comorbid condition, the most commonly reported comorbid conditions were hypertension (1027/1742, 59.0%) and diabetes (824/1742, 47.3%). There were 307 (17.6%) patients who were HIV-infected, 65 (3.7%) patients with active tuberculosis (TB) and 153 (8.8%) patients with previous history of TB (Table 2).

Table 2: Reported comorbid diseases among COVID-19 admissions reporting at least one comorbid disease, South Africa, 5 March-24 May 2020 (n=1742)

Comorbid disease*	n (%)
Hypertension	1027 (59.0)
Diabetes mellitus	824 (47.3)
Chronic cardiac disease	62 (3.6)
Chronic pulmonary disease/ Asthma	282 (16.2)
Chronic renal disease	144 (8.3)
Malignancy	31 (1.8)
HIV	307 (17.6)
Active TB	65 (3.7)
Previous history of TB	153 (8.8)

* Multiple comorbid conditions would be counted more than once so the total number may be more than the total number of individuals reporting comorbid conditions

Clinical management of COVID-19 hospitalised patients

Of the 1105 COVID-19 patients currently in-hospital, 38 (3.4%) were being treated in isolation wards, 822 (74.4%) in general wards, 96 (8.7%) in high care wards and 149 (13.5%) in Intensive Care Unit (ICU). There were 66 (6.0%) patients currently ventilated and 155 (14.0%) currently on supplementary oxygen.

Severity

Of the 3411 COVID-19 admissions to date, 870 (25.5%) met the criteria for severe disease. The median age of patients who had severe disease was 53 (IQR 44 – 64) years; compared to 47 (IQR 35 – 60) years for those who did not have severe disease. The proportion of reported in-patients who were treated in ICU and ventilated in each epidemiological week has decreased in the past nine weeks (Figure 4).

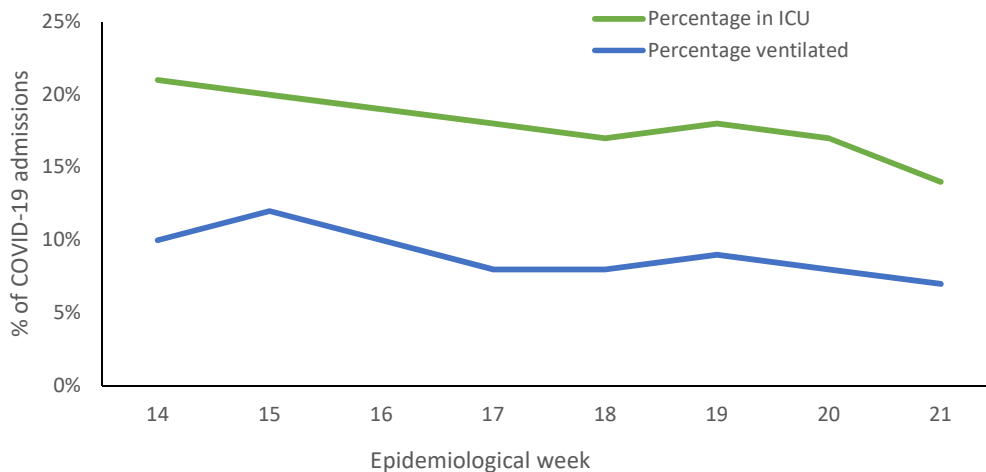


Figure 4: Proportion of COVID-19 in-patients treated in intensive care unit (ICU) and ventilated by epidemiological week, South Africa, 28 March-24 May 2020*

*Data on ventilation and ICU care was not reliable prior to epidemiological week 14

Outcomes

Of the 3411 admitted individuals, 1803 (52.9%) were discharged alive, 53 (1.6%) were transferred out to either higher level care or step-down facilities, 450 (13.2%) had died and 1105 (32.4%) were currently in hospital.

Mortality

Of the 3411 COVID-19 patients admitted, 450 died, case fatality ratio (CFR) 13.2% (191 additional deaths from last report). In the first few weeks of the outbreaks most deaths were reported in the private sector but in recent weeks an increasing proportion of reported deaths was in the public sector (Figure 5).

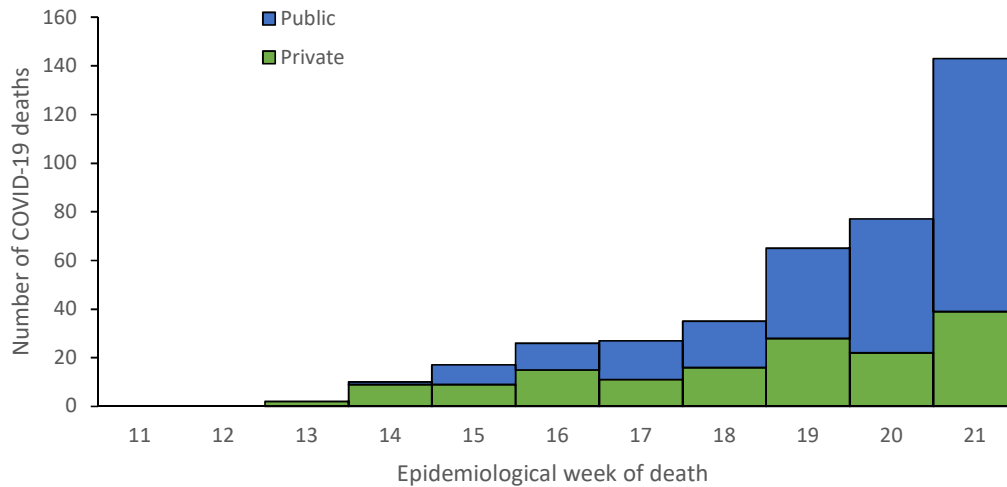


Figure 5: Number of COVID-19 deaths reported per week by health sector and epidemiologic week, South Africa, 5 March-24 May 2020, n=3411

The median age of patients who died was 62 (IQR 52 – 71) years, and for those who were still alive was 47 (IQR 35 – 59) years. On multivariable analysis, factors associated with in-hospital mortality were older age groups, 40-64 years (233/1682, case fatality ratio 13.9%; aOR 4.4; 95% CI 2.8-6.9) and ≥65 years (189/696, 27.2%; aOR 9.0; 95% CI 5.6-14.5) as compared to <40 years (28/1033, 2.7%); male sex (238/1521, 15.7%; OR 1.5, 95% CI 1.2-1.9); admitted in the public sector (279/1796, 15.5%; aOR 1.5; 95% CI 1.1-1.9); having comorbid hypertension (232/1027 (22.6%; aOR 1.3; 95% CI 1.03-1.7), diabetes (192/824 (23.3%; aOR 1.4; 95% CI 1.1-1.7), chronic renal disease (52/144 (36.1%; aOR 2.0; 95% CI 1.4-3.0). Patients who died were less likely to be admitted in Gauteng province (21/346, 6.1%; aOR 0.4; 95% CI 0.3-0.8) as compared to the Eastern Cape (Table 3).

Table 3: Univariate and multivariable analysis of factors associated with mortality among 3411 admissions, South Africa, 5 March-24 May 2020

Characteristic	Case-fatality ratio n/N (%)	Unadjusted OR (95% CI)	p-value	Adjusted OR (95% CI)	p-value
Age group					
<40 years	28/1033 (2.7)	Reference		Reference	
40-64 years	233/1682 (13.9)	5.8 (3.9-8.6)	<0.001	4.4 (2.8-6.9)	<0.001
≥65 years	189/696 (27.2)	13.4 (8.9-20.2)	<0.001	9.0 (5.6-14.5)	<0.001
Sex					
Female	212/1890 (11.2)	Reference		Reference	
Male	238/1521 (15.7)	1.5 (1.2-1.8)	<0.001	1.5 (1.2-1.9)	<0.001
Ethnicity					
Black	118/1058 (11.2)	Reference			
Coloured	48/335 (14.3)	1.3 (0.9-1.9)	0.119		
Indian	9/94 (9.6)	0.8 (0.4-1.7)	0.640		
White	21/209 (10.1)	0.9 (0.5-1.5)	0.641		
Unknown	254/1715 (14.8)	1.4 (1.1-1.7)	0.006		

Occupation						
Not Healthcare worker	444/3239 (13.7)	Reference				
Healthcare worker	6/172 (3.5)	0.2 (0.1-0.5)	<0.001			
Peri-partum						
No	211/1760 (12.0)	Reference				
Yes	1/130 (0.8)	0.1 (0.0-0.4)	0.004			
Comorbid condition						
No co-morbidity	83/1006 (8.3)	Reference				
1 co-morbid condition	110/832 (13.2)	1.7 (1.3-2.3)	0.001			
≥2 comorbid conditions	218/910 (24.0)	3.5 (2.7-4.6)	<0.001			
Unknown	39/663 (5.9)	0.7 (0.5-1.0)	0.070			
Hypertension						
No	179/1721 (10.4)	Reference		Reference		
Yes	232/1027 (22.6)	2.5 (2.0-3.1)	<0.001	1.3 (1.03-1.7)	0.029	
Diabetes mellitus						
No	219/1924 (11.4)	Reference		Reference		
Yes	192/824 (23.3)	2.4 (1.9-2.9)	<0.001	1.4 (1.1-1.7)	0.012	
Chronic cardiac disease						
No	392/2686 (14.6)	Reference		Reference		
Yes	19/62 (30.7)	2.6 (1.5-4.5)	0.001	1.5 (0.8-2.7)	0.177	
Chronic pulmonary disease/Asthma						
No	362/2466 (14.7)	Reference				
Yes	49/282 (17.4)	1.2 (0.9-1.7)	0.230			
Chronic renal disease						
No	359/2604 (13.8)	Reference		Reference		
Yes	52/144 (36.1)	3.5 (2.5-5.1)	<0.001	2.0 (1.4-3.0)	<0.001	
Malignancy						
No	404/2717 (14.9)	Reference				
Yes	7/31 (22.6)	1.7 (0.7-3.9)	0.236			
HIV						
No	363/2441 (14.9)	Reference		Reference		
Yes	48/307 (15.6)	1.1 (0.8-1.5)	0.723	1.2 (0.8-1.8)	0.346	
Tuberculosis						
No	398/2683 (14.8)	Reference				
Yes	13/65 (20.0)	1.4 (0.8-2.7)	0.251			
Past Tuberculosis						
No	378/2595 (14.6)	Reference		Reference		
Yes	33/153 (21.6)	1.6 (0.1-2.4)	0.019	1.4 (0.9-2.2)	0.192	
Health sector						
Private sector	171/1615 (10.6)	Reference		Reference		
Public sector	279/1796 (15.5)	1.6 (1.3-1.9)	<0.001	1.5 (1.1-1.9)	0.005	
Province						
Eastern Cape	57/347 (16.4)	Reference		Reference		
Free State	7/80 (8.8)	0.5 (0.2-1.1)	0.089	0.6 (0.2-1.4)	0.237	
Gauteng	21/346 (6.1)	0.3 (0.2-0.6)	<0.001	0.4 (0.3-0.8)	0.003	
KwaZulu-Natal	39/323 (12.1)	0.7 (0.5-1.1)	0.109	0.9 (0.5-1.4)	0.576	
Limpopo	2/10 (20.0)	1.3 (0.3-6.1)	0.765	0.9 (0.2-4.8)	0.927	
Mpumalanga	0/7 (0)	1	-	1	-	
North West	1/54 (1.9)	0.1 (0.0-0.7)	0.022	0.2 (0.0-1.2)	0.077	

Northern Cape	2/14 (14.3)	0.8 (0.2-3.9)	0.832	1.4 (0.3-6.8)	0.693
Western Cape	321/2230 (14.4)	0.9 (0.6-1.2)	0.320	0.8 (0.6-1.1)	0.181
Severe*					
No	248/2541 (9.8)	Reference			
Yes	202/870 (23.2)	2.8 (2.3-3.4)	<0.001		
Ever ICU					
No	288/2896 (9.9)	Reference			
Yes	162/515 (31.5)	4.2 (3.3-5.2)	<0.001		
Ever High Care					
No	393/2971 (13.2)	Reference			
Yes	57/440 (13.0)	1.0 (0.7-1.3)	0.874		
Ever ventilated					
No	336/3152 (10.7)	Reference			
Yes	114/259 (44.0)	6.6 (5.0-8.6)	<0.001		
Ever on oxygen					
No	298/2590 (11.5)	Reference			
Yes	152/821 (18.5)	1.7 (1.4-2.2)	<0.001		

* Severe disease was defined as any individual who was treated in high care or intensive care unit (ICU), ventilated or diagnosed with acute respiratory distress syndrome (ARDS).

Acknowledgements

Private hospital groups submitting data to DATCOV19:

- Netcare
- Life Healthcare
- Mediclinic Southern Africa
- National Hospital Network (NHN)
- Clinix Health Group
- Lenmed
- Joint Medical Holdings (JMH)

Western Cape province: all public sector hospitals submitting data to DATCOV19

Public hospitals using DATCOV19 surveillance online platform:

- Dora Nginza Hospital (EC)
- Frere Hospital (EC)
- Livingstone Hospital (EC)
- Madwaleni Hospital (EC)
- Uitenhage Hospital (EC)
- Pelonomi Hospital (FS)
- National District Hospital (FS)
- Universitas Hospital (FS)
- Tambo Memorial Hospital (GP)
- Steve Biko Academic Hospital (GP)
- Charlotte Maxeke Johannesburg Academic Hospital (GP)
- Greys Hospital (KZN)
- Ladysmith Hospital (KZN)
- Manguzi Hospital (KZN)
- Addington Hospital (KZN)
- Polokwane Hospital (LP)
- Robert Mangaliso Sobukwe Hospital (NC)
- Tshepong Hospital (NW)
- Job Shimankana Thabane Hospital (NW)
- Tygerberg Hospital (WC)
- Helderberg Hospital (WC)