

## OVERVIEW

**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 18 July 2020.**

## HIGHLIGHTS

- As of 18 July, 28 154 COVID-19 admissions were reported from 308 facilities (88 public-sector and 220 private-sector) in all nine provinces of South Africa. There was an increase of 5 050 new admissions since the last report, and 7 additional hospitals (5 public-sector and 2 private-sector) reporting COVID-19 admissions. There were 11 287 (40%) and 16 867 (60%) admissions reported in public and private sector respectively. The majority of COVID-19 admissions were reported from four provinces, 12 503 (44%) in Western Cape, 7 617 (27%) in Gauteng, 3 327 (12%) in KwaZulu-Natal and 1 863 (7%) in Eastern Cape.
- The median age of COVID-19 admissions was 51 years; 895 (3%) admissions in patients  $\leq 18$  years and 3 957 (14%) in  $>70$  years. Fifty five percent (15 373/28 154) were female.
- Among 22 812 (81%) patients with data on comorbid conditions; 6 908 (30%) had one comorbid condition, 4 887 (21%) had two comorbid conditions and 2 680 (12%) had three or more comorbid conditions. Of the 14 475 patients who had a comorbid condition, the most commonly reported were hypertension 9 012 (62%) and diabetes 7 141 (49%); and there were 2 627 (18%) patients admitted with HIV, 523 (4%) with active tuberculosis (TB) and 1 031 (7%) patients with previous history of tuberculosis. Obesity, while not consistently recorded for all reported COVID-19 admissions, was noted by clinicians as a risk factor in 784 (3%) patients.
- Of the 28 154 admissions, 7 033 (25%) patients were in hospital at the time of this report, 17 310 (61%) patients were discharged alive or transferred out and 3 811 (14%) patients had died. There were 599 additional deaths since the last report.
- Of the 20 805 COVID-19 patients who had recorded in-hospital outcome (died and discharged), 3 811 died, equating to a case fatality ratio (CFR) of 18%. On multivariable analysis, factors associated with in-hospital mortality were older age groups; male sex; admission in the public sector and in Eastern Cape, Gauteng and Mpumalanga provinces; and having comorbid hypertension, diabetes, chronic cardiac disease, chronic renal disease, malignancy, HIV and active tuberculosis. Of the 536 patients in whom obesity was recorded and who had an outcome, 230 (43%) died.
- In sites where enhanced data was collected on all admissions, of 2 327 individuals, 942 (41%) never smoked, 134 (6%) were current smokers, 102 (4%) were former smokers, and in 1 149 (49%) smoking history was unknown. On univariate analysis, when compared to individuals who had never smoked (179/942, case fatality ratio 19%), there was an association with mortality in those who were former smokers (36/102, 35%; unadjusted odds ratio [OR] 2.5, 95% CI 1.6-3.8) and those with unknown smoking history (380/1 149, 33%; OR 2.2; 95% CI 1.8-2.7). Smoking was not retained in the multivariable model due to missing data.

## METHODS

DATCOV, 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 DATCOV 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 DATCOV sentinel hospital. An individual was defined as having severe disease if treated in high care or intensive care unit (ICU), or ventilated or diagnosed with acute respiratory distress syndrome (ARDS). Case fatality ratio (CFR) was calculated for all closed cases, i.e. COVID-19 deaths divided by COVID-19 deaths plus COVID-19 discharges, excluding individuals who are still admitted in hospital.

Data are received from all private hospitals nationally, from all public hospitals in the Western Cape (WC) Province and 35 public hospitals in the other eight provinces. As new hospitals join the surveillance system, they have retrospectively captured all admissions recorded. As of 18 July 2020, a total of 308 facilities, 88 from public sector and 220 from private sector, submitted data on hospitalised COVID-19 cases (Table 1). There were 7 additional hospitals (5 public-sector and 2 private-sector) reporting COVID-19 admissions since the last report.

Table 1. Number of hospitals reporting data on COVID-19 admissions by province and sector, South Africa, 5 March-18 July 2020

Name of province	Public Sector	Private Sector
Eastern Cape (EC)	12	13
Free State (FS)	10	18
Gauteng (GP)	6	81
KwaZulu-Natal (KZN)	6	40
Limpopo (LP)	1	6
North West (NW)	2	12
Northern Cape (NC)	1	6
Western Cape (WC)	50	36
Mpumalanga (MP)	0	8
<b>South Africa</b>	<b>88</b>	<b>220</b>

## RESULTS

### Epidemiological and geographic trends in admissions

From 5 March to 18 July, a total of 28 154 COVID-19 admissions (5 050 additional from last report) were reported from 308 facilities in all nine provinces of South Africa. Of these admissions, 11 287 (40.1%) and 16 867 (59.9%) were reported in public and private sector, respectively. Initially, most admissions were reported in the private sector; from week 17 a higher proportion of total admissions was reported in the public sector; and since week 25 a higher proportion was reported in the private sector. The shift is most likely due to underreporting in the public sector

in other provinces besides Western Cape in recent weeks. The decrease in reported admissions in the last epidemiological week is likely due to a delay in the submission of data (Figure 1).

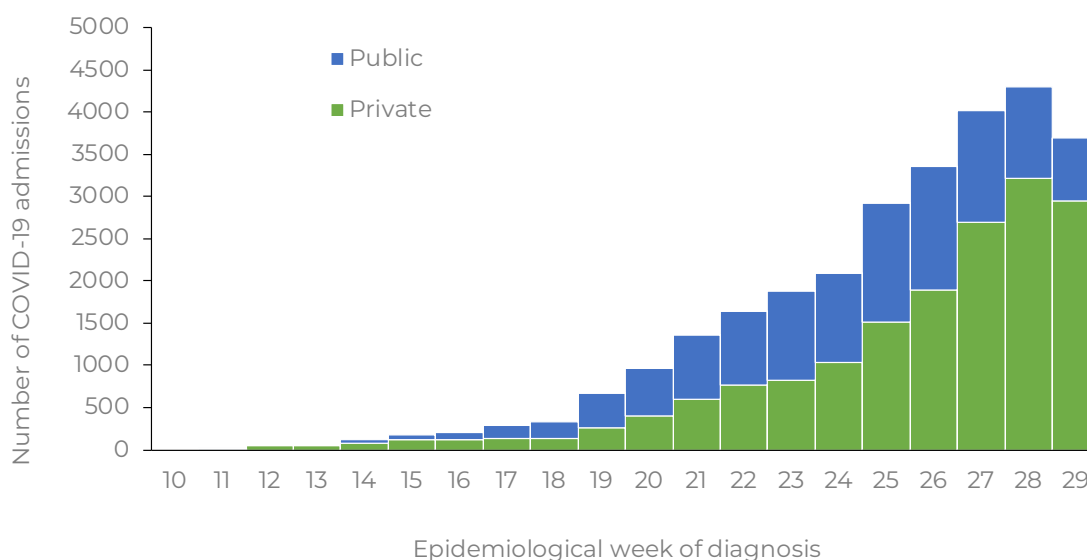


Figure 1. Number of reported COVID-19 admissions by health sector and epidemiologic week of diagnosis, 5 March-18 July 2020, n=28 154

The majority of admissions (25 310/28 154, 89.9%) were recorded in four provinces, with the highest number reported in Western Cape (12 503/28 154, 44.4%), followed by Gauteng (7617/28 154, 27.1%), KwaZulu-Natal (3 327/28 154, 11.8%) and Eastern Cape (1 863/28154, 6.6%) provinces. Western Cape experienced an increase in admissions from week 19 which has in the past two weeks seemingly begun to stabilise; the increase in Gauteng began in week 22 and in KwaZulu-Natal in week 25 (Figure 2).

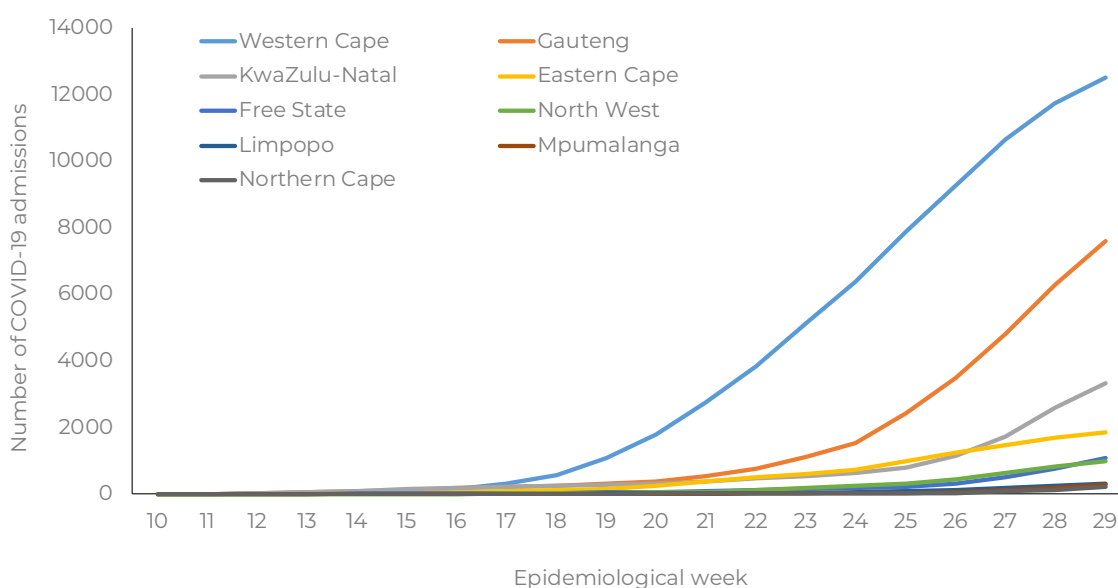


Figure 2. Cumulative numbers of reported COVID-19 admissions, by province and epidemiological week of diagnosis, South Africa, 5 March-18 July 2020, n=28 154

# DEMOGRAPHIC AND CLINICAL CHARACTERISTICS OF ADMISSIONS

The median age of COVID-19 admissions was 51 years (interquartile range [IQR] 38 – 62). There were 895 (3.2%) admissions in patients 18 years and younger and 3 957 (14.1%) in patients older than 70 years. Among admitted individuals with COVID-19, 15373 (54.6%) were female. The sex ratio varied by age group with females more common than males in all age groups except in patients younger than 10 years (Figure 3).

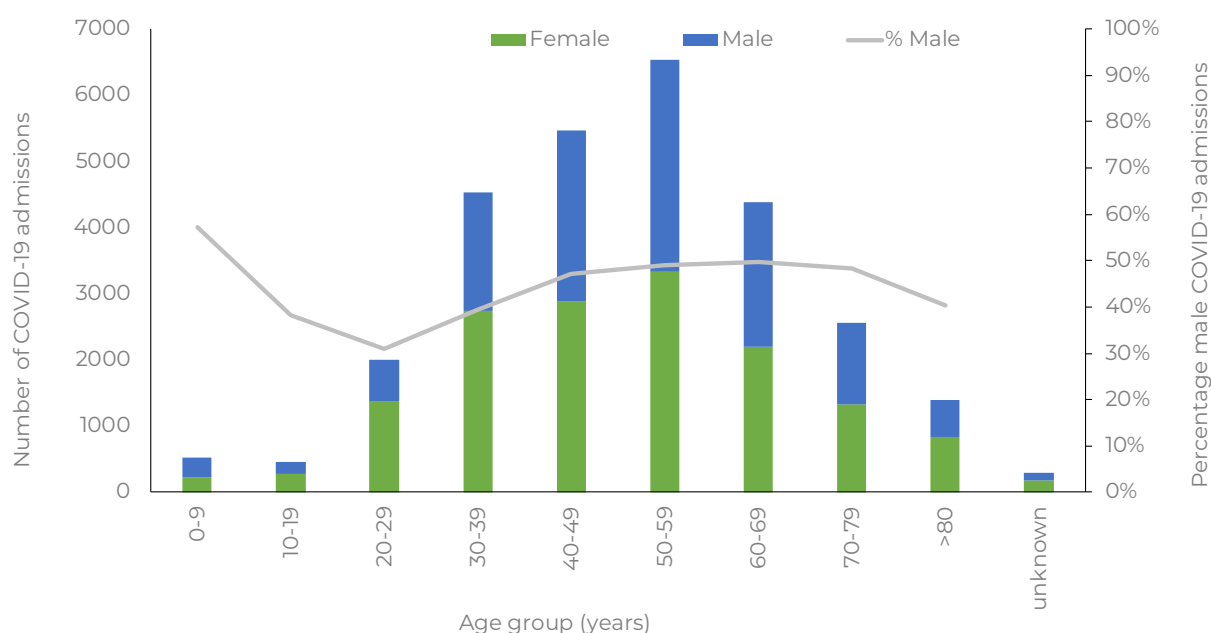


Figure 3. Number of reported COVID-19 admissions by age, gender and percentage of males, South Africa, 5 March-18 July 2020, n=28 154

Of the 11 600 (41.2%) patients for whom race was known, 8 150 (70.3%) were Black African, 1 444 (12.5%) were Coloured, 703 (6.1%) were Indian, 1 273 (11.0%) were White and 30 (0.3%) were classified as Other race group. There were 704 (2.5%) health care workers (HCW) that were reported to be hospitalised. Among the 7 224 admissions in females of child-bearing age 15-50 years, there were 824 (11.4%) females admitted who were pregnant or within 6 weeks post-partum. Of the 22 812 (81.0%) patients for whom comorbid disease was known, 8 337 (36.6%) had no comorbid disease reported, 6 908 (30.3%) had one comorbid disease reported, 4 887 (21.4%) had two comorbid diseases and 2 680 (11.8%) had three or more comorbid diseases reported. Among the 14 475 patients who had reported a comorbid condition, the most commonly reported comorbid conditions were hypertension (9 012/14 475, 62.3%) and diabetes (7 141/14 475, 49.3%); there were 2 627/14 475 (18.1%) patients who were HIV-infected, 523/14 475 (3.6%) patients with active tuberculosis (TB) and 1 031/14 475 (7.1%) patients with previous history of TB (Table 2). Obesity, defined by the subjective opinion of the attending HCW, while not consistently recorded for all reported COVID-19 admissions, was recorded as a risk factor in 784 (2.8%) of all patients hospitalised.

Table 2. Reported comorbid diseases among COVID-19 admissions reporting at least one comorbid disease, South Africa, 5 March-18 July 2020, n=14 475\*

Comorbid disease**	N	%
Hypertension	9 012	62.3%
Diabetes mellitus	7 141	49.3%
Chronic cardiac disease	1 047	7.2%
Chronic pulmonary disease/ Asthma	2 095	14.5%
Chronic renal disease	989	6.8%
Malignancy	264	1.8%
HIV	2 627	18.1%
Active tuberculosis	523	3.6%
Previous history of tuberculosis	1 031	7.1%

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

\*\* Presence of a comorbid disease includes only the conditions reported in the table; obesity is not included

## DISEASE SEVERITY

Of the 28 154 COVID-19 admissions to date, 6 689 (23.8%) met the criteria for severe disease. The median age of patients who had severe disease was 55 (IQR 45 – 65) years; compared to 49 (IQR 37 – 61) years for those who did not have severe disease. Amongst all admissions to date, 4 183 (14.9%) patients were treated in ICU and 2 832 (10.1%) were treated in High Care; 1 771 (6.3%) were ventilated and 5 564 (19.8%) received supplemental oxygen. The proportion of reported in-patients who were treated in ICU and ventilated in each epidemiological week decreased from week 14 to week 22, but in the past six weeks there has been an increase in the proportion of patients who were treated in ICU (Figure 4).

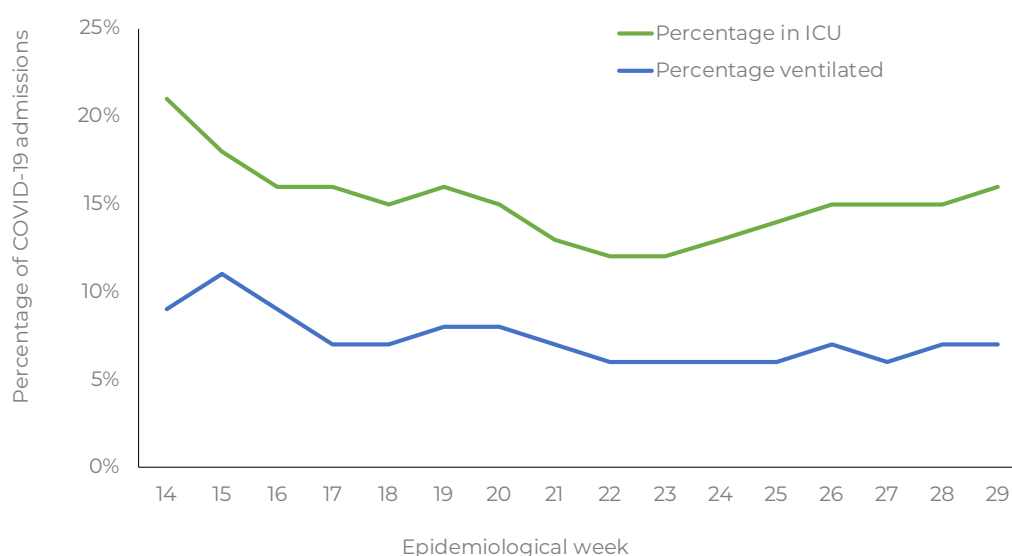


Figure 4. Proportion of COVID-19 in-patients treated in intensive care unit (ICU) and ventilated by epidemiological week, South Africa, 28 March-18 July 2020\*

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



## OUTCOMES

Of the 28 154 admitted individuals, 7 033 (25.0%) were currently in hospital, 16 994 (60.4%) were discharged alive, 316 (1.1%) were transferred out to either higher level care or step-down facilities and 3 811 (13.5%) had died. There were 599 additional deaths since the last report. Of the 20 805 COVID-19 patients who had recorded in-hospital outcome (died and discharged), 3 811 died, equating to a case fatality ratio (CFR) of 18.3%.

## EPIDEMIOLOGICAL AND GEOGRAPHIC TRENDS IN MORTALITY

There has been an increasing trend in reported number of deaths and the CFR among hospitalised individuals increased with each month of admission – March 11.2%, April 17.4%, May 19.0%, June 19.4% and July 16.1%, but these differences were not significant. In the first few weeks of the outbreak most deaths were reported in the private sector, since week 17 a higher proportion of reported deaths was in the public sector, and since week 27 again most deaths were reported in the private sector (Figure 5). The CFR was higher in the public health sector (23.9%) than in the private health sector (13.8%) ( $p < 0.001$ ).

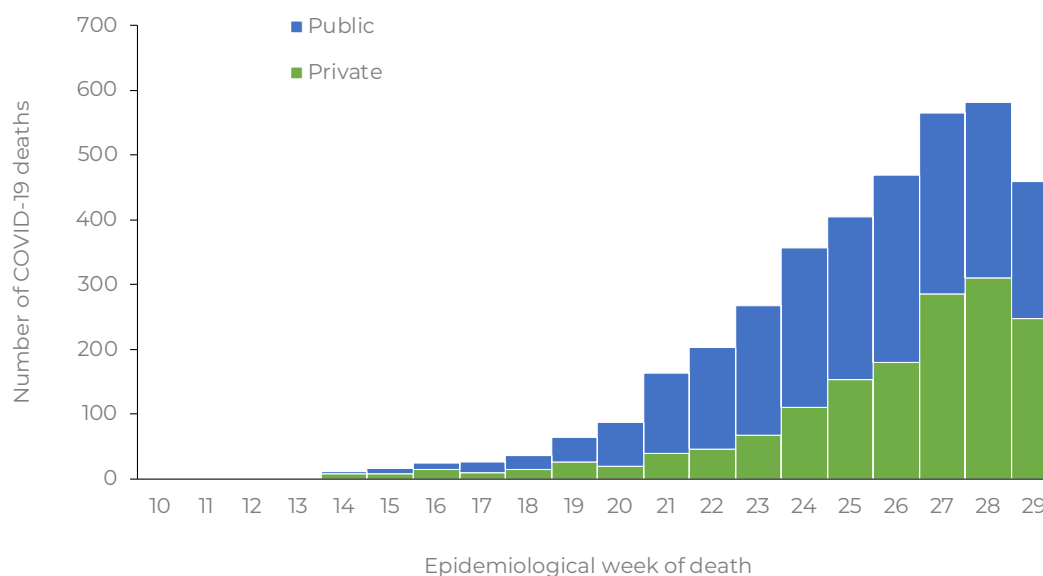


Figure 5. Number of COVID-19 deaths reported per week by health sector and epidemiologic week, South Africa, 5 March-18 July 2020,  $n=3\,811$

Most deaths were reported in Western Cape (2 228, 28.5%), followed by Gauteng (735, 19.3%) and Eastern Cape (432, 11.3%). The increases in deaths seem to be levelling off in Western Cape, with a sharper increase in deaths in Gauteng in the past three weeks (Figure 6). However, compared to Western Cape Province (CFR 20.5%), the CFR was significantly elevated in Eastern Cape Province (31.1%) ( $p < 0.001$ ) and Gauteng Province (15.7%) ( $p = 0.002$ ), and significantly lower in Mpumalanga (1.6%) Province ( $p = 0.001$ ).

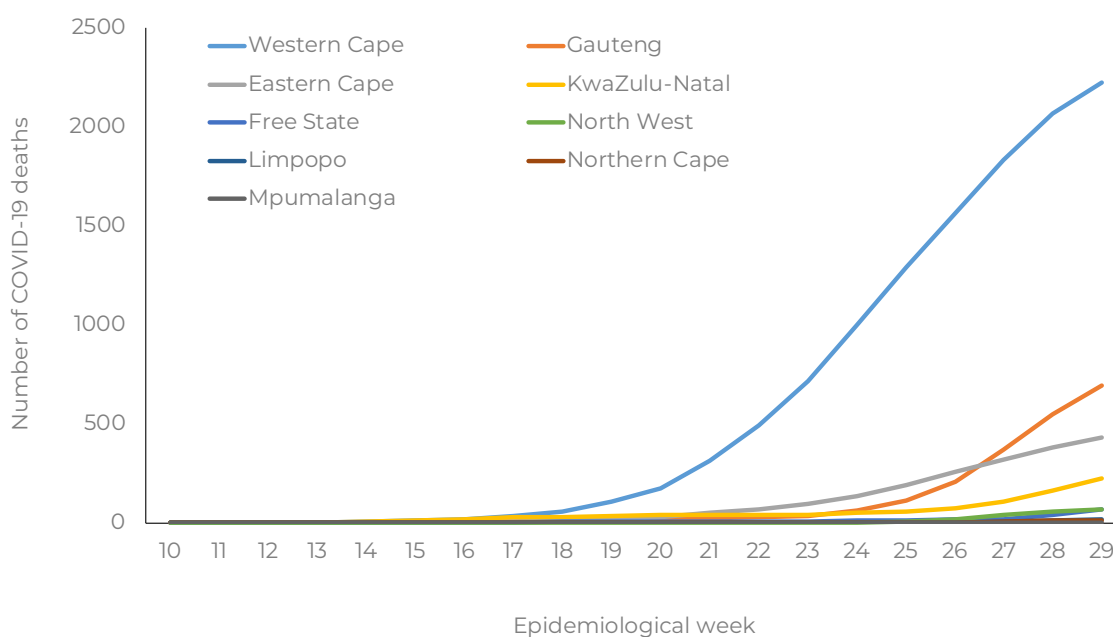


Figure 6. Cumulative numbers of reported COVID-19 deaths, by province and epidemiological week of death, South Africa, 5 March-18 July 2020, n=3 811

## DEMOGRAPHIC CHARACTERISTICS OF DEATHS

The median age of patients who died was 62 (IQR 52 – 72) years, and for those who were discharged alive was 49 (IQR 37 – 60) years. There were 18 (0.5%) deaths in children  $\leq 18$  years. There were 285 (7.5%) deaths in patients younger than 40 years (Figure 7). The CFR was higher in males (21.4%) than females (15.8%) ( $p < 0.001$ ).

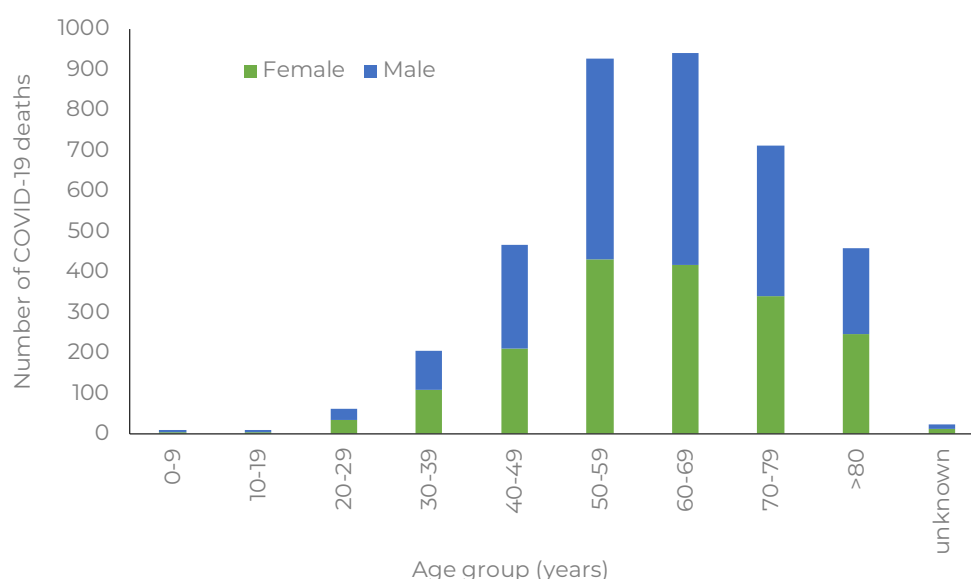


Figure 7. Number of reported COVID-19 deaths by age and gender, South Africa, 5 March-18 July 2020, n=3 811

Race was only available for 11 600 (41.2%) of all admissions. Where race was available, the CFR according to race group was as follows, Black (18.2%), Coloured (19.6%), Indian (21.3%), White (20.9%) and other race groups (18.2%), however these differences were not statistically significant.

## COMMON COMORBIDITIES REPORTED AMONG DEATHS

In all age groups except <20 years, hypertension and diabetes were most commonly reported comorbidities among patients who died. In addition, in patients younger than 60 years, HIV, tuberculosis and obesity were common while in those older than 60 years, asthma/COPD and chronic renal disease were common comorbidities (Figure 8).

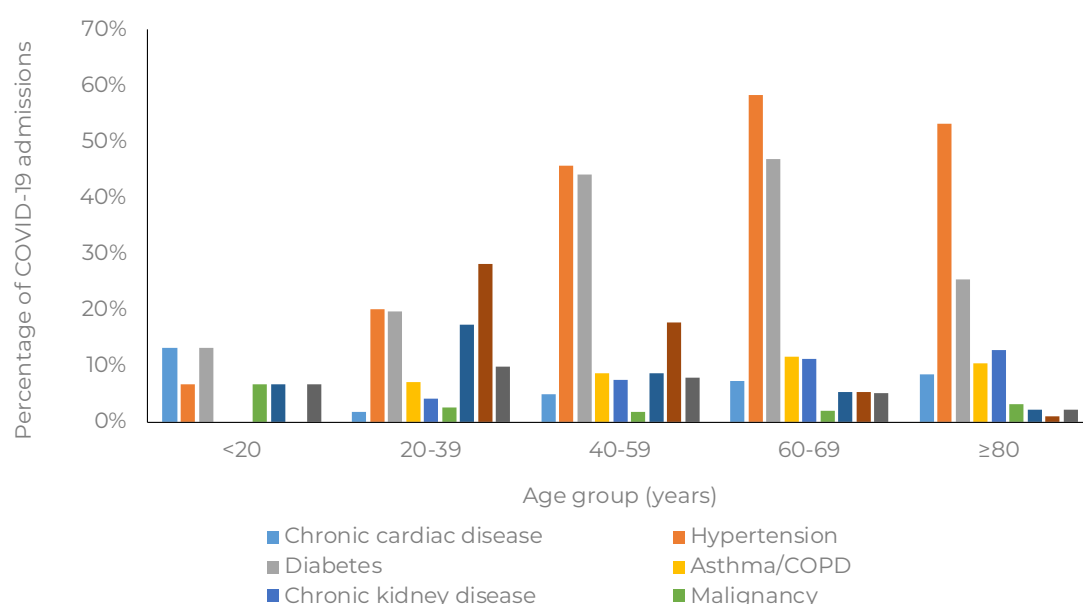


Figure 8. Frequency of comorbid conditions for reported COVID-19 deaths by age group, South Africa, 5 March-18 July 2020, n=3 811

\* There were 13 people younger than 20 years that died

Where comorbidity was available for patients with completed outcome, compared to patients with no comorbidity (9.2%), the CFR was higher ( $p<0.001$ ) for patients with one comorbid condition (19.9%), two comorbid conditions (26.5%) and three or more comorbid conditions (31.5%).

While most patients with COVID-19 who died, had a known comorbidity, and a large proportion had multimorbidity, there were 534 (14.0%) patients who died who had no comorbidity recorded (Table 3).



Table 3. Number of comorbid conditions for reported COVID-19 deaths by age group, South Africa, 5 March-18 July 2020, n=3 811

Age (years)	No comorbidity	1 comorbidity	2 comorbidities	≥3 comorbidities	Unknown comorbidities
0 – 19	3 (15.8)	4 (21.1)	2 (10.5)	0	10 (52.6)
20 – 39	48 (18.1)	77 (29.0)	54 (20.3)	31 (11.7)	56 (21.1)
40 – 59	201 (14.4)	394 (28.3)	363 (26.1)	250 (18.0)	185 (13.3)
60 – 79	189 (11.4)	440 (26.6)	483 (29.2)	336 (20.3)	204 (12.4)
≥ 80	85 (18.6)	136 (29.7)	89 (19.4)	79 (17.3)	69 (15.1)
Unknown	8 (34.8)	2 (8.7)	2 (8.7)	1 (4.4)	10 (43.5)
Total	534 (14.0)	1053 (27.6)	993 (26.1)	697 (18.3)	534 (14.0)

## FACTORS ASSOCIATED WITH IN-HOSPITAL MORTALITY

On multivariable analysis, factors associated with in-hospital mortality were older age groups; male sex; admission in the public sector; and having comorbid hypertension, diabetes, chronic cardiac disease, chronic renal disease, malignancy, HIV and active tuberculosis. Compared to the Western Cape Province, individuals hospitalised in Eastern Cape and Gauteng were more likely to die in-hospital while individuals in Mpumalanga Province were less likely to die (Table 4 and Figure 9). For obesity, there is much unknown data and therefore this is not included in the multivariable model, but where obesity and outcome was recorded in 536 patients, 230 (42.9%) patients died.

Table 4. Univariate and multivariable analysis of factors associated with mortality among 20 805 individuals with in-hospital outcome (discharges and deaths), South Africa, 5 March-18 July 2020

Characteristic	Case-fatality ratio n/N (%)	Unadjusted OR (95% CI)	p-value	Adjusted OR* (95% CI)	p-value
<b>Age group</b>					
<20 years	19/819 (2.3)	Reference		Reference	
20-39 years	2 66/5 170 (5.2)	2.3 (1.4-3.7)	0.001	3.5 (1.7-7.2)	0.001
40-59 years	1 393/8 794 (15.8)	7.9 (5.0-12.5)	<0.001	11.3 (5.6-22.9)	<0.001
60-79 years	1 652/4 932 (33.5)	21.2 (13.4-33.6)	<0.001	26.5 (13.1-53.8)	<0.001
≥80 years	458/1 002 (45.7)	35.4 (22.1-56.8)	<0.001	52.8 (25.7-108.3)	<0.001
Unknown age	23/88 (26.1)	14.9 (7.7-28.8)	<0.001	35.2 (13.2-93.7)	<0.001
<b>Sex</b>					
Female	1 809/11 431 (15.8)	Reference		Reference	
Male	2 001/9 373 (21.4)	1.4 (1.3-1.5)	<0.001	1.5 (1.4-1.6)	<0.001

<b>Race</b>						
Black	1 012/5 573 (18.2)	Reference				
Coloured	230/1 176 (19.6)	1.1 (0.9-1.3)	0.261			
Indian	102/478 (21.3)	1.2 (0.97-1.5)	0.086			
White	1 92/919 (20.9)	1.2 (1.0-1.4)	0.048			
Other	4/22 (18.2)	1.0 (0.3-3.0)	0.998			
Unknown	2 271/12 637 (18.0)	0.99 (0.9-1.1)	0.761			
<b>Healthcare worker</b>						
No	3 774/20 274 (18.6)	Reference				
Yes	37/531 (7.0)	0.3 (0.2-0.5)	<0.001			
<b>Peri-partum</b>						
No	3 44/4 913 (7.0)	Reference				
Yes	11/702 (3.1)	0.2 (0.1-0.4)	<0.001			
<b>Comorbid condition</b>						
No co-morbidity	534/5 819 (9.2)	Reference				
1 co-morbid condition	1 053/5 291 (19.9)	2.5 (2.2-2.7)	<0.001			
2 comorbid conditions	993/3 750 (26.5)	3.6 (3.2-4.0)	<0.001			
≥3 comorbid conditions	697/2 212 (31.5)	4.6 (4.0-5.2)	<0.001			
Unknown	534/3 733 (14.3)	1.7 (1.5-1.9)	<0.001			
<b>Hypertension</b>						
No	1 398/10 109 (13.8)	Reference		Reference		
Yes	1 879/6963 (27.0)	2.3 (2.1-2.5)	<0.001	1.2 (1.1-1.3)	0.002	
<b>Diabetes mellitus</b>						
No	1 736/11 516 (15.1)	Reference		Reference		
Yes	1 541/5 556 (27.7)	2.2 (2.0-2.3)	<0.001	1.4 (1.3-1.5)	<0.001	
<b>Chronic cardiac disease</b>						
No	3 041/16 274 (18.7)	Reference		Reference		
Yes	236/798 (29.6)	1.8 (1.6-2.1)	<0.001	1.2 (1.02-1.4)	0.031	
<b>Chronic pulmonary disease/Asthma</b>						
No	2 901/15 376 (18.9)	Reference				
Yes	376/1 696 (22.2)	1.2 (1.1-1.4)	0.001			
<b>Chronic disease</b>						
No	2 921/16 258 (18.0)	Reference		Reference		
Yes	356/814 (43.7)	3.5 (3.1-4.1)	<0.001	1.7 (1.5-2.0)	<0.001	
<b>Malignancy</b>						
No	3 196/16 857 (19.0)	Reference		Reference		
Yes	81/215 (37.7)	2.6 (2.0-3.4)	<0.001	2.3 (1.7-3.2)	<0.001	
<b>HIV</b>						
No	2 866/14 977 (19.1)	Reference		Reference		
Yes	411/2 095 (19.6)	1.0 (0.9-1.2)	0.600	1.4 (1.2-1.6)	<0.001	

<b>Tuberculosis</b>					
No	3 179/16 668 (19.1)	Reference		Reference	
Yes	98/404 (24.3)	1.4 (1.1-1.7)	0.009	1.6 (1.3-2.1)	<0.001
<b>Past Tuberculosis</b>					
No	3 042/16 219 (18.8)	Reference			
Yes	235/853 (27.6)	1.6 (1.4-1.9)	<0.001		
<b>Obesity</b>					
Unknown	3 581/20 269 (17.7)	Reference			
Yes	230/536 (42.9)	3.5 (2.9-4.2)	<0.001		
<b>Month of admission</b>					
March	21/187 (11.2)	Reference		Reference	
April	161/928 (17.4)	1.7 (1.02-2.7)	0.041	1.5 (0.9-2.5)	0.149
May	849/4 477 (19.0)	1.8 (1.2-2.9)	0.009	1.4 (0.9-2.3)	0.178
June	1 940/10 011 (19.4)	1.9 (1.2-3.0)	0.006	1.4 (0.9-2.3)	0.161
July	837/5 194 (16.1)	1.5 (0.96-2.4)	0.075	1.4 (0.9-2.3)	0.171
<b>Health sector</b>					
Private sector	1 588/11 506 (13.8)	Reference		Reference	
Public sector	2 223/9 299 (23.9)	2.0 (1.8-2.1)	<0.001	2.0 (1.8-2.3)	<0.001
<b>Province</b>					
Western Cape	2 228/10 897 (20.5)	Reference		Reference	
Eastern Cape	432/1 390 (31.1)	1.8 (1.6-2.0)	<0.001	2.4 (2.1-2.7)	<0.001
Free State	78/616 (12.7)	0.6 (0.4-0.7)	<0.001	0.9 (0.7-1.1)	0.298
Gauteng	735/4 686 (15.7)	0.7 (0.7-0.8)	<0.001	1.2 (1.1-1.4)	0.002
KwaZulu-Natal	234/2 033 (11.5)	0.5 (0.4-0.6)	<0.001	1.0 (0.9-1.2)	0.820
Limpopo	18/231 (7.8)	0.3 (0.2-0.5)	<0.001	0.7 (0.4-1.2)	0.163
Mpumalanga	3/193 (1.6)	0.1 (0.02-0.2)	<0.001	0.1 (0.02-0.4)	0.001
North West	70/625 (11.2)	0.5 (0.4-0.6)	<0.001	1.1 (0.8-1.4)	0.649
Northern Cape	13/134 (9.7)	0.4 (0.2-0.7)	0.003	0.7 (0.4-1.3)	0.262
<b>Severe**</b>					
No	2 207/16 339 (13.5)	Reference			
Yes	1 604/4 466 (35.9)	3.6 (3.3-3.9)	<0.001		
<b>Ever ICU</b>					
No	2 690/18 203 (14.8)	Reference			
Yes	1 121/2 602 (43.1)	4.4 (4.0-4.8)	<0.001		
<b>Ever High Care</b>					
No	3 382/18 820 (18.0)	Reference			
Yes	429/1 985 (21.6)	1.3 (1.1-1.4)	<0.001		
<b>Ever ventilated</b>					
No	3149/19730 (16.0)	Reference			
Yes	662/1075 (61.6)	8.4 (7.4-9.6)	<0.001		
<b>Ever on oxygen</b>					
No	2 722/16 635 (16.4)	Reference			
Yes	1 089/4 170 (26.1)	1.8 (1.7-2.0)	<0.001		

\* Multivariable model excluded all individuals with unknown comorbid conditions

\*\* 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)

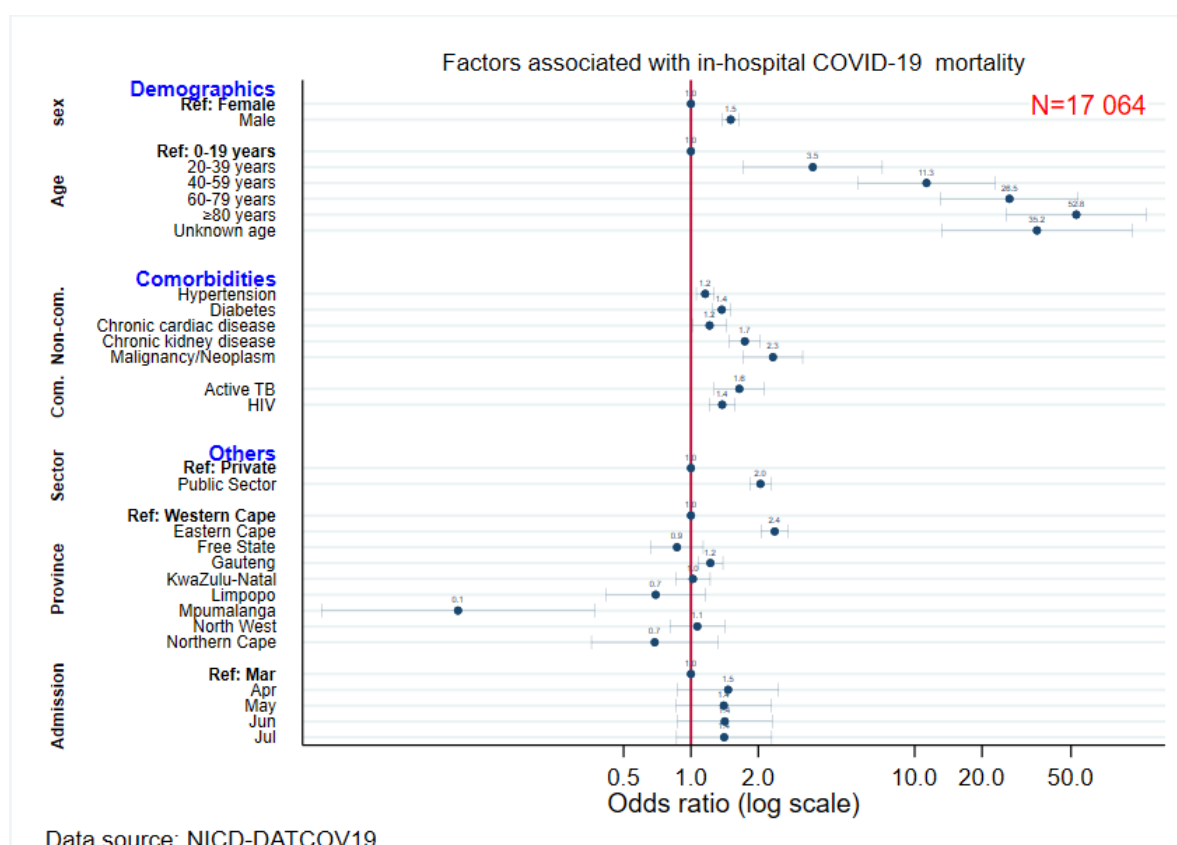


Figure 9. Multivariable analysis of factors associated with mortality among 20 805 individuals with in-hospital outcome (discharges and deaths), South Africa, 5 March-18 July 2020

## SMOKING

In sites where enhanced data was collected on all admissions, of 2 327 admissions, 942 (40.5%) never smoked, 134 (5.8%) were current smokers, 102 (4.4%) were former smokers, and in 1149 (49.4%) smoking history was unknown. On univariate analysis, when compared to individuals who had never smoked (179/942, case fatality ratio 19.0%), there was an association with mortality in those who were former smokers (36/102, 35.3%; unadjusted odds ratio [OR] 2.5, 95% CI 1.6-3.8) and those with unknown smoking history (380/1 149, 33.1%; OR 2.2; 95% CI 1.8-2.7). Smoking was not retained in the multivariable model due to missing data.

Table 5. Univariate analysis of the association of smoking history with mortality among 2 327 individuals with in-hospital outcome (discharges and deaths), South Africa, 5 March-18 July 2020

Characteristic	Case-fatality ratio n/N (%)	Unadjusted OR (95% CI)	p value
Never smoked	179/942 (19.0)	Reference	
Current smoker	32/134 (23.9)	1.3 (0.9-2.1)	0.184
Former smoker	36/102 (35.3)	2.3 (1.5-3.6)	<0.001
Unknown smoking history	380/1149 (33.1)	2.1 (1.7-2.6)	<0.001

## DISCUSSION

DATCOV currently includes 28 154 admissions from 308 public and private hospitals in all nine provinces in South Africa. It also includes 3 811 deaths that have occurred to date. The factors reported to be associated with in-hospital mortality, older age groups; male sex; and comorbid hypertension, diabetes, chronic cardiac disease, chronic renal disease and malignancy are consistent with data reported from other countries.<sup>1-5</sup> In addition, this report also quantifies the increased risk of in-hospital mortality among HIV-infected individuals and patients with active tuberculosis which is consistent with data from the Western Cape Province.<sup>6</sup>

Trends in CFR over time and provincial differences may be affected by many factors such as hospital admission criteria, timeousness of closing cases, testing criteria in different provinces, and the severity of illness in admitted cases.

The availability of reliable surveillance data is of critical importance to gain a better understanding of the epidemiology of COVID-19 in South Africa, to monitor the COVID-19 epidemic and to respond with adequate control measures. It has been suggested that when local transmission is widespread and testing strategies change, hospital admission or mortality surveillance systems provide a more reliable picture of the epidemic progression than overall confirmed case numbers.

DATCOV provides real-time data and summary analyses, which inform modelling and reporting at a national level. It also addresses a knowledge gap, in the lack of data from low and middle income countries (LMIC), allowing for analysis of COVID-19 epidemiology in a country with a younger population, unique disease profile with epidemics of both infectious (HIV and tuberculosis) and non-communicable diseases, and an overburdened public health system.

## LIMITATIONS

DATCOV is a sentinel surveillance system and does not include all hospitals with COVID-19 admissions and therefore may not be truly representative of hospital admissions for COVID-19 throughout South Africa. DATCOV only reports hospital-based admissions and deaths and therefore does not include deaths occurring outside hospitals. Data quality in a surveillance system is dependent on the information submitted by healthcare institutions. It is not possible for the NICD to verify or check the quality of all these data, however, the NICD has built-in data quality checks.

In patients with non-communicable diseases, the current data collection platform is not able to distinguish between those that had pre-existing disease and those that were newly-diagnosed;

and between those with well or poorly controlled disease. New variables are being introduced to allow for this analysis.

For obesity, the platform currently only allows for capture of the subjective opinion of the attending HCW that the patient is obese. The platform will soon include fields to collect height and weight where available, to allow calculation of Body Mass Index (BMI).

Data on socioeconomic status are not collected. Data on treatment and medical interventions have not been analysed because the data were incomplete. Efforts are ongoing to improve the quality and completeness of data on symptoms and medical interventions and analysis of these data will be included in future reports.

Due to missing data, only univariate analysis is presented and smoking was not retained in the multivariable model adjusted for age, sex and other comorbidities.

## REFERENCES

1. Adhikari SP et al., Epidemiology, causes, clinical manifestation and diagnosis, prevention and control of coronavirus disease (COVID-19) during the early outbreak period: a scoping review. *Infectious Diseases of Poverty*, 2020. 9(1): p. 29.
2. Docherty AB, et al., Features of 16,749 hospitalised UK patients with COVID-19 using the ISARIC WHO Clinical Characterisation Protocol. *medRxiv*, 2020: p. 2020.04.23.20076042.
3. Lewnard JA, et al., Incidence, clinical outcomes, and transmission dynamics of severe coronavirus disease 2019 in California and Washington: prospective cohort study. *BMJ*, 2020. 369: p. m1923.
4. Petrilli CM, et al., Factors associated with hospital admission and critical illness among 5279 people with coronavirus disease 2019 in New York City: prospective cohort study. *BMJ*, 2020. 369: p. m1966.
5. Onder G, Rezza G, Brusaferro S. Case-fatality rate and characteristics of patients dying in relation to COVID-19 in Italy. *JAMA*, 2020. 323(18): p. 1775-1776.
6. Boulle B, Davies MA. Risk of COVID-19 death among people with HIV: A population cohort analysis from the Western Cape Province, South Africa. *COVID-19 Special Public Health Surveillance Bulletin 2*. National Institute for Communicable Disease.



# ACKNOWLEDGEMENTS

## **Western Cape Province: all public sector hospitals submitting data to DATCOV**

### **Public hospitals using DATCOV surveillance online platform:**

Bedford Hospital, Eastern Cape  
Butterworth Hospital, Eastern Cape  
Cradock Hospital, Eastern Cape  
Dora Nginza Hospital, Eastern Cape  
Frere Hospital, Eastern Cape  
Khotsong TB Hospital, Eastern Cape  
Livingstone Hospital, Eastern Cape  
Madwaleni Hospital, Eastern Cape  
Nompumelelo Hospital, Eastern Cape  
Stutterheim Hospital, Eastern Cape  
Uitenhage Hospital, Eastern Cape  
Zithulele hospital, Eastern Cape  
3 Military Hospital, Free State  
Bongani Regional Hospital, Free State  
Botshabelo Hospital, Free State  
Dr Js Moroka Hospital, Free State  
Manapo Hospital, Free State  
National District Hospital, Free State  
Pelonomie Hospital, Free State  
Phekolong Hospital, Free State  
Universitas Hospital, Free State  
Charlotte Maxeke Hospital, Gauteng  
Chris Hani Baragwanath Hospital, Gauteng  
Helen Joseph Hospital, Gauteng  
Leratong Hospital, Gauteng  
Steve Biko Academic Hospital, Gauteng  
Tambo Memorial Hospital, Gauteng  
Addington Hospital, KwaZulu-Natal  
General Justice Gizenga Mpanza Hospital, KwaZulu-Natal  
Grey's Hospital, KwaZulu-Natal  
King Edward VIII Hospital, KwaZulu-Natal  
Ladysmith Hospital, KwaZulu-Natal  
Manguzi Hospital, KwaZulu-Natal  
Polokwane Hospital, Limpopo  
Job Shimankana Tabane Hospital, North West  
Tshepong Hospital, North West  
Robert Mangaliso Sobukwe Hospital, Northern Cape  
Tygerberg Hospital, Western Cape

# COVID-19 SENTINEL HOSPITAL SURVEILLANCE UPDATE

WEEK 29 2020

## Private hospital groups submitting data to DATCOV:

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

## Private hospitals using DATCOV surveillance online platform:

Care Cure Queenstown, Eastern Cape  
Nurture Queenstown, Eastern Cape  
Busamed Bram Fischer International Airport Hospital, Free State  
Busamed Harrismith Private Hospital, Free State  
Corona Sub-Acute Hospital, Free State  
Emoyamed Private Hospital, Free State  
Nurture Woodlands, Free State  
Riemland Clinic, Free State  
St Helena GM Hospital, Free State  
Arwyp Medical Centre, Gauteng  
Botshilu Private Hospital, Gauteng  
Busamed Modderfontein Private Hospital Orthopaedic and Oncology Centre, Gauteng  
Louis Pasteur Private Hospital, Gauteng  
Lynnmed Clinic, Gauteng  
Midvaal Private Hospital, Gauteng  
Nurture Rynmed, Gauteng  
Nurture Vereeniging, Gauteng  
Pretoria Urology Hospital, Gauteng  
RH Rand Hospital, Gauteng  
Sunshine Hospital, Gauteng  
Zuid Afrikaans Hospital, Gauteng  
Ahmed Al-Kadi Private Hospital, KwaZulu-Natal  
Busamed Gateway Private Hospital, KwaZulu-Natal  
Busamed Hillcrest Private Hospital, KwaZulu-Natal  
Capital hospital, KwaZulu-Natal  
KwaDukuza Private Hospital, KwaZulu-Natal  
Midlands Medical Centre Private Hospital, KwaZulu-Natal  
Nurture Ilembe, KwaZulu-Natal  
Shelly Beach Private Hospital, KwaZulu-Natal  
Zoutpansberg Private Hospital, Limpopo  
RH Piet Retief Hospital, Mpumalanga  
Mooimed Private Hospital, North West  
Sunningdale Hospital, North West  
Vryburg private hospital, North West  
Wilmed Park Private Hospital, North West  
Lenmed Royal Hospital and Heart Centre, Northern Cape  
Busamed - Paardevelei private hospital, Western Cape  
Nurture Cape View, Western Cape  
Nurture Newlands, Western Cape