

# COVID-19 Sentinel Hospital Surveillance Weekly Update on Hospitalized HCWs

Update: Week 38, 2020



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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 19 September 2020 on the DATCOV platform.

# HIGHLIGHTS

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- As of 19 September 2020, 2 924 (4.1%) of the 70 592 COVID-19 hospital admissions recorded on the DATCOV surveillance database, were health care workers (HCWs), reported from 281 facilities (113 public-sector and 168 private-sector) in all nine provinces of South Africa. Among 1043/2924 (35.7%) HCWs with available data on type of work, 528/1043 (50.6%) were nurses, 164/1043 (15.7%) were categorized as other HCWs, 156/1043 (15.0%) porters or administrators, 100/1043 (9.6%) allied HCWs, 69/1043 (6.6%) doctors, 18/1043 (1.7%) paramedics, and 8/1043 (0.8%) laboratory scientists.
  - There was an increase of 113 new HCW admissions since week 37.
  - There were 556 (19.0%) and 2368 (81.0%) admissions reported in the public and private sector, respectively.
  - The majority of HCW admissions were reported in Gauteng (849, 29.0%), KwaZulu-Natal (761, 26.0%), Eastern Cape (518, 17.7%) and Western Cape (288, 9.9%).
  - The median age of COVID-19 HCW admissions was 49 years, there were 497 (17.0%) admissions in HCWs aged 60 years and older. A total of 2098 (71.8%) were female.
  - Of the 1971 (67.4%) HCWs for whom comorbid disease was known, 1182/2924 (40.4%) had at least one comorbid disease and 429/1182 (36.3%) had more than one comorbidity reported. Among the 1182 HCWs who had reported a comorbid condition, the most commonly reported comorbid conditions were hypertension (762/1182; 64.5%) and diabetes (503/1182; 42.6%). There were 169 (14.3%) HCWs who were HIV positive, 165 (14.0%) with asthma/chronic pulmonary disease, 21 (1.8%) with active tuberculosis (TB) and eight (0.7%) with a previous history of TB.
  - A total of 202 (6.9%) HCWs had severe disease defined as receiving treatment in high care or intensive care unit (ICU) or ventilated or diagnosed with acute respiratory distress syndrome (ARDS).
  - Of the 2924 HCW admissions, 76 (2.6%) were in hospital at the time of this report, 2508 (85.8%) were discharged alive, 44 (1.5%) transferred out and 296 (10.1%) HCWs had died. Ninety-one (91) of the 296 deaths (30.7%) were reported in the Eastern Cape, 71 (24.0%) from Gauteng and 70 (23.7%) from KwaZulu-Natal provinces. Of those who died, 191 (64.2%) had at least one comorbid disease reported and 96 (32.4%) had more than one reported comorbidity.
  - The case fatality ratio among HCWs with known in-hospital outcome was 10.6%. Factors associated with in-hospital mortality were older age groups (40 years and older); having comorbid hypertension, diabetes, malignancy and HIV.
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# 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 (Table 1). 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. All hospitalized patients who were noted to be doctors, nurses, allied health care workers, laboratory staff, porters and administrative staff were captured as health care workers (HCWs). 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.

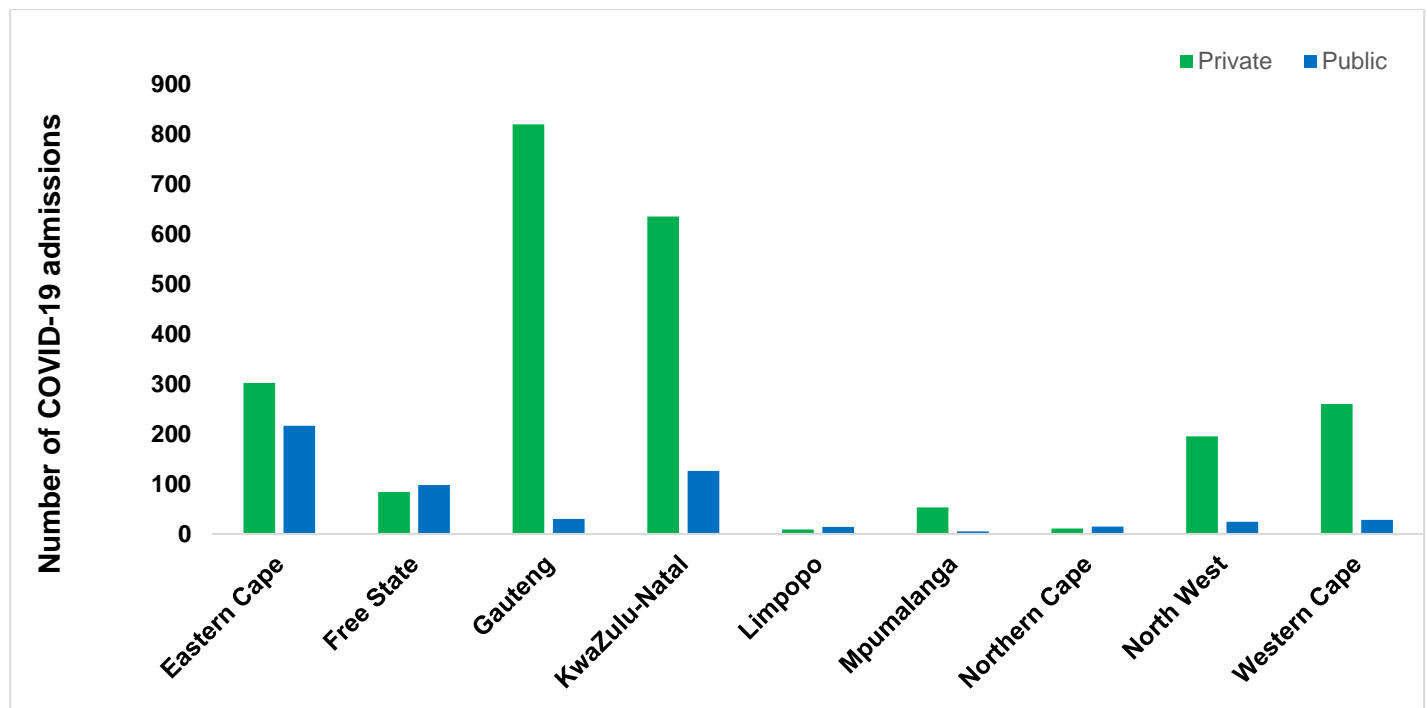
Data on all COVID-19 admissions are received from all private hospitals nationally, and a subset of public hospitals in all nine provinces (data are received from all public hospitals in the Western Cape (WC) Province). As new hospitals join the surveillance system, they retrospectively captured all admissions recorded. As of 19 September 2020, a total of 513 facilities, 269 from public sector and 244 from private sector, submitted data on hospitalized patients with COVID-19 (Table 1). There were 18 additional hospitals reporting COVID-19 admissions since the last report. Data on hospitalized HCWs who were diagnosed with COVID-19 from 5 March to 19 September 2020 were collected from 281 hospitals (113 public and 168 private) of the 513 participating sentinel hospitals.

**Table 1:** Number of hospitals reporting data on COVID-19 admissions by province and health-sector, South Africa, 5 March – 19 September 2020

Facilities reporting	Public	Private
Eastern Cape	80	17
Free State	33	20
Gauteng	6	88
KwaZulu-Natal	25	45
Limpopo	31	6
Mpumalanga	24	9
North West	9	12
Northern Cape	5	7
Western Cape	56	40
South Africa	269	244

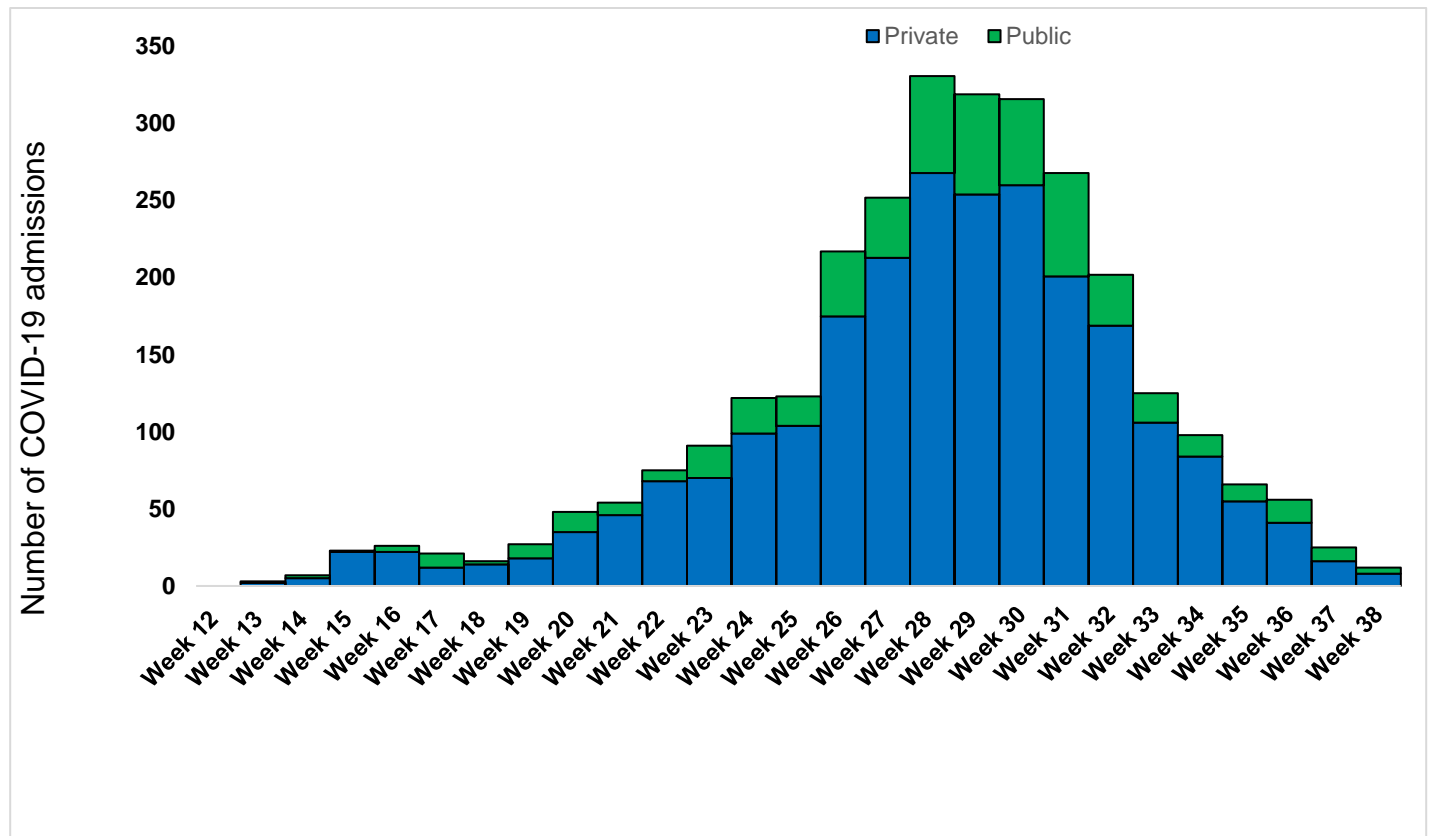
# Results

From 5 March to 19 September 2020, there was a total of 2924/70592 (4.1%) COVID-19 admissions among HCWs (113 additional admissions from the last report) reported from 281 facilities in all nine provinces of South Africa. Of these admissions, 556 (19.0%) and 2368 (81.0%) were reported in the public and private sector, respectively (Figure 1). The majority of HCW admissions (2416/2924; 82.6%) were recorded in four provinces, with the highest number 849/2924 (29.0%) reported in Gauteng, followed by 761/2924 (26.0%) in KwaZulu-Natal, 518/2924 (17.7%) in Eastern Cape and 288/2924 (9.9%) in Western Cape provinces (Figure 1).



**Figure 1:** Number of reported COVID-19 admissions among HCWs by province and health-sector, South Africa, 5 March – 19 September 2020 (n=2924)

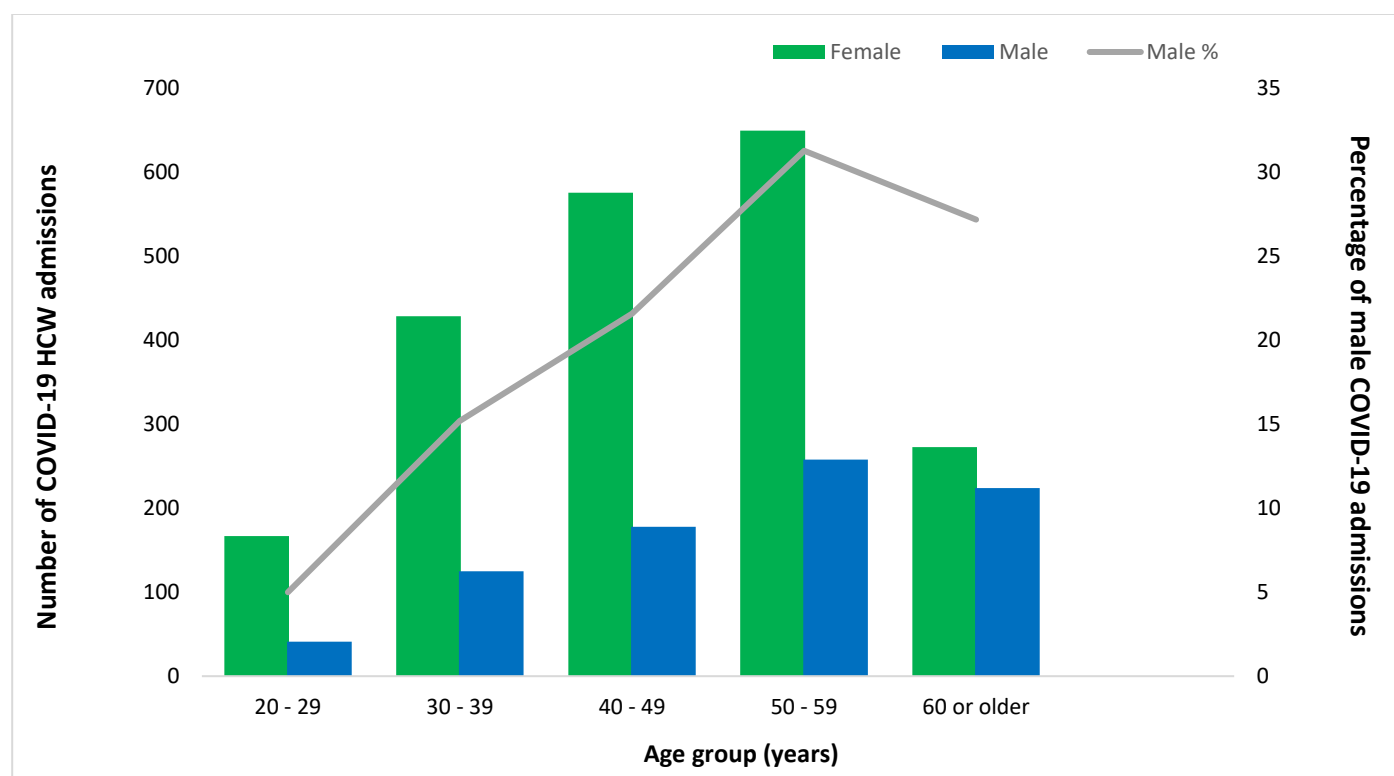
The majority of HCW admissions continue to be reported in the private sector (81.0%) (Figure 2). The overall number of admissions has been decreasing since week 30.



**Figure 2:** Number of reported COVID-19 admissions among HCWs by epidemiologic week of diagnosis and health-sector, South Africa, 5 March– 19 September 2020 (n=2924)

# Demographic and clinical characteristics of COVID-19 admissions among HCWs, South Africa, 5 March– 19 September 2020

The median age of COVID-19 admissions among HCWs was 49 years (interquartile range [IQR] 39–57). There were 497 (17.0%) admissions in patients 60 years and older (Figure 3). Among admitted HCWs with COVID-19, 2098 (71.8%) were female. The sex ratio varied by age group with females more common than males in all age groups (Figure 3). Among the 2098 female admissions, 45 (2.1%) were pregnant.



**Figure 3:** Number of reported COVID-19 HCW admissions by age, gender and percentage of males, South Africa, 5 March– 19 September 2020 (n=2924)

There were 3 HCWs whose age was unknown at the time of this report's dissemination.

Of the 1971 (67.4%) HCWs for whom comorbid disease was known, 1182/2924 (40.4%) had at least one comorbid disease and 429/1182 (36.3%) had more than one comorbidity reported. Among the 1182 HCWs who had reported a comorbid condition, the most commonly reported comorbid conditions were hypertension (762/1182; 64.5%) and diabetes (503/1182; 42.6%). There were 169 (14.3%) HCWs who were HIV positive, 165 (14.0%) with asthma/chronic pulmonary disease, 21 (1.8%) with active tuberculosis (TB) and eight (0.7%) with a previous history of TB (Table 2).

**Table 2:** Reported comorbid diseases in COVID-19 admissions among HCWs reporting at least one comorbid disease, South Africa, 5 March– 19 September 2020 (n=1182)

<b>Comorbid disease*</b>	<b>Frequency (n)</b>	<b>Percentage (%)</b>
Hypertension	762	64.5
Diabetes mellitus	503	42.6
Chronic cardiac disease	44	3.7
Chronic pulmonary disease/Asthma	165	14.0
Chronic renal disease	9	0.8
Malignancy	15	1.3
HIV	169	14.3
Active tuberculosis	21	1.7
Previous history of tuberculosis	8	0.7

\* 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

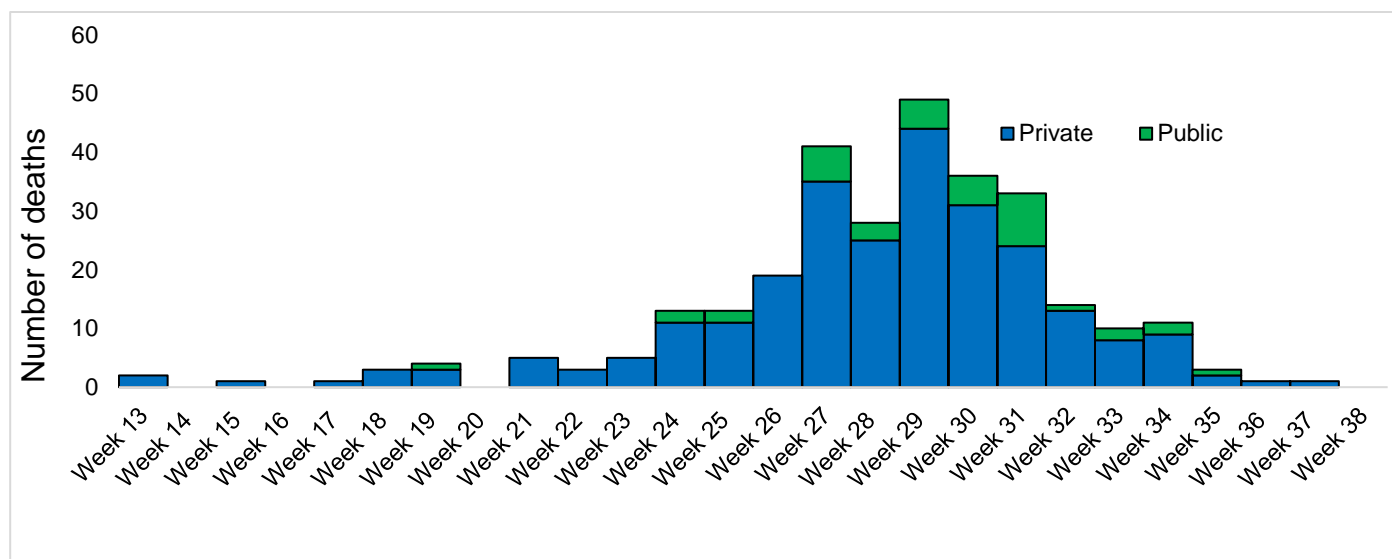
## Severity

- Of the 2924 COVID-19 HCW admissions to date, 202 (6.9%) met the criteria for severe disease defined as receiving treatment in high care or intensive care unit (ICU) or ventilated or diagnosed with acute respiratory distress syndrome (ARDS). The mean age of patients who had severe disease (52 years) was significantly different from those who did not have severe disease (48 years) ( $p < 0.001$ ). Of the 202 with severe disease, 124 (61.4%) had at least one comorbid disease ( $p < 0.001$ ).

## Outcomes

Of the 2924 admitted HCWs, 2508 (85.8%) were discharged alive, 44 (1.5%) were transferred out to either higher level care or step-down facilities, 296 (10.1%) died, and 76 (2.6%) were currently in hospital. The case fatality ratio (CFR) of 10.6% (296/2804) among HCWs with known in-hospital outcome was significantly differed from the CFR among non-HCW admissions reported to DATCOV (19.3%, 12615/65373). Most HCW deaths occurred between week 27 and week 31 and in the private sector [Figure 4].

The majority of HCW deaths, 91 (30.7%), were reported in the Eastern Cape, followed by 71 (24.0%) from Gauteng and 70 (23.7%) from KwaZulu-Natal provinces. One hundred and twenty-one (40.9%) deaths recorded were among HCWs aged 60 years and older. The median age of those who died was 57 (IQR 50 – 64) years compared to 48 (IQR 38 – 56) years for those who were still alive. One hundred and twenty (40.5%) of the deceased were admitted in ICU, 95 (32.1%) were ventilated, and 125 (42.2%) were given supplemental oxygen. The median length of stay for the HCWs who died was 10 days [IQR 4 – 19] compared to 6 days [3 – 10] for those discharged alive. Of the HCW who died, 191 (64.5%) had at least one comorbid disease reported and 96 (32.4%) had more than one reported comorbidity. Hypertension (140/296; 50.2%) and diabetes (111/296; 39.9%) were the common reported comorbid diseases.



**Figure 4:** Number of reported COVID-19 deaths among HCWs by epidemiologic week of diagnosis and health-sector, South Africa, 5 March– 19 September 2020 (n=296)

Please note that the mortality data presented was based on available information from sentinel hospitals as of 19 September 2020, thus not all deaths that occurred during the reporting period nationally are included. Deaths that were subsequently confirmed not be of a HCW were removed from the data set.



## Factors associated with in-hospital mortality

On multivariable analysis, factors associated with in-hospital mortality were older age groups (50 years and older); having comorbid hypertension, diabetes, malignancy and HIV. HCWs hospitalised in Eastern Cape and Limpopo were more likely to die in-hospital compared to their colleagues hospitalized in the Western Cape province (Table 3).

**Table 3:** Univariate and multivariable analysis of factors associated with mortality among 2804 HCWs with in-hospital outcome (discharges and deaths), South Africa, 5 March-19 September 2020.

Characteristic	Case-fatality ratio n/N (%)	Unadjusted OR (95% CI)	p-value	Adjusted OR* (95% CI)	p-value
<b>Age group</b>					
20 – 29 years	4/195 (2.1)	Reference		Reference	
30 – 39 years	14/532 (2.6)	1.3 (0.43-4.06)	0.626	1.1 (0.3 – 3.5)	0.876
40 – 49 years	54/ 723 (7.5)	3.9 (1.4-11.0)	0.009	3.0 (1.1 – 8.5)	0.037
50 – 59 years	103/868 (11.9)	6.5 (2.4-17.9)	<0.001	4.4 (1.6 – 12.3)	0.004
60 years or older	121/483 (25.1)	16.4 (6.0-45.1)	<0.001	9.2 (3.3 – 25.6)	<0.001
<b>Sex</b>					
Female	191/2009 (9.5)	Reference		Reference	
Male	105/792 (13.3)	1.5 (1.1 - 1.9)	0.004	*	*
<b>Race</b>					
White	45/313 (14.4)	Reference			
Black	195/1916 (10.2)	0.7 (0.5-0.9)	0.024		
Coloured	11/214 (5.1)	0.3 (0.2-0.6)	0.001		
Indian	29/274 (10.6)	0.8 (0.5-1.3)	0.415		
<b>Comorbid condition</b>					
No co-morbidity	105/1646 (6.4)	Reference		Reference	
1 co-morbid condition	95/741 (12.8)	2.2 (1.7–3.0)	<0.001	*	*
≥ 2 comorbid conditions	96/414 (23.2)	4.5 (3.3 – 6.1)	<0.001	*	*
<b>Hypertension</b>					
No	139/1863 (7.5)	Reference		Reference	
Yes	140/747 (18.7)	2.9 (2.3 - 3.8)	<0.001	1.6 (1.2 – 2.1)	0.003
<b>Diabetes mellitus</b>					
No	168/2118 (7.9)	Reference		Reference	
Yes	111/492 (22.6)	3.5 (2.7 – 4.5)	<0.001	2.2 (1.6 – 2.9)	<0.001
<b>Chronic cardiac disease</b>					
No	274/2567 (10.7)	Reference			
Yes	5/43 (11.6)	1.1 (0.4 – 2.9)	0.807		
<b>Chronic pulmonary disease/Asthma</b>					
No	276/2598 (10.6)	Reference			
Yes	16/156 (10.3)	0.9 (0.6 – 1.6)	0.911		
<b>Chronic renal disease</b>					
No	277/2601 (10.6)	Reference			

Yes	2/9 (22.2)	2.5 (0.5 – 12.1)	0.252		
<b>Malignancy</b>					
No	273/2595 (10.5)	Reference		Reference	
Yes	6/15 (40.0)	5.9 (2.1 – 16.8)	0.001	5.3 (1.9 – 29.8)	
<b>HIV Positive</b>					
No	249/2250 (11.1)	Reference		Reference	
Yes	19/160 (11.9)	1.1 (0.6 – 1.7)	0.835	2.3 (1.3 – 4.2)	0.006
<b>Tuberculosis</b>					
No	275/2584 (10.6)	Reference			
Previous	1/5 (20.0)	1.8 (0.2 – 15.1)	0.607		
Current	2/19 (10.5)	1.0 (0.2 – 4.5)	0.964		
Current and Previous	1/2 (50.0)	8.8 (0.5 – 141.0)	0.125		
<b>Month of admission</b>					
March	2/9 (22.2)	Reference		Reference	
April	2/77 (2.6)	0.1 (0.01 – 0.7)	0.025	*	*
May	16/215 (7.4)	0.3 (0.1 – 1.4)	0.125		
June	66/623 (10.6)	0.4 (0.1 – 2.0)	0.259		
July	167/1322 (12.6)	0.5 (0.1 – 2.4)	0.378		
August	41/498 (8.2)	0.3 (0.1 – 1.5)	0.133		
September	2/57 (3.5)	0.1 (0.01 – 0.7)	0.026		
<b>Health sector</b>					
Private	257/2292 (11.2)	Reference		Reference	
Public	39/509 (7.7)	0.6 (0.4 – 0.9)	0.007	*	*
<b>Province</b>					
Western Cape	22/278 (7.9)	Reference		Reference	
Eastern Cape	91/501 (18.2)	2.6 (1.6 – 4.2)	<0.001	2.7 (1.5 – 4.7)	0.001
Free State	16/167 (9.6)	1.2 (0.6 – 2.3)	0.656	1.4 (0.7 – 2.9)	0.384
Gauteng	71/821 (8.6)	1.1 (0.7 – 1.8)	0.691	1.2 (0.7 – 2.1)	0.561
KwaZulu-Natal	70/741 (9.4)	1.2 (0.7 – 2.0)	0.426	1.3 (0.7 – 2.3)	0.345
Limpopo	4/19 (21.1)	2.5 (0.8 – 8.1)	0.115	4.0 (1.2 – 13.8)	0.028
Mpumalanga	5/49 (10.2)	1.1 (0.4 – 3.1)	0.799	1.5 (0.5 – 4.4)	0.446
North West	16/200 (8.0)	0.9 (0.5 – 1.9)	0.888	1.2 (0.6 – 2.5)	0.623
Northern Cape	1/25 (4.0)	0.5 (0.1 – 3.7)	0.486	0.9 (0.1 – 8.1)	0.996
<b>Ever ICU</b>					
No	112/2381 (4.7)	Reference		#	
Yes	184/420 (43.8)	14.7 (11.2–19.2)	<0.001		
<b>Ever High Care</b>					
No	249/2462 (10.1)	Reference		#	
Yes	47/339 (13.9)	1.4 (1.0 – 2.0)	0.044		
<b>Ever Ventilated</b>					
No	196/2636 (7.4)	Reference		#	
Yes	100/165 (60.6)	16.4 (11.8 -22.8)	<0.001		
<b>Ever on Oxygen</b>					
No	207/2264 (9.1)	Reference		#	
Yes	89/537 (16.6)	1.9 (1.4 – 2.4)	<0.001		

Note: Multivariable model excluded all individuals with unknown comorbid conditions

\* represents variables that were statistically associated with mortality in the univariate analysis (unadjusted OR) but were not statistically associated with mortality in the multivariate analysis (Adjusted OR) and thus, were excluded from the final model.

# represent variables that were excluded from the multivariate analysis because they were in the direct causal path

# Conclusion

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Admissions among HCW are declining in keeping with the national trend. We continue to observe a high percentage of deaths amongst HCWs older than 50 years of age. Healthcare workers with comorbid hypertension, diabetes, and malignancy were at greater risk.

## Acknowledgements

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

Public hospitals using DATCOV surveillance online platform:

Eastern Cape
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Aberdeen Hospital	Adelaide Hospital
Aliwal North Hospital	All Saints Hospital
Andries Vosloo Hospital	Bambisana Hospital
Bedford Hospital	Bisho Hospital
Burgersdorp Hospital	Butterworth Hospital
Cala Hospital	Cathcart Hospital
Cecilia Makiwana Hospital	Cloete Joubert Hospital
Cofimvaba Hospital	Cradock Hospital
Dora Nginza Hospital	Dordrecht Hospital
Dr Malizo Mpehle Hospital	Elizabeth Donkin Hospital
Elliot Hospital	Empilisweni Hospital
Empilweni Hospital	Fort Beaufort Hospital
Fort England Hospital	Frere Hospital
Frontier Hospital	Glen Grey Hospital
Greenville Hospital	Grey Hospital
Hewu Hospital	Holy Cross Hospital
Humansdorp Hospital	Indwe Hospital
Isilimela Hospital	Jamestown Hospital
Kareedouw Hospital	Khotsong TB Hospital
Komani Hospital	Komga Hospital
Lade Grey Hospital	Livingstone Hospital
Maclear Hospital	Madwaleni Hospital
Madzikana ka Zulu Memorial Hospital	Midland Hospital
Mjanyana Hospital	Molteno Hospital
Mount Ayliff Hospital	Nelson Mandela Academic Hospital
Nkqubela Chest Hospital	Nompumelelo Hospital
Orsmond Hospital	Port Alfred Hospital
SS Gida Hospital	Rev Dr Elizabeth Mamisa Chabula-Nxiweni Field
Sawas Hospital	Settlers Hospital
Sipetu Hospital	St Barnabas Hospital
St Elizabeth Hospital	St Francis Hospital
St Patricks Hospital	Sterkstroom Hospital
Steynsburg Hospital	Stutterheim Hospital
Sundays Valley Hospital	Tafalofefe Hospital
Taylor Bequest Hospital (Matatiele)	Taylor Bequest Hospital (Mount Fletcher)
Tower Psychiatric Hospital	Uitenhage Hospital
Umlamli Hospital	Umtata General Hospital
Victoria Hospital	Wilhelm Stahl Hospital
Willowmore Hospital	Winterberg TB Hospital
Zithulele hospital	
<b>Free State</b>	
3 Military Hospital,	Albert Nzula District Hospital
Boitumelo Hospital	Bongani Regional Hospital
Botshabelo Hospital	Diamant Hospital
Dihlabeng Hospital	Dr Js Moroka Hospital
Elizabeth Ross Hospital	Fezi Ngubentombi Provincial Hospital
Itemoheng Hospital	John Daniel Newsberry Hospital
Katleho Hospital	Manapo Hospital
Mohau Hospital	Nala Hospital
National District Hospital	Nketoana District Hospital
Parys Hospital	Pelonomie Hospital
Phekolong Hospital	Phumelela Hospital
Senorita Ntlabathi Hospital	Stoffel Coetzee Hospital
Thebe Hospital	Thusanong Hospital
Universitas Hospital	Winburg Hospital
House Idahlia Critical Care Surge Facility	
<b>Gauteng</b>	
Charlotte Maxeke Hospital	Chris Hani Baragwanath Hospital
Helen Joseph Hospital	Leratong Hospital

Steve Biko Academic Hospital	Tambo Memorial Hospital
KwaZulu-Natal	
Addington Hospital	Edendale Hospital
General Justice Gizenga Mpanza Hospital	Grey's Hospital
Inkosi Albert Luthuli Central Hospital	King Edward VIII Hospital
Ladysmith Hospital	Manguzi Hospital
Limpopo	
Kgapane Hospital	Polokwane Hospital
Siloam Hospital	
Mpumalanga	
Barberton Hospital	Belfast Hospital
Bethal Hospital	Carolina Hospital
Lydenburg Hospital	Mapulaneng Hospital
Matibidi Hospital	Matikwana Hospital
Middelburg Hospital	Rob Ferreira Hospital
Sabie Hospital	Shongwe Hospital
Barberton TB Specialised Hospital	Themba Hospital
Tonga Hospital	Waterval-Boven Hospital
North West	
Job Shimankana Tabane Hospital	Tshepong Hospital
Northern Cape	
Robert Mangaliso Sobukwe Hospital	
Western Cape	
Tygerberg Hospital	

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)
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Private hospitals using DATCOV surveillance online platform:

Eastern Cape	
Aurura Hospital	Aurura Rehabilitation Hospital
Care Cure Queenstown	Matatiele Private Hospital
Nurture Queenstown	Nurture Sunnyside
Free State	
Busamed Bram Fischer Airport Hospital	Busamed Harrismith Private Hospital
Cairnhall Hospital	Corona Sub-Acute Hospital
Emoyamed Private Hospital	Hillandale Health Care centre
Nurture Woodlands	Riemland Clinic
St Helena GM Hospital	
Gauteng	
Arwyp Medical Centre	Busamed Modderfontein Private Hospital
Botshilu Private Hospital	Louis Pasteur Private Hospital
Lynnmed Clinic	Midvaal Private Hospital
Nurture Rynmed	Nurture Vereeniging
Pretoria Urology Hospital	RH Rand Hospital
Sunshine Hospital	Zuid Afrikaans Hospital
KwaZulu-Natal	
Aba Qulusi Private Hospital	Ahmed Al-Kadi Private Hospital
Busamed Gateway Private Hospital	Busamed Hillcrest Private Hospital
Capital hospital	Hibiscus Cato Ridge Hospital
Hibiscus Private Hospital	KwaDukuza Private Hospital
Midlands Medical Centre Private Hospital	Nurture Ilembe

	Shelly Beach Private Hospital
Limpopo	
Zoutpansberg Private Hospital	
Mpumalanga	
Kiaat Private Hospital	RH Piet Retief Hospital
North West	
Medicare Private Hospital	Mooimed Private Hospital
Sunningdale Hospital	Vryburg private hospital
Wilmed Park Private Hospital	
Northern Cape	
Lenmed Royal Hospital and Heart Centre	
Western Cape	
Busamed - Paardevlei private hospital	Nurture Cape View
Nurture Newlands	