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# COVID-19

## Hospital Surveillance-Monthly Update on Hospitalized HCWs

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Update: Week 2, 2022



Compiled by:

Epidemiology and Surveillance Division  
National Institute for Occupational Health  
25 Hospital Street, Constitution Hill, Johannesburg

This report summarises data of COVID-19 cases admitted to hospital surveillance sites in all provinces. The report is based on data collected from 5 March 2020 to 15 January 2022 on the DATCOV platform.

# HIGHLIGHTS

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- As of 15 January 2022 (week 2 of 2022), 10247 (2.5%) of the 416177 COVID-19 hospital admissions recorded on the DATCOV surveillance database, were health care workers (HCWs), reported from 666 facilities in all nine provinces of South Africa. Among 3092/10247 (30.2%) HCWs with available data on type of work, 1718/3092 (55.6 %) were nurses, 775/3092 (25.1%) porters or administrators, 263/3092 (8.5%) allied HCWs, 228/3092 (7.4%) doctors, 69/3092 (2.2%) paramedics, and 39/3092 (1.3%) were laboratory scientists.
- There were 3080 (30.1%) and 7167 (69.9%) admissions reported in the public and private sectors, respectively. The majority of HCW admissions (8577/10247; 83.7%) were recorded in four provinces, with the highest number 3523/10247 (34.4%) reported in Gauteng, followed by 2439/10247 (23.8%) in KwaZulu-Natal, 1323/10247 (12.9%) in Eastern Cape and 1292/10247 (12.6%) in Western Cape Provinces.
- The median age of COVID-19 admissions among HCWs was 49 years (interquartile range [IQR] 39–58). There were 2119 (20.7%) admissions in HCWs 60 years and older (Figure 4). Among the admitted HCWs with COVID-19, 6897 (67.3%) were females.
- The prevalence of comorbid diseases among HCW was 4486/8686 (51.7%). Among the 8686 HCWs with one or more comorbid condition, the most commonly reported underlying condition were hypertension 35.6% (3089/8686) and diabetes 22.4% (1949/8686). There were 4.9% (425/8686) HCWs that were HIV positive, 0.8% (68/8686) with active tuberculosis (TB) and 0.9% (76/8686) with a previous history of TB.
- A total of 1715 (16.7%) HCWs admitted were treated in ICU, of these treated in ICU, 1046 (61.0%) required supplemental oxygen, 585 (34.1%) required invasive mechanical ventilation and 345 (33.0%) required both treatments. Of the 10247 HCWs admitted, 8831 (86.2%) were discharged alive, 105 (1.0%) transferred out to either high-level care or step-down facilities, 1256 (12.3%) had died and 55 (0.5%) were currently in hospital. The majority of deaths among HCWs admitted with COVID-19 were reported in Gauteng (398, 32.0%) and KwaZulu-Natal (304; 24.2%), followed by the Eastern Cape (217, 17.3%) provinces. Of the HCWs who died, 777 (65.2%) had comorbid disease reported and 369 (29.4%) had more than one reported comorbidity.
- There were 4014/84676 (4.7%), 4053/176524 (2.3%), 1834/140637 (1.3%) and 245/14340 (1.8%) admissions, and 365/17419 (2.1%), 622/43531 (1.4%), and 245/33723 (0.7%) and 24/470 (5.1%) deaths amongst HCWs in the first, second, third and fourth waves respectively. The case fatality ratio (CFR) of HCWs with known in-hospital outcomes reported to DATCOV was 9.2% (365/3961), 15.6% (622/3995), 15.4% (245/1588) and 4.4% (24/543) in the first, second, third and fourth waves.

# Methods

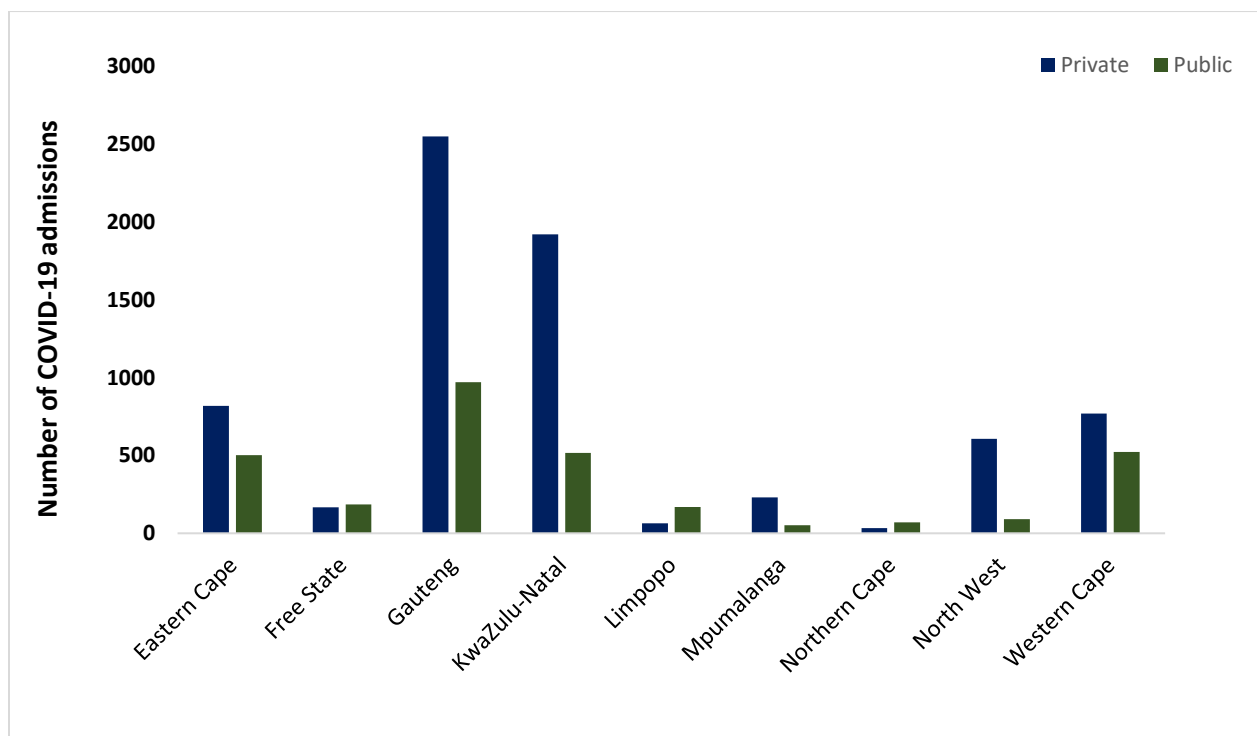
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DATCOV hospital surveillance for COVID-19 admissions was initiated on 1 April 2020. Data are submitted by public and private hospitals that have agreed to report COVID-19 admissions through DATCOV surveillance in all nine provinces of South Africa (Table 1). A COVID-19 case was defined as a person with a positive reverse transcriptase-polymerase chain reaction (RT-PCR) assay or positive antigen test for SARS-CoV-2 who was admitted to a 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). HCWs included in this surveillance report were from 20 to 79 years old, the age group of almost all HCWs in South Africa. The age group was also applied in the non-HCWs to make the two groups comparable. 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). Data on all COVID-19 admissions are received from all private and public hospitals nationally, in all nine provinces. As new hospitals join the surveillance system, they retrospectively captured all admissions recorded. As of 15 January 2022, a total of 666 facilities, 407 from the public sector and 259 from the private sector submitted data on hospitalized patients with COVID-19 (Table 1).

**Table 1: Number of hospitals reporting data on COVID-19 admissions by province and health-sector, South Africa, 5 March 2020–15 January 2022**

<b>Provinces</b>	<b>Public</b>	<b>Private</b>
Eastern Cape	86	18
Free State	35	20
Gauteng	40	96
KwaZulu-Natal	69	47
Limpopo	41	7
Mpumalanga	31	9
North West	17	13
Northern Cape	29	6
Western Cape	59	43
South Africa	407	259

From 5 March 2020 to 15 January 2022, there was a total of 10247/416177 (2.5%) COVID-19 admissions among HCWs. Of these admissions, 3080 (30.1%) and 7167 (69.9%) admissions reported in the public and private sectors, respectively (Figure 1). The majority of HCW admissions (8577/10247; 83.7%) were recorded in four provinces, with the highest number 3523/10247 (34.4%) reported in Gauteng, followed by 2439/10247 (23.8%) in KwaZulu-Natal, 1323/10247 (12.9%) in Eastern Cape and 1292/10247 (12.6%) 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 2020 –15 January 2022 (n=10247).**

Figure 2 shows that HCW admissions peaked in week 28 of 2020 during the first wave of the pandemic, in week 1 of 2021 during the second wave, and in week 27 during the third wave. After a decline in HCW admissions during week 35 to 46 of 2021, the number of HCW admissions increased in week 48 of 2021 and reached a peak in week 50 and 51 of 2021 during the fourth wave of the COVID-19 pandemic. The number of HCW admission declined in week 52 of 2021 to week 2 of 2022.

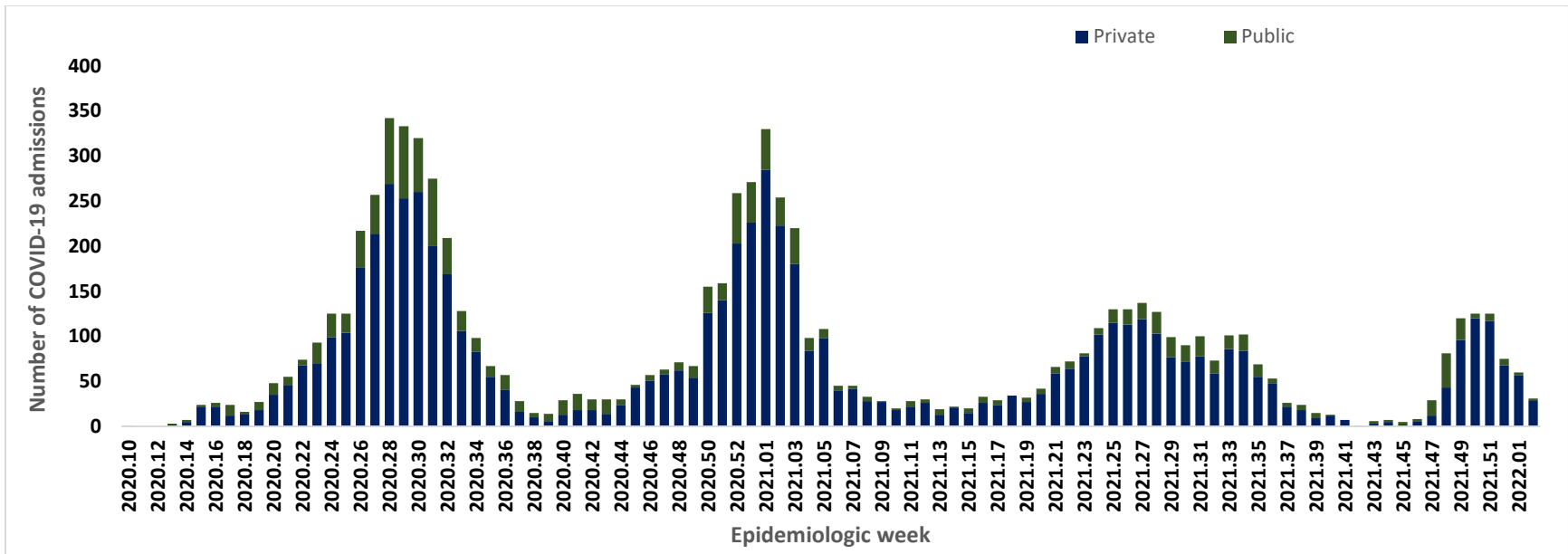


Figure 2: Number of reported COVID-19 admissions among HCWs by an epidemiologic week of diagnosis and health-sector, South Africa, 5 March 2020 –15 January 2022 (n=10247).

The numbers of HCW admissions were highest in Gauteng, KwaZulu-Natal and Eastern Cape during the first wave and highest in Gauteng, KwaZulu-Natal and Western Cape during the second wave. In the fourth wave, the number of HCW admissions increased in Gauteng in week 48 of 2021 (Figure 3), KwaZulu Natal in week 49 of 2021 and in the Eastern Cape in week 50 of 2021. Overall, there were lower HCW admissions in the fourth wave across all provinces compared to the third, second and the first wave.

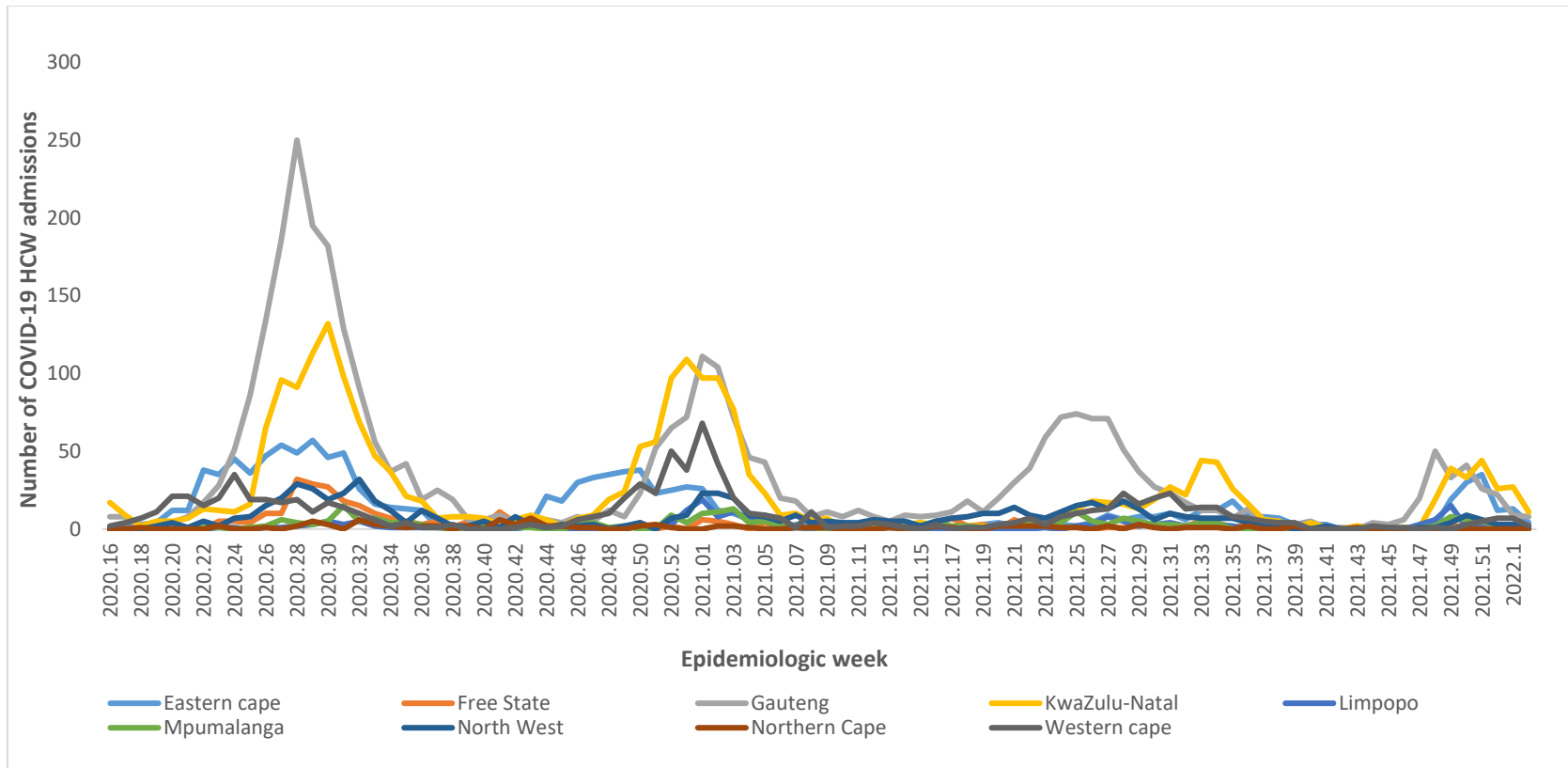


Figure 3: Number of reported COVID-19 admissions among HCWs by an epidemiologic week of diagnosis and provinces, South Africa, 5 March 2020 – 15 January 2022 (n=10247).

# Demographic and clinical characteristics of HCWs admitted with COVID-19, South Africa, 5 March 2020 –15 January 2022

The median age of COVID-19 admissions among HCWs was 49 years (interquartile range [IQR] 39–58). There were 2119 (20.7%) admissions in HCWs 60 years and older (Figure 4). Among the admitted HCWs with COVID-19, 6897 (67.3%) were females. The sex ratio varied by age group with females more common than males in all age groups (Figure 4). Among the 6897 female admissions, 261 (3.8%) were pregnant.

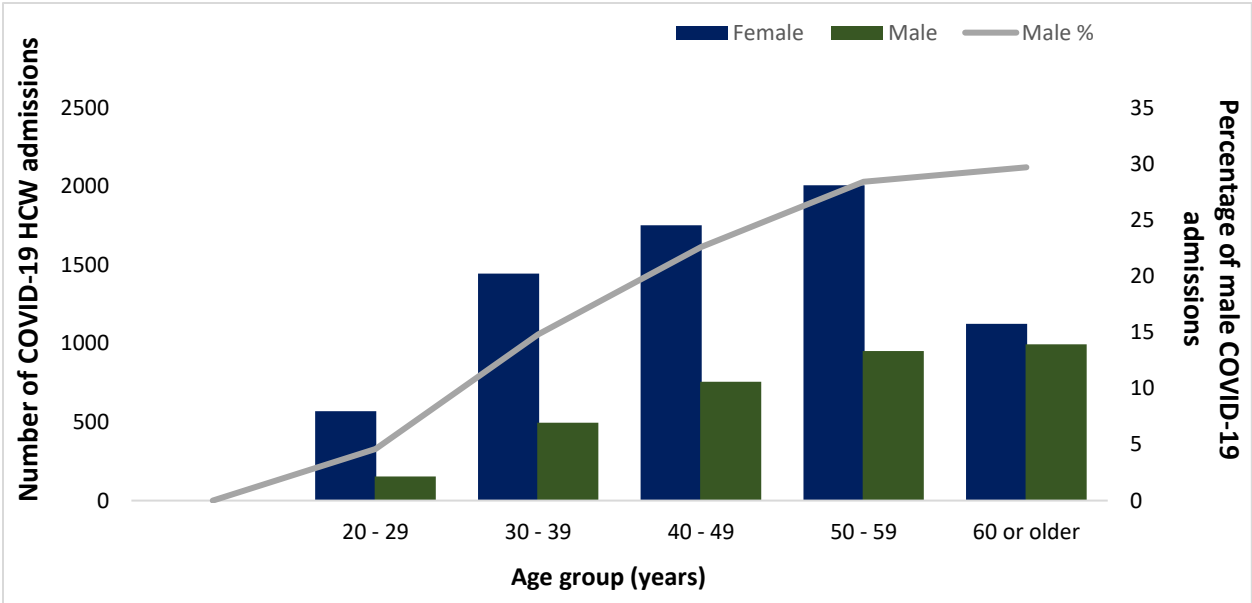


Figure 4: Number of reported HCW admitted with COVID-19 by age, gender and percentage of males, South Africa, 5 March 2020 –15 January 2022 (n=10247).



The prevalence of comorbid diseases among HCW was 4486/8686 (51.7%). Among the 8686 HCWs with one or more comorbid condition, the most commonly reported underlying condition were hypertension 35.6% (3089/8686) and diabetes 22.4% (1949/8686). There were 4.9% (425/8686) HCWs that were HIV positive, 0.8% (68/8686) with active tuberculosis (TB) and 0.9% (76/8686) with a previous history of TB. (Table 2).

**Table 2: The number and prevalence of comorbid diseases in HCW admitted with COVID-19, South Africa, 5 March 2020 – 15 January 2022 (n=8686)**

Comorbid disease*	Frequency (n)	Percentage (%)
Hypertension	3089	35.6
Diabetes mellitus	1949	22.4
Chronic cardiac disease	157	1.8
Chronic pulmonary disease/Asthma	574	6.6
Chronic renal disease	52	0.6
Malignancy	38	0.4
HIV	436	5.0
Active tuberculosis	68	0.8
Previous history of tuberculosis	76	0.9

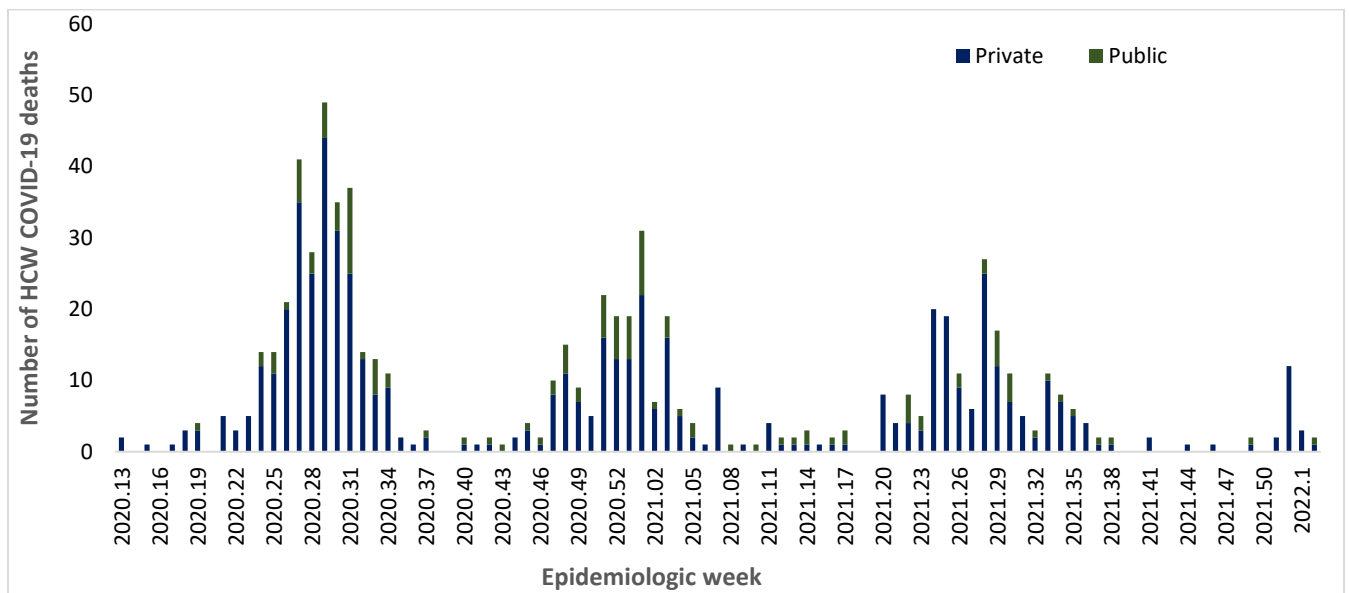
\* Multiple comorbid conditions would be counted more than once so the total number may be more than the total number of individuals reporting comorbid conditions

## Severity

A total of 1715 (16.7%) HCWs admitted were treated in ICU, of these treated in ICU, 1046 (61.0%) required supplemental oxygen, 585 (34.1%) required invasive mechanical ventilation and 345 (33.0%) required both treatments. The mean age of patients who received oxygen or ventilation as an intervention (52.5 years) was significantly older than those who did not receive oxygen or ventilation intervention (46.6 years) ( $p < 0.0001$ ). Of the all HCW admissions treated with oxygen or ventilation, 897/4064 (22.1%) had more than one comorbid disease ( $p < 0.001$ ).

## Outcomes

Of the 10247 HCWs admitted, 8831 (86.2%) were discharged alive, 105 (1.0%) transferred out to either high-level care or step-down facilities, 1256 (12.3%) had died and 55 (0.5%) were currently in hospital. The case fatality ratio (CFR) of HCWs with known in-hospital outcomes reported to DATCOV was 12.5% (1256/10087) compared to a CFR of 23.7% (81166/342543) among non-HCW admissions ( $p < 0.001$ ) (Figure 5).



**Figure 5.** The number of reported COVID-19 deaths among admitted HCW by epidemiologic week in the private and public sector, South Africa, 5 March–15 January 2022.

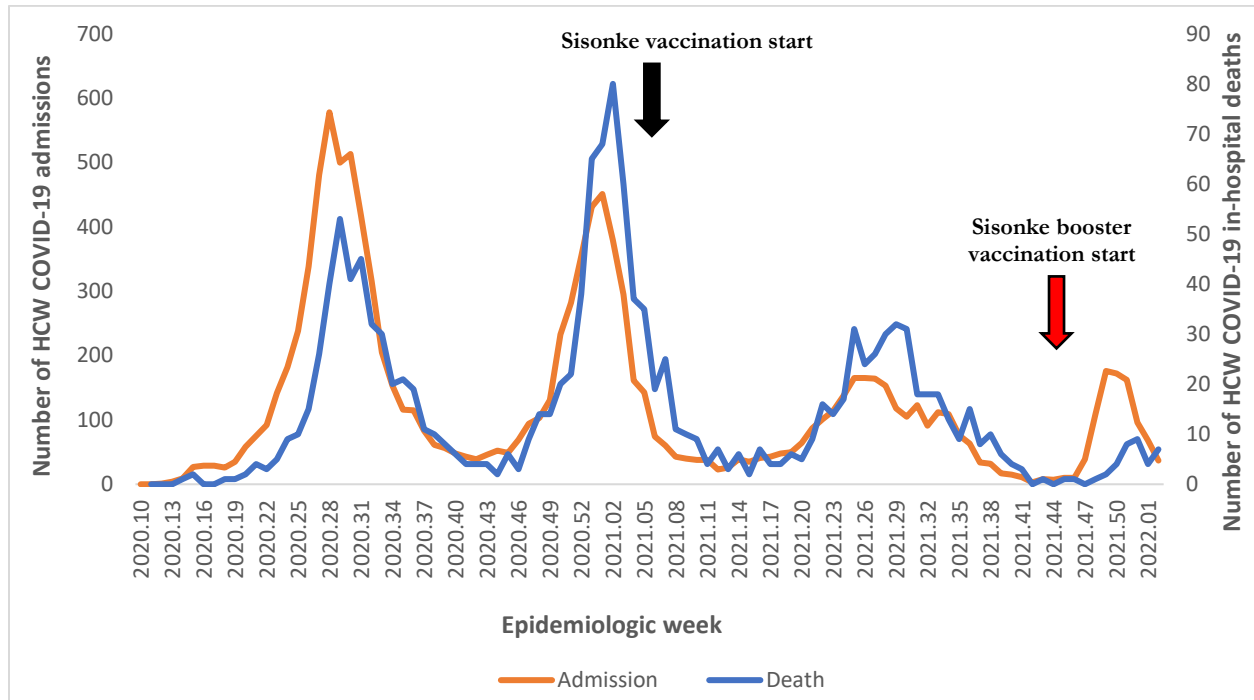
Please note that the mortality data presented was based on available information from reporting hospitals as of 13 November 2021. Deaths that were subsequently confirmed not to be of a HCW were removed from the data set.

The majority of deaths among HCWs admitted with COVID-19 were reported in Gauteng (398, 32.0%) and KwaZulu-Natal 304 (24.2%), followed by the Eastern Cape (217, 17.3%) provinces. Five hundred and sixty-three (44.8%) of the deaths were recorded among HCWs aged 60 years and older. The median age of those who died was 58 (IQR 50 – 66) years compared to 48 (IQR 38 – 57) years

for those who were still alive. Seven hundred and fifty-two (59.9%) of the deceased were admitted at ICU, 377 (30.0%) were ventilated, and 758 (60.4%) were given supplemental oxygen. The median length of stay for the HCWs who died was 11 days [IQR 5 – 19] compared to 6 days [3 – 10] for those discharged alive. Of the HCWs who died, 777 (65.2%) had comorbid disease reported and 369 (29.4%) had more than one reported comorbidity. Hypertension 600 (51.2%), diabetes 424 (36.9%) and obesity 69 (24.5%) were the common reported comorbid diseases among the deceased.

### **Comparison of COVID-19 admissions and deaths among HCWs and non-HCWs in the four waves**

Of the total COVID-19 admissions and death reported to DATCOV, there were 4014/84676 (4.7%), 4053/176524 (2.3%), 1834/140637 (1.3%) and 245/14340 (1.8%) admissions, and 365/17419 (2.1%), 622/43531 (1.4%), and 245/33723 (0.7%) and 24/470 (5.1%) deaths amongst HCWs in the four waves respectively (Figure 6). The case fatality ratio (CFR) of HCWs with known in-hospital outcomes reported to DATCOV was 9.2% (365/3961), 15.6% (622/3995), 15.4% (245/1588) and 4.4% (24/543) in the four waves.



**Figure 6: Number of COVID-19 HCW admissions and in-hospital mortality across South Africa, 5 March–15 January 2022.**

The number of non-HCW admissions and in-hospital mortality was high in the second wave compared to the first, third and fourth wave. There were 84.9% (71887/84676), 43.2% (153209/355045); 84.8% (119204/140637) and 77.2 % (11066/14340) non-HCW admissions and 84.8% (14765/17419); 86.1% (37486/43531), 84.6% (28535/33723) and 80.9% (380/470) non-HCW deaths in the four waves respectively. The case fatality ratio (CFR) of non-HCWs with known in-hospital outcomes reported to DATCOV was 20.9% (14765/70811), 25.0% (37486/150051) and 24.6% (28535/115855) and 6.5% (380/5826) in the four waves.

## Conclusions

Vaccination for HCWs in South Africa started in February 2021, and the Sisonke booster vaccine was offered in November 2021. The trends in cases shows a decline in HCW admission in the third wave compared to the second and the first wave. The CFR of HCWs was higher in the second and third

wave than in the first and fourth wave HCW admission increased in in the fourth wave even after the booster vaccination. Breakthrough infections occurred in HCWs in fourth wave even though the number of reported deaths were low. Acquired SARS-COV-2 immunity from prior infection and vaccination or both factors may be attributed to reduced severe disease outcome in the fourth wave (Wolter et al, 2022).

## Acknowledgements

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Our gratitude goes to the National Institute for Communicable Diseases for granting access to the DATCOV data.

## References

1. Wolter, *et al.* Early assessment of the clinical severity of the SARS-CoV-2 omicron variant in South Africa: a data linkage study. *The Lancet*: Published 19 January 2022, 9 (9); E1216-E1225. DOI: 10.1016/ S0140-6736(22)00017-4.