

# COVID-19

## Hospital Surveillance-Monthly Update on Hospitalized HCWs

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Update: Week 11, 2022



Compiled by:

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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 19 March 2022 on the DATCOV platform.

# HIGHLIGHTS

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- As of 19 March 2022 (week 11 of 2022), 10429 (2.3%) of the 462016 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 3174/10429 (30.4%) HCWs with available data on type of work, 1740/3174 (54.8%) were nurses, 822/3174 (25.9%) porters or administrators, 275/3174 (8.7%) allied HCWs, 229/3174 (7.2%) doctors, 69/3174 (2.2%) paramedics, and 39/3174 (1.2%) were laboratory scientists.
- There were 3153 (30.2%) and 7276 (70.0%) admissions reported in the public and private sectors, respectively. The majority of HCW admissions (8730/10429; 83.7%) were recorded in four provinces, with the highest number 3634/10429 (34.6%) reported in Gauteng, followed by 2467/10429 (23.7%) in KwaZulu-Natal, 1334/10429 (12.8%) in Eastern Cape and 1295/10429 (12.4%) in Western Cape Provinces.
- The median age of COVID-19 admissions among HCWs was 49 years (interquartile range [IQR] 39–58). There were 2151 (20.7%) admissions in HCWs 60 years and older. Among the admitted HCWs with COVID-19, 7021 (67.3%) were females.
- The prevalence of comorbid diseases among HCW was 4553/8885 (51.2%). Among the 8885 HCWs with one or more comorbid condition, the most commonly reported underlying condition were hypertension 35.1% (3129/8885) and diabetes 23.1% (1966/8885). There were 5.0% (441/8885) HCWs that were HIV positive, 0.7% (68/8885) with active tuberculosis (TB) and 0.9% (76/8885) with a previous history of TB.
- A total of 1718 (16.5%) HCWs admitted were treated in ICU, of these treated in ICU, 1042 (60.7%) required supplemental oxygen, 590 (34.3%) required invasive mechanical ventilation and 346 (33.2%) required both treatments. Of the 10429 HCWs admitted, 9047 (86.8%) were discharged alive, 103 (1.0%) transferred out to either high-level care or step-down facilities, 1263 (12.1%) had died and 16 (0.2%) were currently in hospital.
- The majority of deaths among HCWs admitted with COVID-19 were reported in Gauteng (402, 31.8%) and KwaZulu-Natal (306; 24.3%), followed by the Eastern Cape (217, 17.2%) provinces. Of the HCWs who died, 783 (65.1%) had comorbid disease reported and 371 (29.4%) had more than one reported comorbidity.
- There were 3994/84060 (4.8%), 4031/176069 (2.3%), 1628/140670 (1.2%) and 776/60898 (1.3%) admissions, and 365/17367 (2.1%), 621/43604 (1.4%), 245/33997 (0.7%) and 31/6268 (0.5%) HCW deaths reported to DATCOV in the four waves respectively. The case fatality ratio (CFR) of HCWs in the four waves with known in-hospital outcomes reported to DATCOV was 9.2% (365/3949), 15.6% (621/3984), 15.2% (245/1614) and 4.2% (32/763).

# Methods

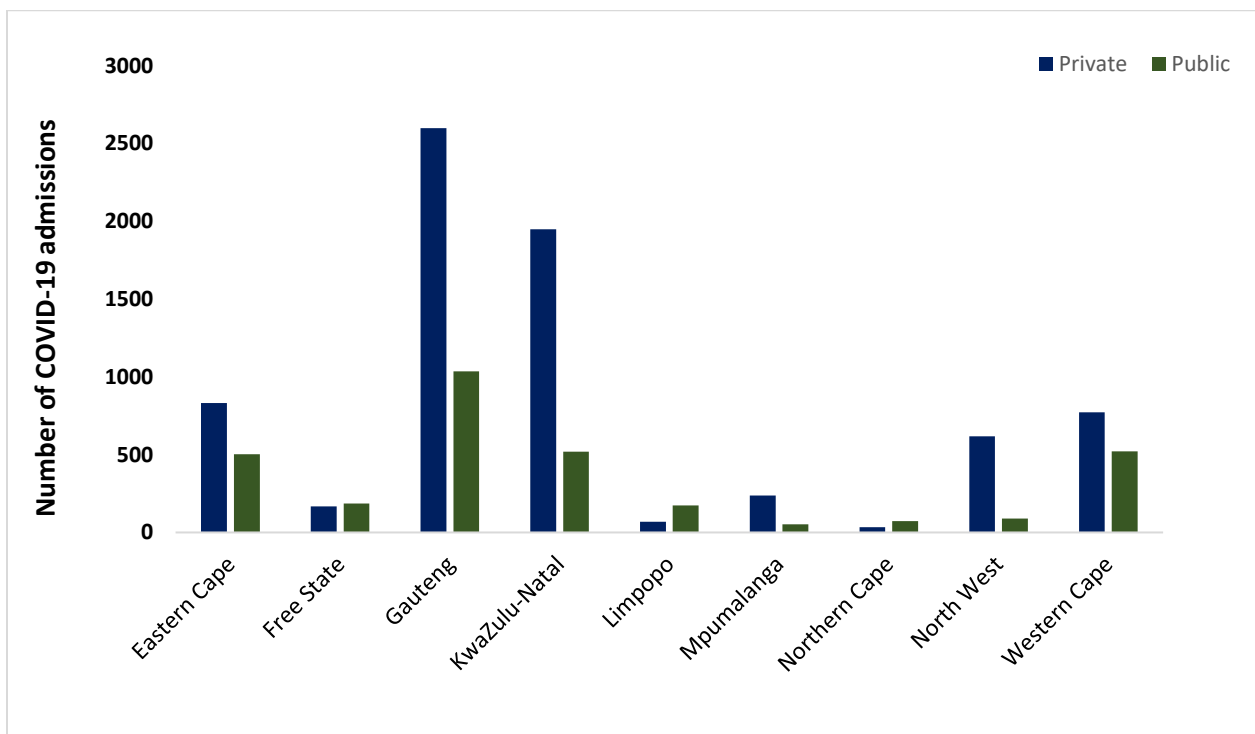
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DATCOV hospital surveillance for COVID-19 admissions was initiated on 1 April 2020. Data are submitted by public and private hospitals that have agreed to report COVID-19 admissions through DATCOV surveillance in all nine provinces of South Africa (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 19 March 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 2020–19 March 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 19 February 2022, there was a total of 10429/ 462016 (2.3%) COVID-19 admissions among HCWs. Of these admissions, 3153 (30.2%) and 7276 (69.8%) admissions reported in the public and private sectors, respectively (Figure 1). The majority of HCW admissions (8730/10429; 83.7%) were recorded in four provinces, with the highest number 3634/10429 (34.6%) reported in Gauteng, followed by 2467/10429 (23.7%) in KwaZulu-Natal, 1334/10429 (12.98%) in Eastern Cape and 1295/10429 (12.4%) 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 –19 March 2022 (n=10429).**

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, in week 27 during the third wave and in week 50 and 51 of 2021 during the fourth wave of the COVID-19 pandemic. Overall, the number of admissions for HCWs remained the lowest in fourth wave when compared with the first, second and third waves.

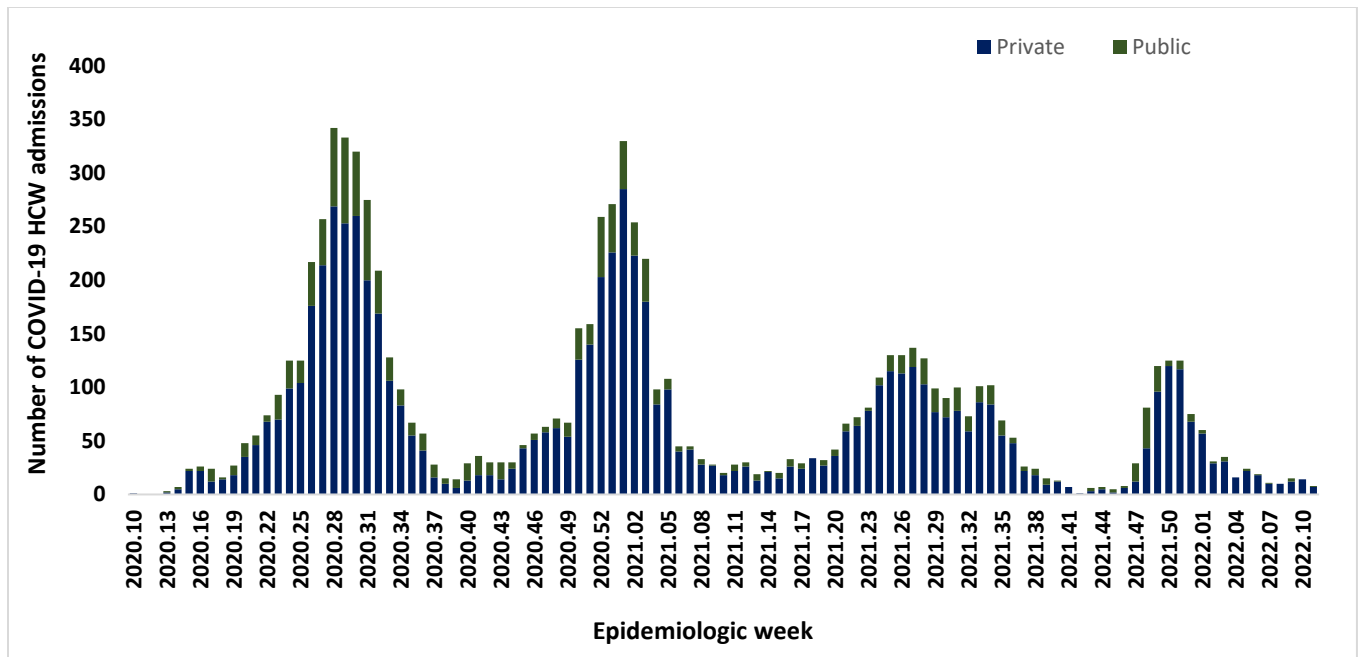


Figure 2: Number of reported COVID-19 admissions among HCWs by an epidemiologic week of diagnosis and health-sector, South Africa, 5 March 2020 –19 March 2022 (n=10429).

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

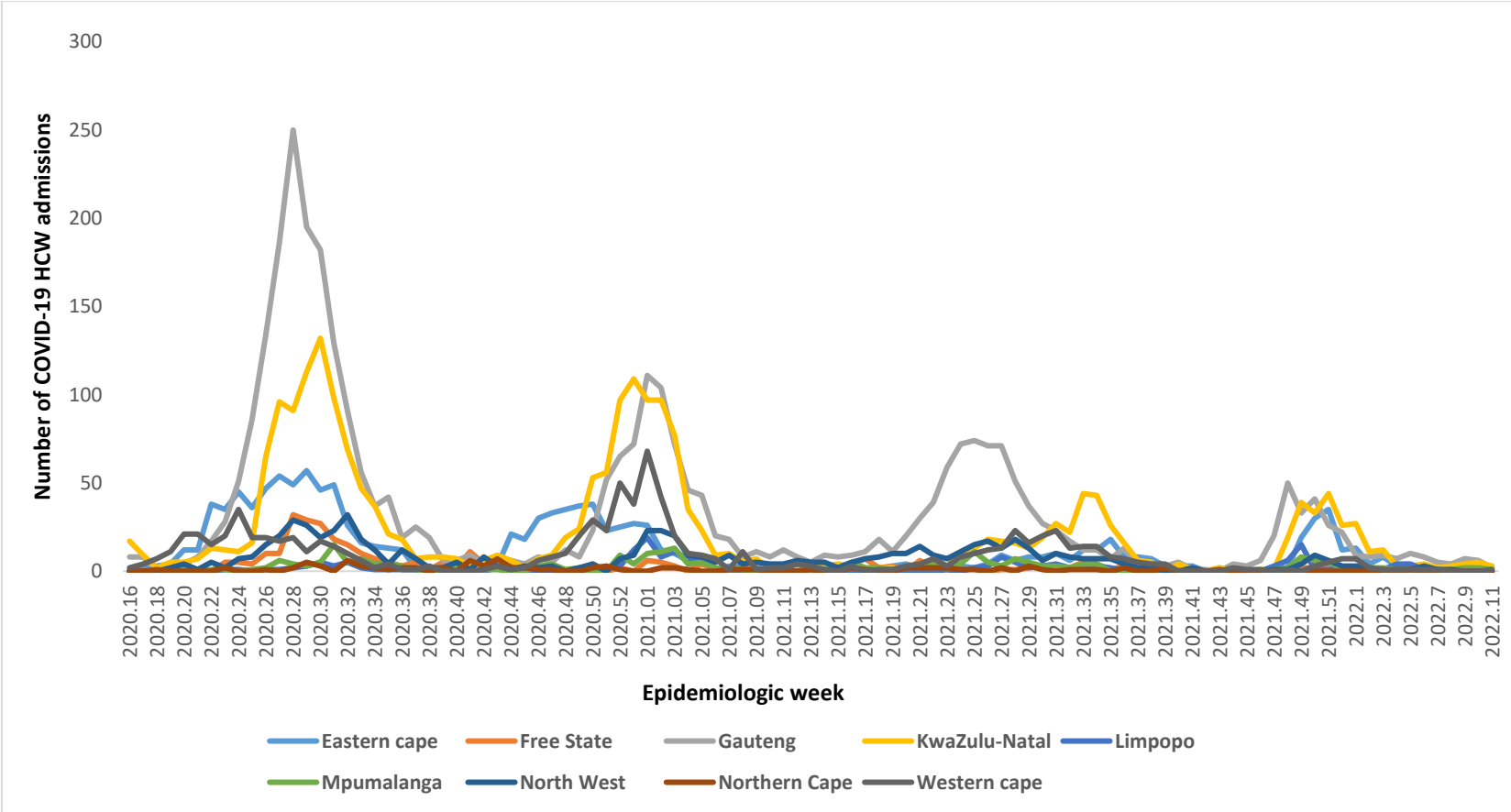


Figure 3: Number of reported COVID-19 admissions among HCWs by an epidemiologic week of diagnosis and provinces, South Africa, 5 March 2020 – 19 March 2022 (n=10429).

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

The median age of COVID-19 admissions among HCWs was 49 years (interquartile range [IQR] 39–58). There were 2151 (20.7%) admissions in HCWs 60 years and older. Among the admitted HCWs with COVID-19, 7021 (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 7021 female admissions, 278 (4.0 %) were pregnant.

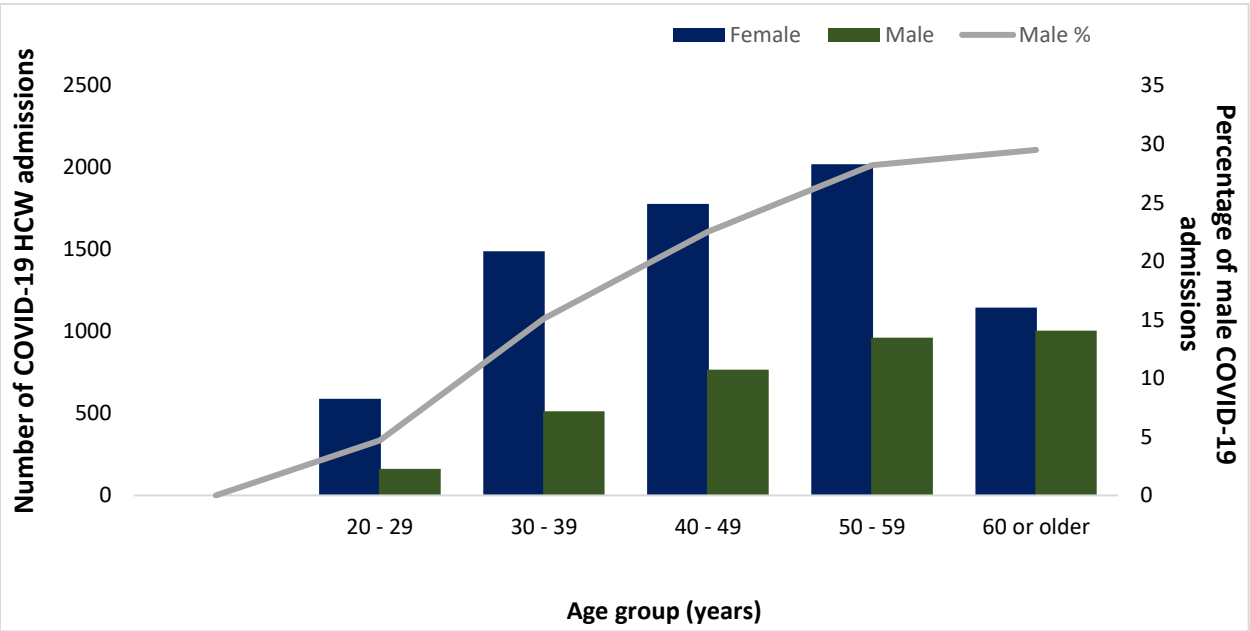


Figure 4: Number of reported HCW admitted with COVID-19 by age, gender and percentage of males, South Africa, 5 March 2020 –19 March 2022 (n=10429).

The prevalence of comorbid diseases among HCW was 4553/8885 (51.2%). Among the 8885 HCWs with one or more comorbid condition, the most commonly reported underlying condition were hypertension 35.1% (3129/8885) and diabetes 23.1% (1966/8885). There were 5.0 % (441/8885) HCWs that were HIV positive, 0.7% (68/8885 with active tuberculosis (TB) and 0.9% (76/8885) 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 – 19 March 2022 (n=8885)**

Comorbid disease*	Frequency (n)	Percentage (%)
Hypertension	3129	36.1
Diabetes mellitus	1966	23.1
Chronic cardiac disease	158	1.9
Chronic pulmonary disease/Asthma	585	6.9
Chronic renal disease	55	0.7
Malignancy	40	0.5
HIV	441	5.2
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 1718 (16.5%) HCWs admitted were treated in ICU, of these treated in ICU, 1042 (60.7%) required supplemental oxygen, 590 (34.3%) required invasive mechanical ventilation and 346 (33.2%) required both treatments. The mean age of patients who received oxygen or ventilation as an intervention (52.6 years) was significantly older than those who did not receive oxygen or ventilation intervention (46.2 years) ( $p < 0.0001$ ). Of the all HCW admissions treated with oxygen or ventilation, 1658/4091 (40.5%) had more than one comorbid disease ( $p < 0.001$ ).



## Outcomes

Of the 10429 HCWs admitted, 9047 (86.8%) were discharged alive, 103 (1.0%) transferred out to either high-level care or step-down facilities, 1263 (12.1%) had died and 16 (0.2%) were currently in hospital. The case fatality ratio (CFR) of HCWs with known in-hospital outcomes reported to DATCOV was 12.3% (1263/10310) compared to a CFR of 22.6% (99817/441184) among non-HCW admissions ( $p < 0.001$ ) (Figure 5).

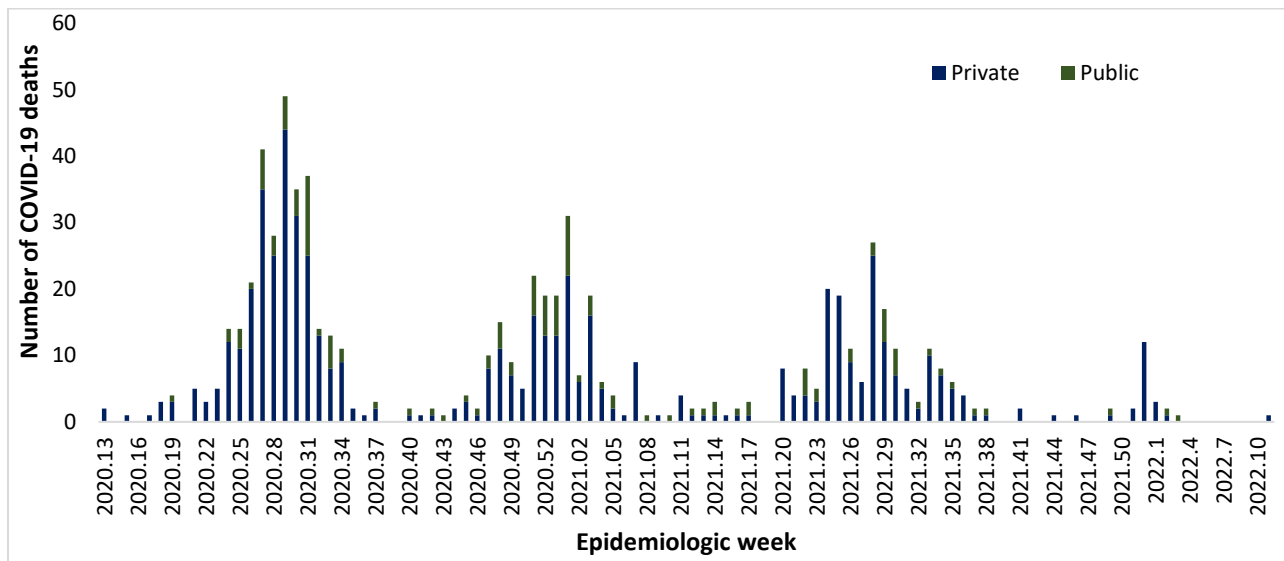


Figure 5. The number of reported COVID-19 deaths among admitted HCW by epidemiologic week in the private and public sector, South Africa, 5 March–19 March 2022.

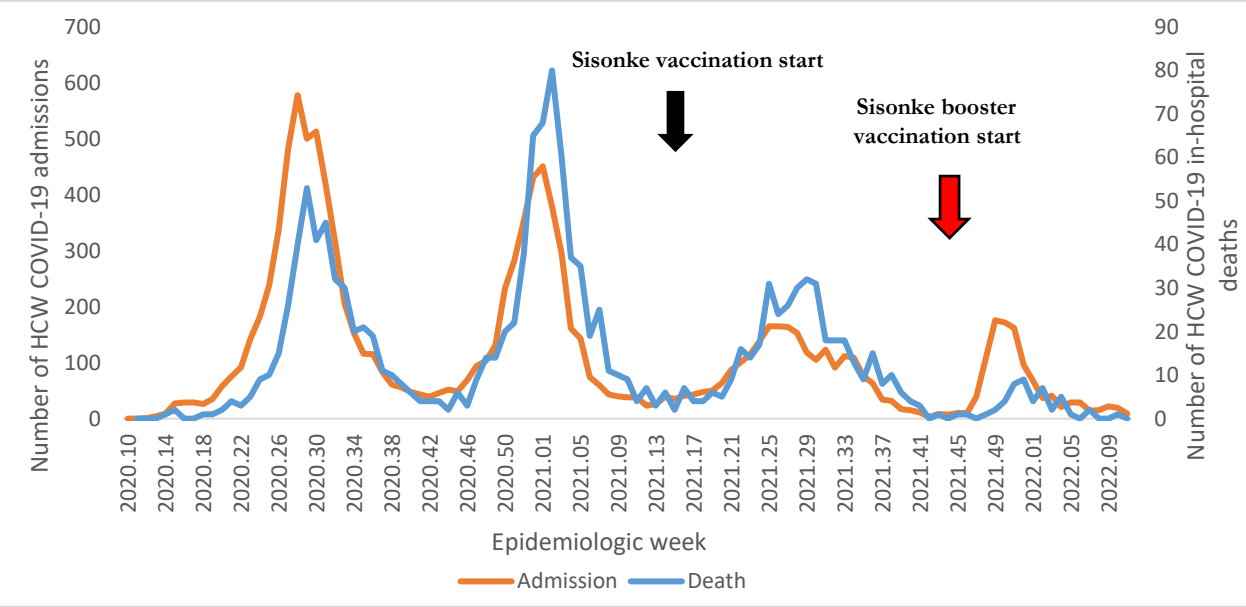
Please note that the mortality data presented was based on available information from reporting hospitals as of 13 November 2021. Deaths that were subsequently confirmed not to be of a HCW were removed from the data set.

The majority of deaths among HCWs admitted with COVID-19 were reported in Gauteng (402, 31.8%) and KwaZulu-Natal 306 (24.2%), followed by the Eastern Cape (217, 17.2%) provinces. Five hundred and sixty-seven (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-eight (60.0%) of the deceased were admitted at ICU, 380 (30.1%) were ventilated, and 759 (60.1%) 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, 783 (65.1%) had comorbid disease reported and 371 (29.3%) had more than one reported comorbidity. Hypertension 604 (51.3%), diabetes 426 (37.0%) and obesity 70 (24.9%) 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 3994/84060 (4.8%), 4031/176069 (2.3%), 1628/140670 (1.2%) and 776/60898 (1.3%) admissions, and 365/17367 (2.1%), 621/43604 (1.4%), 245/33997 (0.7%) and 31/6268 (0.5%) deaths amongst HCWs in the four waves respectively (Figure 6). The case fatality ratio (CFR) of HCWs in the four waves with known in-hospital outcomes reported to DATCOV was 9.2% (365/3949), 15.6% (621/3984), 15.2% (245/1614) and 4.2% (32/763).



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

The number of non-HCW admissions and in-hospital mortality was high in the second and third waves compared to the first and fourth waves. The case fatality ratio (CFR) of non-HCWs with known in-hospital outcomes reported to DATCOV was 21.5% (16966/78752), 25.5% (42905/168528), 24.7% (33721/136437) and 10.8 % (6225/57467) in the four waves.

## Conclusions

Vaccination for HCWs in South Africa started in February 2021, and the Sisonke booster vaccine was introduced in November 2021. The trends in cases show a decline in HCW admission in the third and fourth waves compared to the second and the first waves. The CFR of HCWs was higher in the second (Beta) and third (Delta) waves than in the first (D614G) and fourth (Omicron) waves. Breakthrough infections occurred in HCWs in the fourth wave even though the number of reported deaths were low when compare to the other waves. Acquired SARS-COV-2 immunity from prior infection and vaccination or both factors may be attributed to reduced severe disease in the fourth wave (Wolter et al, 2022).

## Acknowledgements

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## 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.