University of Cape Town

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CLINICAL PROFILE OF PATIENTS WHO DIED OF COVID-19 INFECTION AT A FIELD HOSPITAL IN CAPE TOWN

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KRKABH001

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DECLARATION

I, Abhaya Singh Karki, hereby declare that the work on which this dissertation/thesis is based is my original work (except where acknowledgements indicate otherwise) and that neither the whole work nor any part of it has been, is being, or is to be submitted for another degree in this or any other university.

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ABSTRACT

Background: In May 2020, Cape Town was designated as the COVID-19 outbreak's epicenter in South Africa. As the infection spread so did admissions in hospitals and mortality among the infected. Field hospitals were established to take the burden off the hospitals, however, the mortality rate in these facilities has not been described yet. This study describes the clinical profile and characteristics of patients who died in this field hospital.

Methods: This was a single-center, retrospective cross-sectional study involving secondary dataset and folder review of patients who died in Cape Town International Convention Center (CTICC), Hospital of Hope during its commission from June 2020 to August 2020.

Results: During its period of operation the CTICC had 1502 admissions and 83 deaths giving a mortality rate of 5.53%. Among the patients who died, 55% were female and 77% were older than 60 years. Most patients (75%) had more than two comorbidities. Of these patients 71% had hypertension and 45% had diabetes. As per the CTICC admission category, 77% were category three patients who were either terminally ill or referred to as not for further escalation. Blood results showed that 77.14% of patients had high D-dimer and 97.7% had high CRP.

Conclusions: The CTICC field hospital was the first intermediate care facility in South Africa born out of a time of need. The mortality rate at this field hospital was 5.53%. Further studies should explore the benefits of palliative care on patients who were admitted as not for escalation.

KEY WORDS

COVID-19, death, clinical profile, field hospital, mortality, South Africa

INTRODUCTION

On 09 January 2020, the World Health Organization (WHO) reported that the cluster of pneumonia in Wuhan, China, was caused by a novel coronavirus.(1) Prior to this, there were two other coronavirus outbreaks. In 2002, severe acute respiratory syndrome coronavirus (SARS-CoV) that was identified in China and had a mortality rate of 10%, while the Middle East respiratory syndrome coronavirus (MERS-CoV) that originated in Saudi Arabia in 2012, had a mortality rate of 34.4%. Although the novel coronavirus has a lower mortality rate of 4%, it is highly contagious.(2) A multicentre meta-analysis of 43 studies from different hospitals in China involving 3600 patients showed a mortality rate of 3.6%.(3) The outbreak had spread from a marketplace in Wuhan, China, in December 2019, to over 213 countries and had infected more than 29 million people with 900 000 fatalities within nine months.(4)

SARS-CoV-2 belongs to the family Coronaviridae of the Nidovirales order.(5) Coronaviruses are large, enveloped, positive-strand RNA viruses. Studies have shown that COVID-19 uses the ACE2 receptor to gain entry to the epithelial cells of respiratory tracts and mucosal linings of eyelids, nasal cavity, lip and oral cavity.(6) Contaminations of surfaces and hands from the virus spread to other people. The incubation period is then 2-9 days, after which the symptoms appear. The majority of symptoms are mild, and most people experience fever, cough, and shortness of breath.(7) Although most cases are mild to moderate, 14% of the cases are severe, and 5% are critical.(8) People who have multiple comorbidities especially pre-existing cardiopulmonary conditions and old age seem to be at major risk for morbidity and mortality.(3,7,9) SARS-CoV-2 has high virulence and transmissibility because of its ability to increase the frequency of mutations in the genetic sequence of the virus among people from different countries.(9)

There have been many studies to date regarding the risk factors and mortality related to COVID-19 infection. Some European countries considered older people as a vulnerable population group, and in other countries, obesity was found to be a risk factor. Jordan in his study reports that patients above the age of 70 are considered high risk.(10) The studies that were conducted at the tertiary level with ICU facilities have used a sequential organ failure (SOFA) score to predict mortality.(11) The SOFA score predicts mortality based on the dysfunction of six organ systems (respiratory, coagulation, hepatic, central nervous, renal and cardiovascular systems). A study done in Wuhan, China showed that old age, high SOFA score and high D-dimer were risk factors for death.(12) This study is supported by another single-centre study from Wuhan which showed old age, male sex and chronic hypertension and other cardiovascular comorbidities as major risk factors for mortality.(13) A study from New York showed that old age, male sex, hypotension, tachypnoea, hypoxia, and renal impairment were associated with

high in-patient mortality.(14) Dietz made the observation and assumption that the increased prevalence of obesity in the older population in Italy may have accounted for the higher number of fatalities compared to China.(15) Other studies have shown that patients with diabetes are at an increased risk for complications and death with COVID-19.(16) A Swedish study of 255 randomly selected patients with COVID-19 infection postulated that in older patients clinical frailty score was the only predictor of death in a multivariate study.(17) South Africa, with higher HIV and TB prevalence, a relatively younger population, and higher levels of poverty than the countries where these data were collected, presents an interesting dilemma when considering mortality risk factors.(18)

As early as February 2020, the African fragile health ecosystem and its capacity to fight the pandemic were under scrutiny by the WHO. The WHO had prioritized supporting South Africa and twelve other countries based on its close trade ties with China.(19) The first case of COVID-19 infection in the Western Cape (WC), South Africa, was confirmed on 11 March 2020.(20) The 36-year-old patient had a travel history to Europe and presented with flu-like symptoms. As a major tourist destination with direct flights linking to the rest of the world, the WC province had been under an uncomfortable spotlight during the early phase of the pandemic. The high burden of infectious and chronic diseases and the crowded informal settlements around the urban areas were considered unchartered territory, and how it would affect the general population was yet to be known. On 21 May 2020 with more than 12 000 cases reported, Cape Town had 63% of South Africa's positive cases and was declared the epicentre of the COVID-19 outbreak in South Africa and the government advisory committee had painted a grim picture of 40 000 – 45 000 COVID-19-related mortalities by the end of November 2020.(21)
As the number of cases increased in the WC, health officials were tasked to test, contain and manage this disaster.(19) Cape Town like all the other major cities in South Africa was already struggling with the quadruple disease burden roughly categorized as HIV and Aids, violence and trauma, chronic non-communicable diseases and conditions related to maternal and child health.(22) The thinly stretched resources in the public health sector were further burdened by increasing admissions due to COVID-19 infection. Hospitals were running out of beds for patients who required oxygen support. The scarcity of ICU facilities and ventilators compounded by a low number of skilled personnel to run such units meant that South Africa could be facing unsurmountable numbers of preventable deaths.

This problem gave rise to the conceptualisation of field hospitals. These field hospitals were to provide crucial support to the patients and give relief to the hospitals in the metro. The CTICC was born out of necessity. It was conceptualised in mid-May 2020, and by June 2020, the hospital situated in the financial hub of the city was commissioned to receive patients from other hospitals.(23) The facility was aimed at providing space for people to recover and allowing other hospitals to provide acute and critical care.(24) The 862 bedded facility deemed Africa's largest COVID-19 response facility started

admitting patients on 08 June 2020.(23) By the time the last patient was discharged on 18 August 2020, a total of 1502 patients had been admitted, and 83 of them had died during admission.

This study seeks to contribute to this growing data by describing the profile and characteristics of those people who died, and the predictability of their deaths during their admission to the CTICC.

OBJECTIVES:

1. To describe the demographic profile of the patients who died at CTICC.
2. To describe the key clinical characteristics of patients who died at the CTICC.
3. To identify factors that contributed to expected and unexpected deaths in this cohort.

METHODOLOGY

Study Design

This was a single-centre, retrospective cross-sectional study, involving secondary analysis of a clinical dataset and folder review of patients who died in the CTICC during its commission from June 2020 to August 2020.

Study Site

The CTICC was temporarily converted into a field hospital during the first wave of the pandemic. It was aptly named the Hospital of Hope. This field hospital situated in the financial hub of Cape Town was the site of this study. The halls were converted to one big 863 bedded ward with different sections and all beds were equipped with an oxygen port. The University of Cape Town's Division of Family Medicine department was given the opportunity to manage and provide holistic care to patients. After admission by the admitting team led by emergency physicians, the patients were then transferred to one of the firms led by internal medicine consultant, family physician or senior registrar based on their care needs. These firms were supported by a strong compliment of nurses, physical therapists, pharmacists and social workers. As an Intermediate Care Bed Facility (ICBF) the patients admitted at CTICC were classified into three categories. Category 1 includes younger patients with a good baseline requiring minimal nursing care, some observation and possible early discharge in stable condition. Category 2 includes patients with comorbidities and COVID-19 requiring nursing support for comorbidities and were at risk of deterioration and category 3 patients were severely ill patients requiring comfort care and not for further escalation. They were palliative either because of severe COVID and not ICU candidates due to their other underlying conditions or they had an underlying terminal illness and suffered from COVID-19. These patients were expected to die in the facility.

Study Population

The study population included all patients who died during their admission to the CTICC. No sampling was applied, as all patients were included.

Inclusion Criteria:

Patients who died during their admission at the CTICC.

Exclusion Criteria:

Patients who died at other facilities after being transferred from the CTICC.

Data collection and analysis

Using the data extraction tool, all relevant data were extracted from the facility's electronic record systems and the pre-approved database, and scanned versions of the folders of all the deceased patients were reviewed (all hardcopies were destroyed as part of the decommissioning process). The data obtained from these folders were collated onto an Excel spreadsheet. A pilot study involving five folders was done and the validity of the data was assessed against the study objectives.

Categorical variables were analysed and reported as proportions and frequencies, while continuous variables were presented as means with standard deviations and confidence intervals or medians and interquartile ranges, depending on the data distribution. Using expected/unexpected deaths as independent variables, correlations between clinical and demographic variables were searched. The strengths of correlations were further investigated with logistic regression.

Ethical Considerations

The study complied with the Helsinki code of ethics and procedures.(25) This research proposal was submitted for ethical approval to the Faculty of Health Sciences' Human Research Ethics Committee (HREC Ref 502/2020) and Western Cape Provincial Research Committee for access approval (Ref WC_202010_037).

The study was driven by the ethical principle of beneficence. Anonymity of the patients involved in this study was strictly maintained by deleting the patients' names. The result of the study may aid other temporary intermediate care facilities and impact the care of the patients.

RESULTS

The CTICC, had 1502 admissions during its time as an ICBF, with a total of 83 deaths, giving a mortality rate of 5.53% in this facility.

Eighty-three patient folders were included in the study. Of the patients who died during their stay who had a COVID-19 infection, 55% (n=46) were female and 45% (n=37) male. As shown in Figure 1, the majority (77%) were older than 60-years. The mean age was 70.1 years (IQR: 60-80).

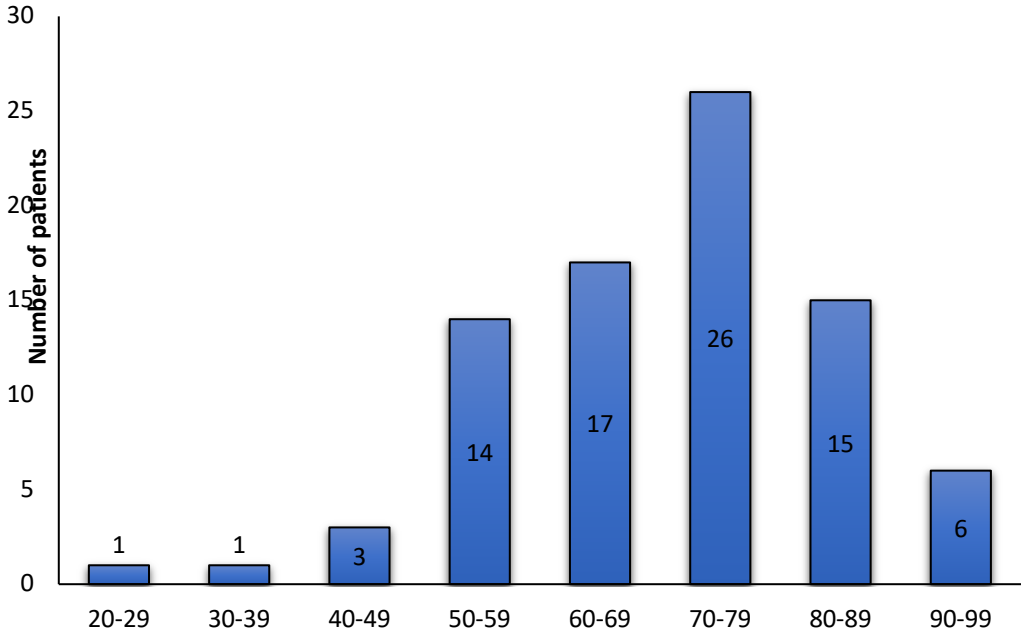

Figure 1: Age distribution of patients

Patient Profile

As depicted in Figure 2, over two-thirds (71%) of the patients had hypertension and almost half (45%) of the patients suffered from diabetes. Other comorbidities included chronic kidney disease (CKD), acute kidney injury (AKI), dementia, asthma, and HIV. Twenty three patients (28%) were known with CKD whereas 18 patients (22%) developed AKI during their course of COVID-19 infection. Surprisingly, only 5% (n=4) of patients were HIV positive. Most patients (75%) had more than one comorbidity. A total of 20% of patients had two comorbidities, 25% had three, 20% had four and 10% had five or more comorbidities.

As per the CTICC ICBF classification system, patients were grouped into three categories. None of the patients who died belonged to category 1. There were 19 (23%) patients who were classified category 2 patients, and the rest 64 (77%) patients were from category 3.

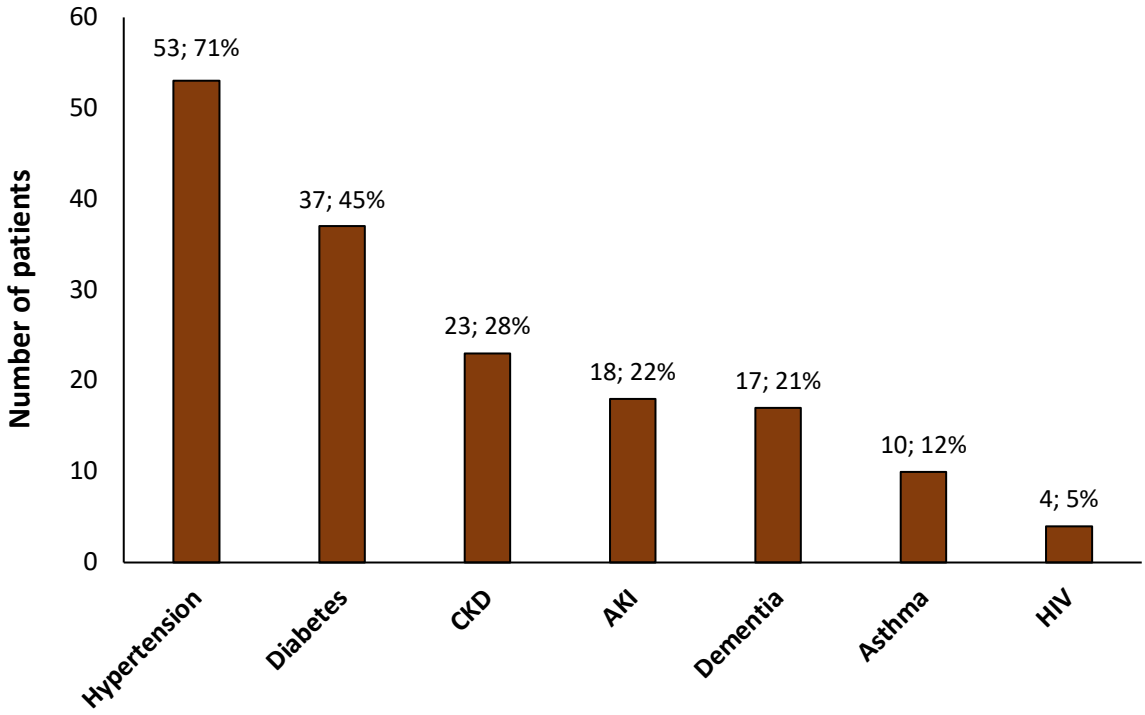

Figure 2: Comorbidities of patients *HIV data based on 75 patients

One-fifth of patients were managing well according to their baseline frailty score, while almost half (47%) were vulnerable to moderately frail. One-sixth of patients were very severely frail or terminally ill (Figure 3).

According to their frailty score, 14 patients (19.4%) were classified as healthy, 20 (27.8%) were at some risk, 31 (43.1%) were high risk, and 7 (9.7%) were terminally ill.

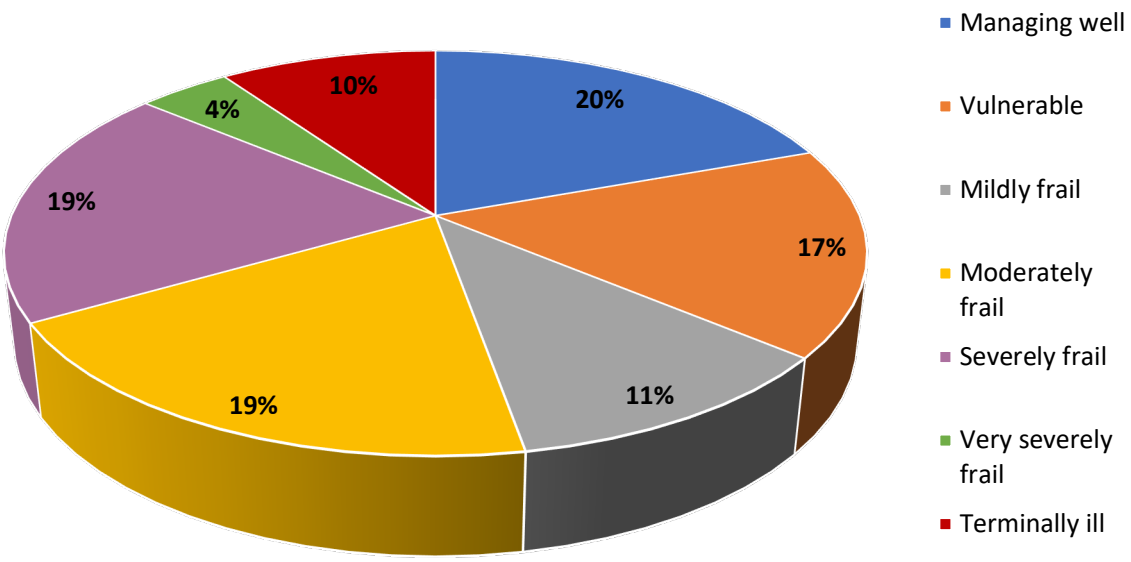

Figure 3: Functional baseline (frailty score) of patients

Clinical profile

The mean number of days symptomatic before presentation to health care facility was 5.83 days (Table 1). The mean length of stay (LOS) in the referring hospital was 11 and the mean LOS at the CTICC was 5.7. Overall, patients spent a mean LOS of 17 days in any health care facility (referring hospital and CTICC combined).

Table 1. Clinical Profile

	N	*M*	*SD*	Range	Media	IQR
Number days of symptoms before death	64	5.83	4.17	1 – 21	5	3 - 7
Number days admitted to the hospital	78	11.37	7.95	0 – 45	9	6 - 14
Number of days admitted at CTICC	83	5.70	4.71	0 – 25	4	3 – 7

n = number of folders with the data; M = Mean; SD = standard deviation

The baseline vital signs on admission at CTICC show that 27 patients (32.5%) were tachycardic. On arrival 72% of patients had normal blood pressure and only 26% had high blood pressure and only two patients (2.5%) were hypotensive. Importantly, 77% of the patients were hypoxic on admission and, fortunately, 72% were coping with supplemental oxygen. There were 5% of patients who were still hypoxic even with oxygen therapy.

Table 2. Clinical Characteristics

	N	%
Vital signs on transfer		
Blood pressure		
Normal	29	36.3
Optimal	12	15
High normal	18	22.5
Grade 1	17	21.3
Grade 2	4	5
Grade 3	0	0
Hypotensive	2	2.5
Unrecordable	1	1.25
Pulse		
Normal (60-100bpm)	56	69
High (>100bpm)	25	31
Oxygen support on transfer to the CTICC		
RA	11	13.4
NC	27	32.9
FM	14	17.1
NRB	24	29.3
DB	6	7.3
Treatment received at the CTICC		
Oxygen support before death		
RA	8	9.6
NC	24	28.9
FM	8	9.6
NRB	29	34.9
DB	14	17.1
Antibiotics (yes)	37	45.7
Steroid (yes)	56	70
Anticoagulation (yes)	69	94.5

RA = Room Air; NC = Nasal Canula; FM = Face mask; NRB = Non-rebreather mask; DB = Double barrel oxygen support (nasal canula and non-rebreather mask)

Treatment

The treatment was as per provincial guidelines and best practices at that time. Oxygen supplementation was increased as per patients' clinical requirements. Oxygen demand increased in patients as they deteriorated as shown in Table 2. Where there is increased use of higher flow oxygen prior to demise. Within this cohort, 70% of patients received steroids and 95% of patients were on either prophylactic

or therapeutic low molecular weight heparin (Table 2). In terms of antimicrobial therapy, 46% of patients had received antibiotics at the referring facility or were started at CTICC.

Use of special investigations

Laboratory investigations showed that 54.2% of patients had raised creatine indicating renal impairment (Table 3). Of the diabetic patients who died in the CTICC, 54.3 (19 of 35 patients) had high HbA1C (normal <7.1). D-dimer tests showed that 77.14% of the 35 patients tested had high D-dimer (>0.5mg/L) and 97.7% (44 of 45 patients) had high CRP (>10mg/L). Among the deceased, 78 (94%) of patients were referred appropriately as per the admission criteria of CTICC. Four (5%) patients could have possibly been escalated and cared for in their referring hospital rather than being referred to the ICF. One patient died during the transfer from the referring hospital to the CTICC.

Table 3. Investigations

Lab Results	Number	% Normal	% Abnormal
Creatinine	83	45.8	54.2
HbA1C	35	45.7	54.3
D-dimer	35	22.86	77.14
CRP	45	2.3	97.7

Factors associated with increased mortality risk

Mann-Whitney *U* tests compared continuous demographic and clinical characteristics between patients admitted with COVID-19 plus comorbidities (unexpected deaths; $n = 19$) and patients admitted for palliative care (expected deaths; $n = 64$). Significant between-group differences were detected only for age ($p < .001$) and frailty score ($p = .006$). Patients who were expected to die were significantly older (median = 75.5 vs 59 years) and had significantly higher frailty scores (median = 6 vs 4) compared to patients who were not expected to die.

DISCUSSION

This study was done on one of the first and the biggest field hospitals dedicated to COVID-19 care in Africa. The service of CTICC was able to achieve good outcome to the vulnerable patients suffering from COVID-19 infection.(26) Furthermore, there are indication that raised DDimer and CRP were associated with increased mortality even though our descriptive study was unable to provide direct causation. The high CRP and D-dimer in elderly patients might help clinicians to anticipate possible

adverse outcomes. This, in turn will initiate good communication with families regarding the high risk and will also help families to understand the severity of the illness.

The role that CTICC played as an ICBF during the first wave of COVID-19 in Cape Town cannot be understated. This facility was commissioned to mitigate the potential overcrowding of existing hospitals and provide care for the patients who were suffering from COVID-19 infection. As of May 2020, it was clear that the public health care system would not cope with the increasing admissions due to COVID-19 complications. The CTICC admission criteria were dynamic and changed according to the need at the time.(27) Our admissions included recovering patients who needed oxygen and nursing care, vulnerable patients from old age facilities during the outbreak, high-risk diabetic patients with COVID infection and patients who needed palliative care but could not be admitted to the hospice due to bed shortage or infection control.(27)

This study looked at the characteristics of patients who died in a field hospital in South Africa. The most significant finding of this study was that older age and frail patients had a significant risk of dying compared to younger patients and those with good healthier baseline. Most patients who died in the CTICC were between the age of 50-89 (87%) with a mean age of 70.1 years (SD=13.5 range:29-98). In a big study of a cohort of 470 034 participants, Ho concludes that older age is an independent risk factor for COVID-19 mortality.(28) Another study found that in patients who were older than 65, clinical frailty score was the strongest prognostic factor for death.(17). Impaired immune response to the infection especially among frail and elderly patients could explain the high mortality rate in these cohorts.(17)

The mortality rate for CTICC was 5.53%. However, mortality rates varied with each facility as they had different admission criteria. Acute hospitals seeing complicated patients in ICU and high care settings had higher mortality rates compared to the field hospital setting. One of the first COVID-19 mortality studies from China showed a mortality rate of 4%.(2). During the first wave a multicentre meta-analysis of 43 papers from different hospitals in China showed a mortality of 3.6%.(3). In-hospital mortality of COVID-19 across the globe varies greatly, the US showed an in-hospital mortality rate of 22.3%, Europe 22.9% and in Asia, it was only 12.65%.(29) The in-hospital mortality of CTICC was much lower, but this could be due to the difference in admission criteria of patients compared to acute hospitals. Patients admitted at CTICC were referred from acute hospitals and very ill and critical patients were not transferred. A more comparable study done in New York at an overflow field hospital had in-facility mortality of 6.75%.(29)

There were more female patients (56.4%) admitted to CTICC compared to males.(27) Result shows that more female patients died in CTICC (55%) compared to male patients but when adjusted to the

total admission rate, there was a slight increase in mortality ratio among male patients, an increase from 43.6% to 45%. Most studies show that males have a higher mortality rate than females.(13)

The mean length of stay in the hospital was 5.7 days (range 0-25) before the patients' death. These patients had spent a further 7.95 days (mean with range 0-45) at the referring hospital before being transferred to CTICC. The overall mean length of stay for all admissions was 6 days at the CTICC. Studies from other field hospitals have shown a median length of stay of 4.6-5.0 days.(30)

The majority of our patients had multiple comorbidities. Of the 83 patients who died, only one patient did not have any record of chronic disease, 80% of the patients had two or more comorbidities. The majority of these patients had hypertension (71%) followed by diabetes (45%). Other comorbidities included CKD, dementia, asthma and HIV. Various literature shows that multiple comorbidities have been linked with mortality in patients suffering from COVID-19 infection.(10,12,13,14,16). In one of the early COVID-19 studies, 78% of patients who died from COVID-19 infection had more than 1 comorbidity.(31) Of the 71% of patients who had hypertension 72% of these patients had normal blood pressure on arrival. As these patients were referred from other hospitals, they were already optimised on their chronic medication before the transfer. Two patients were hypotensive on arrival and these patients were referred for ongoing comfort and palliative care. A total of 31% of patients were tachycardic on arrival. Tachycardia in COVID-19 patients was also observed in various other studies. An early study among 79 patients who were critically ill with COVID-19 in China showed that 24% of these patients were tachycardic.(32) The majority of patients referred to the CTICC needed oxygen support. Supplemental oxygen was required by 89% of patients on transfer and their hypoxia worsened preterminally and they required a higher level of oxygenation. Hypoxia is one of the more severe complications of COVID-19 infection and a major cause of death.(33)

Most work-up and investigations for patients were already done at the referring hospital. At the CTICC, investigations were done sparingly for complications developed in hospital rather than confirmation of COVID-19 infection. D-dimer and CRP were raised in most of the participants in whom it was tested at 77% and 97% respectively. Other studies have also shown that high D-dimer and CRP as indicators for patient mortality and impending deterioration.(34)

Among the diabetic patients who died, 54% of these patients had uncontrolled diabetes as reflected by high HbA1C. The diabetic study done at the CTICC showed that elevated HbA1C was not predictive of poor outcomes in the field hospital setting as it had different admission criteria for diabetic patients.(33). The community admissions of relatively stable diabetic patients, admission after acute care facility and good interfacility engagements and desirability of systemic collaboration and inclusive

pandemic response showed good care of patients with diabetes in a field hospital setting have contributed to better outcomes for diabetic patients.(26)

One of the major findings of this study was the significant mortality rate among patients who were classified as category 3 patients. These were the patients who were either referred for palliative care or were too frail and had a high possibility of dying during admission. The admission category system was able to identify high-risk patients, and older category 3 patients (>75 years) and patients with higher frailty scores (6 and above) had significant mortality risk.

This study had several limitations. The study only included in-hospital deaths and patients who had been referred to tertiary centres for escalation of care were not accounted for. This study also relied on descriptive data from the folders that were scanned and stored in the database. Some of the known high-risk factors like obesity could not be analysed as not all patients had a BMI or visual description recorded. The limited use of investigations in the hospital also meant that SOFA score could not be correctly calculated in most cases, and we could not use this marker to compare with other studies done in acute hospitals. Similarly, not all participants had been tested for DDimer and CRP levels, although for most of those who were tested the level were increased.

As the first field hospital in South Africa, treatment guidelines and new protocols were still being created and some of the early admissions did not receive the same treatment as patients who were admitted at a later stage. With the family medicine influence, a great deal of attention was paid to psychosocial issues and facilitating communication with families, but this was not captured in the dataset.

A key recommendation would be to highlight the role of the CTICC admission classification system, which grouped patients according to risk of in-hospital mortality. In future, these high-risk patients based on this classification system can be cared for appropriately and the families should be involved sooner hence providing proper palliative care to the patients on time and counselling on outcomes and prognosis to the family members. Further studies can explore the psychosocial impact of death on families and health care workers; the correlation between predictors of poor outcome and quality of care based on early palliative care to high mortality risk patients.

CONCLUSION

The CTICC field hospital was commissioned with a sense of urgency during a time of great need. The surrounding acute care hospitals would not have been able to cope with the escalating admission load

of recovering patients to be weaned off oxygen or other patients who needed end-of-life palliative care. The CTICC was able to provide care for these patients. With an in-hospital mortality of around 5%, this field hospital was able to provide sound in-patient intermediate care, with a mortality comparable to other field hospitals around the globe.

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1. Clinical Frailty Scale

Clinical Frailty Scale*

1 **Very Fit** – People who are robust, active, energetic and motivated. These people commonly exercise regularly. They are among the fittest for their age.

2 **Well** – People who have **no active disease symptoms** but are less fit than category 1. Often, they exercise or are very **active occasionally**, e.g. seasonally.

3 **Managing Well** – People whose **medical problems are well controlled,** but are **not regularly active** beyond routine walking.

4 **Vulnerable** – While **not dependent** on others for daily help, often **symptoms limit activities.** A common complaint is being "slowed up", and/or being tired during the day.

5 **Mildly Frail** – These people often have **more evident slowing,** and need help in **high order IADLs** (finances, transportation, heavy housework, medications). Typically, mild frailty progressively impairs shopping and walking outside alone, meal preparation and housework.

6 **Moderately Frail** – People need help with **all outside activities** and with **keeping house**. Inside, they often have problems with stairs and need **help with bathing** and might need minimal assistance (cuing, standby) with dressing.

7 **Severely Frail** – **Completely dependent for personal care**, from whatever cause (physical or cognitive). Even so, they seem stable and not at high risk of dying (within ~ 6 months).

8 **Very Severely Frail** – Completely dependent, approaching the end of life. Typically, they could not recover even from a minor illness.

9. **Terminally Ill** - Approaching the end of life. This category applies to people with **a life expectancy <6 months**, who are **not otherwise evidently frail.**

Scoring frailty in people with dementia

The degree of frailty corresponds to the degree of dementia. Common **symptoms in mild dementia** include forgetting the details of a recent event, though still remembering the event itself, repeating the same question/story and social withdrawal.

In **moderate dementia**, recent memory is very impaired, even though they seemingly can remember their past life events well. They can do personal care with prompting.

In **severe dementia**, they cannot do personal care without help.

* 1. Canadian Study on Health & Aging. Revised 2008.
2. K. Rockwood et al. A global clinical measure of fitness and frailty in elderly people. CMAJ 2005;173:489-495.

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2. CTICC Hospital of Hope Patient's Admission Category:

Our experiences and reflections since 8 June suggests the following classification system for CTICC ICBF patients:

Category	Characteristics / Admission criteria	Important considerations
I – Covid only	1. Mobile and independent 2. Younger age (>18yrs), or good fitness level 3. Needs oxygen support 4. Minimal/no co-morbidities – key medical problem is Covid pneumonia	1. Lower nursing acuity 2. Higher chance of escalation – EM support needed **Discharge:** home 3. Off oxygen for 24hrs 4. ADL/mobility independent 5. Clinically stable 6. past infective phase 7. Clear follow-up plan at CHC
II – Covid + co-morbid	1. Variable mobility & independance 2. Has co-morbidities ie clinical complexity – Diabetes, HIV, Obesity, HPT - may outweigh the Covid issues in clinical acuity 3. Needs oxygen	1. Higher nursing and medical demands 2. Risk of decompensation from co-morbid conditions – IM support needed 3. Higher risk of in-facility death **Discharge:** 1. Home – social worker input early: off oxygen >24hrs; past infective phase; return to acceptable baseline; clinically stable; clear follow-up plan (CHC or OPD) 2. Death SOP
III - Palliative	1. Severely limited mobility and ADL's 2. Palliative care ie symptom control and quality of life 3. Palliation may be due to Covid or non-Covid 4. Needs oxygen, or cannot go home or isolation facility	1. High nursing acuity 2. Pastoral and social care intense and early 3. High risk of in-facility death Discharge: 1. home c/o family – as early as possible: off oxygen; past infective phase; clear plan with resources in place 2. Death SoP

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2020.06.17

3. Instruments

The data collated from the facility's electronic record system included the following in the data extraction tool.

1. Folder number
2. Demographics
    a. Age of the patient
    b. Sex
3. Patient profile
    a. Co-morbidities
    b. Functional baseline (frailty score)
    c. Admission category of the patient (Covid-19 only, Covid-19 and comorbidities or Palliative)
4. Patients clinical characteristics
    a. number of days of symptoms before demise
    b. number of days admitted in the hospital
    c. number of days admitted at CTICC, HOH
    d. highest Oxygen support at referring hospital
    e. Oxygen support on transfer to CTICC, HOH
    f. Vital signs on transfer (BP, pulse, Oxygen saturation)
    g. Lab results: Creatinine, HbA1C (where applicable), D. Dimer, CRP, CD4 and VL (where applicable)
5. Treatment received at CTICC, HOH
    a. Oxygen support prior to demise
    b. Antibiotics
    c. Steroid
    d. Anticoagulation
6. Appropriate referral to intermediate care? (based on patient's profile and clinical characteristics)

SOFA Score Table

The Sequential Organ Failure Assessment (SOFA) score

SOFA score	1	2	3	4
Respiration[a]				
PaO_2/FIO_2 (mm Hg)	<400	<300	<220	<100
SaO_2/FIO_2	221-301	142-220	67-141	<67
Coagulation				
Platelets $\times 10^3/mm^3$	<150	<100	<50	<20
Liver				
Bilirubin (mg/dL)	1.2-1.9	2.0-5.9	6.0-11.9	>12.0
Cardiovascular[b]				
Hypotension	MAP <70	Dopamine ≤5 or dobutamine (any)	Dopamine >5 or norepinephrine ≤0.1	Dopamine >15 or norepinephrine >0.1
CNS				
Glasgow Coma Score	13-14	10-12	6-9	<6
Renal				
Creatinine (mg/dL) or urine output (mL/d)	1.2-1.9	2.0-3.4	3.5-4.9 or <500	>5.0 or <200

MAP, mean arterial pressure; CNS, central nervous system; SaO_2, peripheral arterial oxygen saturation.

[a] PaO_2/FIO_2 ratio was used preferentially. If not available, the SaO_2/FIO_2 ratio was used

[b] vasoactive mediations administered for at least 1 hr (dopamine and norepinephrine μmg/kg/min).

SOFA Score, Jones AE (35)