



THE SOUTH AFRICAN MEDICAL ASSOCIATION

SARS-CoV-2 (COVID-19)

Guidance for Managing Ethical Issues

Version 1

7 April 2020

This is a living document. As such, it will be updated as COVID-19 evolves

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Preamble and Introduction

Ethical dilemmas in health care are common even under normal circumstances because health care responds to human suffering. To act ethically is integral to professionalism in health care. A surge of individuals seeking health care, as well as critically ill patients with COVID-19, disrupts normal processes for supporting ethically sound patient care.

COVID-19 is an acute viral infection that has reached pandemic proportions requiring an ethical reflection and response, rooted in human rights.

As a Nation, our health care resources are already limited. COVID-19 may tragically constrain those resources further, resulting in the loss of lives that would have been preventable under normal circumstances.

It cannot be denied that the duties and obligations of Doctors are the realities of the practice of medicine. Care is the foundation of medicine, and this foundation is strengthened by the oath Doctors take, committing their lives to the service and benefit of humanity. A Doctor's primary duty and obligation is to their patient; their health and well-being. There are, however, other duties and obligations (discussed in this document) that Doctors are expected to fulfil. These duties and obligations do not change during the COVID-19 pandemic - they are heightened; society puts a greater expectation on Doctors during this challenging time to fulfil their duties and obligations.

This document provides ethical guidelines for Doctors during the COVID-19, based on the World Health Organization's (WHO) *Guidance for Managing Ethical Issues in Infectious Disease Outbreaks*, adapted for the South African context. Furthermore, although this document provides ethical guidance for Doctors, the duties and obligations of government and society, in general, are also highlighted.

This guidance document draws on a variety of ethical principles, which are grouped below into several categories:

Justice —Justice, or fairness, encompasses two different concepts. The first is equity, which refers to fairness in the distribution of resources, opportunities, and outcomes. Key elements of equity include treating like cases alike, avoiding discrimination and exploitation, and being sensitive to persons who are especially vulnerable to harm or injustice.

The second aspect of justice is procedural justice, which refers to a fair process for making important moral decisions. Elements of procedural justice include due process, transparency, inclusiveness/community engagement, and oversight.

Beneficence — Beneficence refers to acts that are done for the benefit of others, such as efforts to relieve individuals' pain and suffering.

Utility — The principle of utility states that actions are right insofar as they promote the well-being of individuals or communities (balancing the potential benefits of an activity against any risks of harm) and efficiency (achieving the greatest benefits at the lowest possible cost).

Respect for persons — The term “respect for persons” refers to treating individuals in ways that are fitting to and informed by a recognition of our common humanity, dignity and inherent human rights. Respect for persons also includes paying attention to values such as privacy and confidentiality.

Reciprocity — Reciprocity consists of making a “fitting and proportional return” for contributions that people have made. Policies that encourage reciprocity can be an important means of promoting the principle of justice, as they can correct unfair disparities in the distribution of the benefits and burdens of epidemic response efforts.

Guidelines

1. Obligations and duties of Doctors

Effective outbreak response to COVID-19 depends on the valuable contribution of Doctors, some of whom may be working on a volunteer basis. During such a crisis, Doctors frequently assume a heightened personal risk to carry out their functions. Doctors' obligations and duties must be established, to ensure that all stakeholders are aware of what can be reasonably expected of them.

Being registered with the Health Professions Council of South Africa (HPCSA), Doctors have moral duties to themselves, patients, colleagues, and society. These duties are generally in keeping with the principles of the South African Constitution and the other obligations imposed by law. Doctors, therefore, have certain moral duties during a COVID-19 outbreak, which include the following:

- A duty to self - Doctors have a duty to take care of their own health and mental well-being, as failure to do so will render them incapable of delivering care to their patients. Doctors need to maintain and improve the standard of their professional knowledge and skills, regularly taking part in educational activities that enhance their ability to provide quality healthcare.
- A duty of care to patients - Pursuant to their oath, Doctors have a duty of reasonable clinical care towards patients. This duty is enhanced during pandemics like the COVID-19 crisis. The primary professional duty of a Doctor should be their concern for the best interests or well-being of their patients.
- A duty to colleagues and other professionals - During such distressing times, Doctors have a moral duty to regard all fellow professionals as colleagues and to treat them with dignity and respect. They should readily share relevant information in the patient's best interest and in particular, junior doctors should remain under the close supervision of their senior colleagues whilst simultaneously maintaining professionalism and care.
- A duty to society - During the COVID-19 crisis, Doctors, as custodians of health care, have a duty to deal responsibly with scarce healthcare resources, to refrain from providing services that are not needed and to refrain from unnecessary wastage. They should not participate in improper financial arrangements, especially those that escalate costs and disadvantage individuals or institutions unfairly.
- A duty to participate in public health and reporting efforts - Doctors have a duty to participate in measures to respond to the COVID-19 outbreak, including public health laws, surveillance and reporting. Doctors should remember to protect the confidentiality of patient information to the maximum extent compatible with relevant and applicable legalisation.
- A duty to provide accurate information to the public - Doctors have a duty not to spread unsubstantiated rumours or suspicion and ensure that information

they provide comes from reliable sources. Additionally, Doctors also have a duty to debunk false and inaccurate information about the COVID-19 disease.

- A duty to advocate - Doctors are uniquely positioned to function as advocates for patients, especially vulnerable patients, and the health care system, as they better than anyone else understand the needs of patients and the health care system. Advocacy, in the context of COVID-19, requires more than helping individual patients get the services they need; it requires working to address the root causes of the problems they face.
- A duty to avoid exploitation — In the context of a rapidly spreading life-threatening virus with no proven treatment, certain entities may want to offer any intervention, regardless of the expected risks or benefits for questionable reasons. Doctors have a duty not to exploit individuals' vulnerability by offering treatments or preventive measures for which there is no reasonable basis to believe that the potential benefits outweigh the uncertainties and risks.

Reciprocal obligations

Irrespective of whether a Doctor has a pre-existing duty to assume heightened risks during the COVID-19 outbreak, the Government, the Department of Health, the Private healthcare sector (both hospitals and funders) and society, in general, have reciprocal obligations to provide necessary support to Doctors. If the reciprocal obligations are not met, Doctors cannot morally be expected to assume a significant risk of harm to themselves and their families.

The fulfilment of these reciprocal obligations to Doctors include, at minimum, the following:

- Minimizing the risk of infection — Government, and indeed ALL service providers (including the Private Hospital groups treating Covid19 patients) have a reciprocal responsibility towards Doctors to ensure as safe as reasonably possible a working environment.

This includes providing Doctors with the necessary appropriate resources to minimize the risk of infection, i.e. PPE, facilities and equipment appropriate to the treatment of COVID-19 infections and, where appropriate, medical prophylaxis. This should also include training on the COVID-19 disease, providing Doctors with accurate information of the disease and regular screening of Doctors.

- Priority access to medical care — Doctors who become infected, as well as any immediate family members who become ill through consequent exposure, should be guaranteed access to the highest level of care reasonably available.
- Priority access to the Covid-19 vaccine once developed – Doctors, as front-line essential workers should have priority access to the Covid-19 vaccine. They

need to develop immunity so as to be available to manage patients with the disease.

- Assistance to family members — Assistance should be provided to the families of those Doctors who are not able to care for their families due to the execution of their duties.
- Minimizing the spread of COVID-19 – Society in so far as possible, has a reciprocal responsibility to adhere to any public health efforts to minimize the spread of COVID-19, i.e. adhering to the lockdown restrictions and social distancing, so as to not overwhelm the health care system.
- Leadership and Accountability– Management in the both the private and public sector have a duty to provide guidance and supervision to Doctors, particularly junior Doctors. As well as to ensure that Doctors are adhering to ethical and professional codes.

2. The Patient-Doctor interaction

The patient-Doctor relationship during the COVID-19 crisis may be characterised by a range of ethical issues, in particular those of informed consent, confidentiality and telehealth consultations.

Informed Consent

Generally, Doctors who treat competent patients without their consent violate the patient's constitutional rights and breach fundamental principles of medical ethics. However, Covid-19 has given rise to particular complexities with regard to consent. The following are guidance points for Doctors on obtaining consent when managing patients in this context:

If the situation is life-threatening and there is no proxy available, as may be the case during the COVID-19 crisis, and treatment is necessary to delay irreversible damage to the patient's health or to prevent death, the National Health Act (NHA) allows for treatment to be given without the consent of the patient or the proxy provided that the patient has not previously expressly, impliedly or by conduct refused such treatment.

Doctors must keep clear records of all reasons for the actions they take, especially if no form of informed consent was given by the patient or the patient's proxy or if there was no time to apply for a court order.

Limitations to autonomy in the context of COVID-19

Although the NHA stipulates that patients must give informed consent before the commencement of any treatment or procedure and this includes testing of any kind, section 4 for the Disaster Management Regulations states that no one may refuse medical investigation, testing or quarantine and isolation This implies that informed

consent is not strictly needed in certain *situations for the purposes of testing and treating COVID-19 - where this is necessary to protect the interests of the public.

**Persons who have been confirmed, as a clinical case or as a laboratory confirmed case as having contracted COVID -19, or who is suspected of having contracted COVID -19, or who has been in contact with a person who is a carrier of COVID -19.*

Confidentiality

Confidentiality during the COVID-19 crisis also raises ethical consideration where in certain instances there will be a requirement to limit confidentiality. Section 14 of the NHA states that no Doctor may disclose patient information unless:

1. The patient consents to that disclosure in writing;
2. A court order or any law requires that disclosure; or
3. Non-disclosure of the information represents a serious threat to public health.

Confidentiality Limitations and COVID-19

With regard to public health Covid-19 is a notifiable disease, hence the law imposes a mandatory limitation to confidentiality when a patient is diagnosed with the disease. In addition, Regulation 11H(5) of the Disaster Management Regulations states that:

No person may disclose any information contained in the COVID-19 tracing database or any information obtained through this regulation unless authorized to do so and unless the disclosure is necessary for the purpose of addressing, preventing or combatting the spread of COVID-19.

Telehealth and COVID-19

The HPCSA's amendment to its guidelines on telemedicine state that telehealth should preferably be practised in circumstances where there is an already established Doctor-patient relationship. However, where such a relationship does not exist, Doctors may still consult using telehealth, provided that such consultations are done in the best interest of patients. This therefore allows for telephonic and other forms of virtual consultations.

The guidelines allow for Doctors to charge for telehealth services but cautions against practices that may amount to over-servicing, perverse incentives and supersession.

3. Situations of vulnerability

Certain individuals and groups, including Doctors and their families, face heightened vulnerability during the Covid-19 pandemic. Efforts to address how individuals and groups may be vulnerable should consider the following:

- Difficulty accessing services and resources — Doctors may have difficulty accessing PPE thereby putting themselves and their families at risk. Some

individuals such as the poor, the disabled, the sick, and other vulnerable individuals may have difficulty accessing services and resources, particularly under lockdown conditions.

- Stigmatization and discrimination — Members of socially disadvantaged groups often face considerable stigma and discrimination, which can be exacerbated by the COVID-19 crisis.

Both government and Doctors should take measures to assist access to services and resources and to prevent stigmatization and discrimination.

4. Allocation of scarce resources

COVID-19 has the ability to quickly overwhelm the capacity of government and the healthcare system, forcing Doctors to make difficult decisions about the allocation of limited resources.

Priority scoring or triage can be ethically justified in the context of limited resources.

Most of these decisions involve the allocation of medical interventions, such as hospital beds, medications, ventilators, and other medical equipment. The principle of utility dictates that allocation of scarce resources take into consideration *inter alia* appropriate risk taking, futility of treatment, co-morbid conditions and other relevant factors.

The Critical Care Society of South Africa (CCSSA) provides useful triage guidance and utilises a frailty scale should the COVID-19 create a demand for critical care resources (e.g., ventilators, critical care beds) that would outstrip the supply. The principle of utility is used to maximize benefit to the majority of patients, specifically by maximizing survival to hospital discharge and beyond. (See annexure 1)

The SAMA endorses the CCSSA guidelines, which proposes as follows:

The triage system should be applied for all patients with serious illness who follow the normal requirements for ICU care, not just those with COVID-19.

Doctors should immediately stabilize any patient in need of critical care, irrespective of whether they have COVID-19. Temporary ventilatory support can be provided in combination with stabilisation to allow the triage team to assess the patient for vital resource allocation. Effort should be made to complete the initial triage evaluation within 90 minutes of recognizing the likelihood for use of critical care resources.

Doctors should remember to consider the patient's wishes with regard to ICU care. If the patient is incapacitated, guidelines under *patient-Doctor interaction* apply.

Guidance and allocation of scarce resources for critically ill patients

The CCSSA recommends using the Clinical Frailty Scale (CFS) to assess the patient

The CSF ranges from 1 to 9 as follows:

1. Very fit – those amongst the fittest for their age, and are very active and motivated.
2. Well – there is no active disease or symptoms, but not as active as in category 1.
3. Managing well – medical problems present, but well controlled. Not regularly active.
4. Vulnerable – not dependant on others for daily help, but symptoms limit activities.
5. Mildly frail – more evident slowing and need help in high order IADLS, e.g., finances, transport, etc.
6. Moderately frail – need help with all outside activities, keeping house, bathing and dressing.
7. Completely dependent for personal care, but are stable and not at high risk for dying (within 6 months)
8. Very severely frail – completely dependent, approaching the end of life and not able to recover from a minor illness.
9. Terminally ill – life expectancy of less than 6 months.
 - Patients with a CFS score ≥ 5 are to be offered a management plan excluding ICU.
 - The lower the score, the higher the likelihood of benefit from ICU care.

Thereafter a colour-coded Priority Score is created, taking into consideration the Sequential Organ Failure Score (SOFA) and other significant Co-morbidities. This guides decision-making by helping factor in patient prognosis.

For more detail on Priority Scoring, see Annexure 1

According to the WHO, supportive and palliative care should be provided to persons unable to access lifesaving resources — even when it is not possible to provide life-saving medical resources, e.g. ventilators, to all who could benefit from them, efforts should be made to ensure that no patients are abandoned. This is similar to the CCSSA triage guidelines.

To the extent possible, responsibilities should be separated and the interpretation of allocation principles should not be entrusted to Doctors who have pre-existing professional relationships that create an ethical obligation to advocate for the interests of specific patients.

Instead, decisions should be made by Doctors who have no personal or professional reasons to advocate for one patient over another.

5. Emergency use of unproven interventions outside of research

There is currently no proven effective intervention for the clinical management of COVID-19. Although there may be interventions that have shown promising safety and efficacy in the laboratory and relevant animal models, these have not yet been evaluated for safety and efficacy in humans. Under normal circumstances, such interventions undergo testing in clinical trials that can generate reliable evidence about safety and efficacy. However, in the context of an outbreak such as COVID-19, which is characterized by high mortality, it can be ethically appropriate to offer individual patients' experimental interventions on an emergency basis outside clinical trials.

WHO provides the following criteria for the ethical emergency use of unproven interventions outside of research:

10. no proven effective treatment exists;
11. it is not possible to initiate clinical studies immediately;
12. data providing preliminary support of the intervention's efficacy and safety are available, at least from laboratory or animal studies, and use of the intervention outside clinical trials has been suggested by an appropriately qualified scientific advisory committee based on a favourable risk-benefit analysis;
13. an appropriately qualified ethics committee has approved such use;
14. adequate resources are available to ensure that risks can be minimized;
15. the patient's informed consent is obtained; and
16. the emergency use of the intervention is monitored, and the results are documented and shared promptly with the wider medical and scientific community.

The ethical basis for emergency use of unproven interventions outside of research must be justified by the ethical principle of respect for patient autonomy — i.e. the right of individuals to make their risk-benefit assessments considering their values, goals and health conditions.

It must also be supported by the principle of beneficence — providing patients with available and reasonable opportunities to improve their condition, including measures that can plausibly mitigate extreme suffering and enhance survival.

Administering unproven interventions always involves risks, some of which will not be fully understood until further testing is conducted. However, any known risks associated with an intervention should be minimized to the extent reasonably possible.

Collection and sharing of meaningful data — Doctors overseeing and administering unproven interventions have a moral obligation to collect all scientifically relevant data on the safety and efficacy of the unproven intervention. Knowledge generated through should be collected across patients if possible and shared transparently, completely and rapidly. Doctors also have a duty to keep meticulous patient records.

Doctors also have a moral obligation to describe information accurately, without overstating benefits or understating uncertainties or risks.

Importance of informed consent — Individuals who are offered an unproven intervention should be made aware that the intervention might not benefit them and might even harm them. If the patient is unconscious, cognitively impaired, or too sick to understand the information, proxy consent should be obtained from a family member or other authorized or competent decision-maker.

6. Research during the COVID-19 outbreak

Research conducted during the COVID-19 outbreak should be designed and implemented ethically and rooted in human rights. The research should NOT compromise the public health response to the outbreak or the provision of appropriate clinical care. All clinical trials must be prospectively registered in an appropriate clinical trial registry.

There is a moral obligation to learn as much as possible as quickly as possible, to inform the ongoing public health response, and to allow for the proper scientific evaluation of new interventions being tested. Carrying out this obligation requires carefully designed and ethically conducted scientific research. In addition to clinical trials evaluating diagnostics, treatments or preventive measures such as vaccines, other types of research — including epidemiological, social science, and implementation studies — can play a critical role in reducing morbidity and mortality and addressing the social and economic consequences of the outbreak.

Researchers, government and Doctors ought to be guided by the principles of the Declaration of Helsinki. Doctors, in particular, are reminded that during the COVID-19 crisis they have a duty as a Doctor to promote and safeguard the health, well-being, and rights of patients, including those who are involved in medical research. The Doctor's knowledge and conscience are dedicated to the fulfilment of this duty.

7. Information collection and sharing

Accurate information collection and sharing are important under normal conditions. During the COVID-19 situation, information collection and sharing takes on increased urgency. Doctors who collect and share information have a responsibility to adequately protect the confidentiality of personal information while taking into consideration any laws, policies, and practices that are in effect during the COVID-19 situation. The Disaster Management Regulations (11H(5)) state that: No person may disclose any information contained in the COVID-19 Tracing Database or any information obtained through this regulation **unless authorized to do so and unless the disclosure is necessary for the purpose of addressing, preventing or combatting the spread of COVID-19.**

8. Obligations of government

The government plays a critical role in preventing the spread of and responding to COVID-19 by improving social and environmental conditions, ensuring a well-functioning and accessible health system, and engaging in public health surveillance and prevention activities. The government has an ethical obligation to ensure the long-term capacity and functioning of the health system necessary to carry out effective prevention and response efforts.

Key obligations of government:

- Protection of human rights – The Constitution of the Republic of South Africa is founded on the protection of human rights. The government has an obligation to ensure that human rights are upheld and protected during the COVID-19 crisis.
- Ensuring the sufficiency of national public health laws —The government should review public health laws to ensure that they have enough authority to respond effectively to the epidemic while also providing individuals with appropriate human rights protections.
- Adequate Resource Allocation – Adequate resource allocation, particularly scarce resource allocation is of paramount importance during the COVID-19 crisis. The government has an obligation to ensure the ethical and rational allocation of resources needed to combat the COVID-19 outbreak.
- Participating in global surveillance and preparedness efforts — The government has an obligation to provide rapid notification and surveillance to the global community. Additionally, the government should develop adequate preparedness plans and guide relevant health-care facilities to implement the plans.
- Involving society - All aspects of the COVID-19 response efforts should be supported by early and ongoing engagement with the broader South African (SA) society. In addition to being ethically important, societal engagement is essential to establishing and maintaining trust and preserving social order.

Involving the broader society fully in the COVID-19 outbreak planning and response efforts entail attention to the following issues:

- Inclusiveness — The SA society should have opportunities to make their voices heard in all stages of outbreak planning and response, either directly or through legitimate representatives (i.e. community leaders). Adequate communication platforms and tools should be put in place to facilitate public communication with health officials.

- Openness to diverse perspectives — Communication efforts should be designed to facilitate a genuine two-way dialogue and include all members of society.
- Transparency — The ethical principle of transparency requires that the government publicly explain the basis for decisions. When decisions must be made in the face of uncertain information, the uncertainties should be explicitly acknowledged and conveyed to the public.
- Accountability — Society should know who is responsible for making and implementing decisions concerning the COVID-19 outbreak response, and how they can challenge decisions they believe are inappropriate or a violation of their human rights.
- Situations of vulnerability — Special attention should be given to ensuring that persons who face heightened vulnerability to harm or injustice during the COVID-19 pandemic can contribute to decisions about outbreak planning and response.

9. The Role of Media

The media plays an important role in any infectious disease outbreak response effort. It is therefore important to ensure that the media has access to accurate and timely information about COVID-19 and its management. Government, Doctors, non-governmental organizations, and academic institutions should make efforts to support media training in relevant scientific concepts and techniques for communicating risk information without raising unnecessary alarm. Media training is important for government and public sector employees who may interact with media covering issues related to COVID-19. In turn, the media has both an obligation and a responsibility to provide ethical, accurate, factual, and balanced reporting.

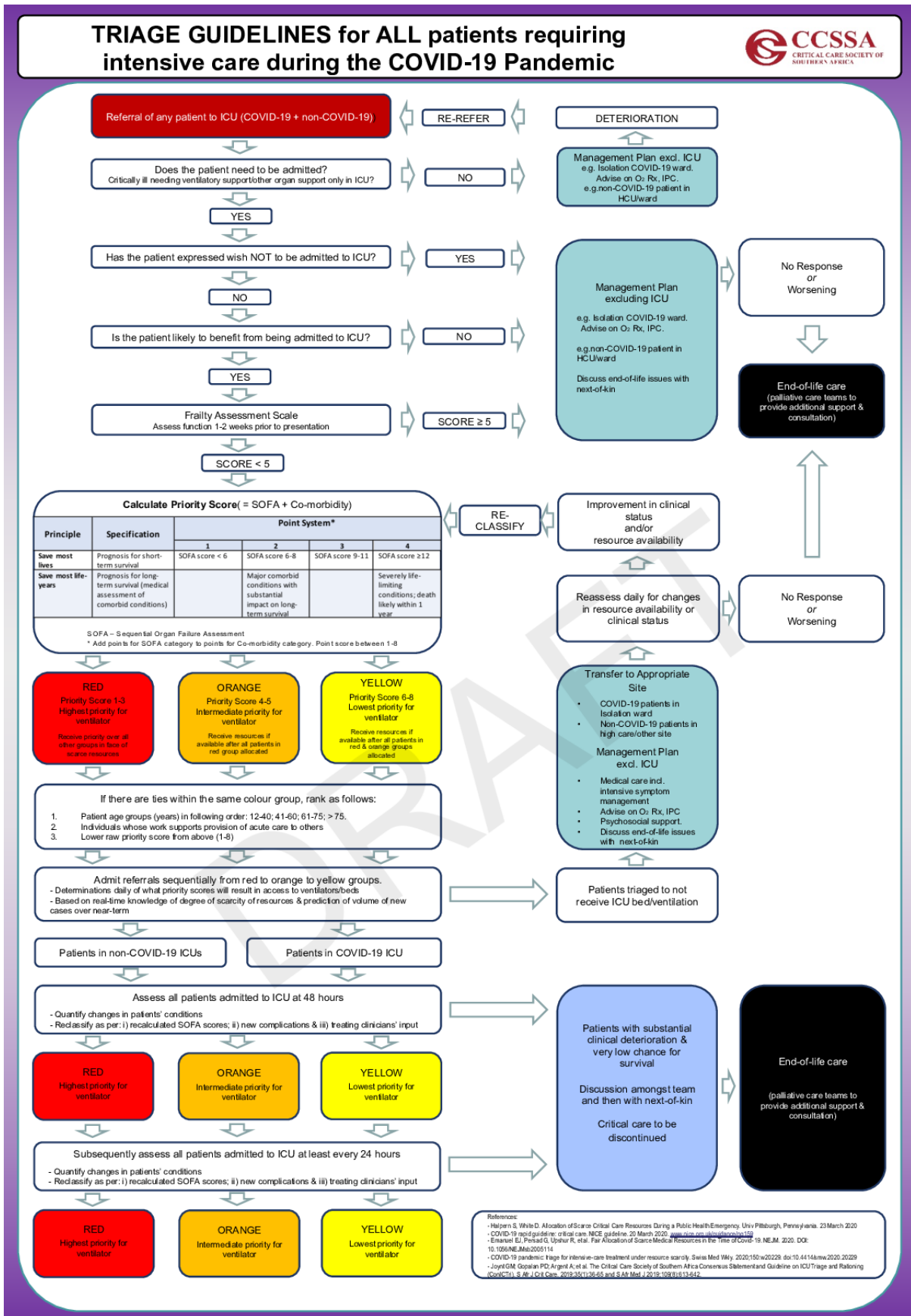
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11. Annexure 1: CCSSA Triage Guidelines (2 April 2020)



TRIAGE GUIDELINES for patients requiring intensive care during the COVID-19 Pandemic



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.

TABLE. Examples of comorbidities to be used for Priority Scoring

Examples of Major comorbidities (associated with significantly decreased long-term survival)	Examples of Severely Life Limiting Comorbidities (commonly associated with survival < 1 year)
<ul style="list-style-type: none"> Moderate Alzheimer's disease or related dementia Malignancy with a < 10 year expected survival New York Heart Association Class III heart failure Moderately severe chronic lung disease (e.g., COPD, IPF) End-stage renal disease in patients < 75 Severe multi-vessel CAD Cirrhosis with history of decompensation AIDS defining illness (or viral load >10000 despite Rx) 	<ul style="list-style-type: none"> Severe Alzheimer's disease or related dementia Cancer being treated with only palliative interventions (including palliative chemotherapy or radiation) New York Heart Association Class IV heart failure plus evidence of frailty Severe chronic lung disease plus evidence of frailty Cirrhosis with MELD score ≥20, ineligible for transplant End-stage renal disease in patients older than 75

Table 1. Sequential [Sepsis-Related] Organ Failure Assessment Score^a

System	Score				
	0	1	2	3	4
Respiration					
PaO ₂ /FIO ₂ , mm Hg (kPa)	≥400 (53.3)	<400 (53.3)	<300 (40)	<200 (26.7) with respiratory support	<100 (13.3) with respiratory support
Coagulation					
Platelets, ×10 ³ /μL	≥150	<150	<100	<50	<20
Liver					
Bilirubin, mg/dL (μmol/L)	<1.2 (20)	1.2-1.9 (20-32)	2.0-5.9 (33-101)	6.0-11.9 (102-204)	>12.0 (204)
Cardiovascular					
	MAP ≥70 mm Hg	MAP <70 mm Hg	Dopamine <5 or dobutamine (any dose) ^b	Dopamine 5.1-15 or epinephrine ≤0.1 or norepinephrine ≤0.1 ^b	Dopamine >15 or epinephrine >0.1 or norepinephrine >0.1 ^b
Central nervous system					
Glasgow Coma Scale score ^c	15	13-14	10-12	6-9	<6
Renal					
Creatinine, mg/dL (μmol/L)	<1.2 (110)	1.2-1.9 (110-170)	2.0-3.4 (171-299)	3.5-4.9 (300-440)	>5.0 (440)
Urine output, mL/d				<500	<200

Abbreviations: FIO₂, fraction of inspired oxygen; MAP, mean arterial pressure; PaO₂, partial pressure of oxygen.

^a Adapted from Vincent et al.²⁷

^b Catecholamine doses are given as μg/kg/min for at least 1 hour.

^c Glasgow Coma Scale scores range from 3-15; higher score indicates better neurological function.

Vincent JL, Moreno R, Takala J, et al. The SOFA (Sepsis-related Organ Failure Assessment) score to describe organ dysfunction/failure. On behalf of the Working Group on Sepsis-Related Problems of the European Society of Intensive Care Medicine. Intensive Care Med. 1996 Jul;22(7):707-10.

Note: In the absence of measured blood values for parameters needed for the SOFA score, it is suggested that clinical assessment of signs (such as bleeding for platelet value and jaundice for bilirubin value) by the managing doctor be performed to place the patient in the appropriate category for that parameter.