The United Republic of Tanzania

Ministry of Health, Community Development, Gender, Elderly and Children

TANZANIA NCD PREVENTION AND CONTROL PROGRAM

GUIDANCE ON PROVISION OF NCD AND MENTAL HEALTH SERVICES IN THE CONTEXT OF COVID-19 OUTBREAK IN TANZANIA

FIRST EDITION

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Contents

ABBREVIATIONS

ACE2	Angiotensin Converting Enzyme 2
ACS	Acute chest syndrome
ADRS	Adult Respiratory Distress Syndrome
AMI	Acute Myocardial Infarction
CMR	Cardiovascular Magnetic Resonance
COVID-19	Corona Virus Disease 2019
CPR	Cardio Pulmonary Resuscitation
CT	Computed Tomography
CXR	Chest X-Ray
ECG	Echocardiography
ESR	Erythrocyte Segmentation Rate
FBP	Full Blood Picture
GLP-1	Glucagon-Like-Peptide-1
GLP-1RAS	Glucagon-Like-Peptide-1 Receptor Agonists
ICU	Intensive Care Unit
IPC	Infection Prevention Committee
MAT	Methadone Assisted Therapy/ Medically Assisted Therapy
MOHCDGEC	Ministry of Health, Community Development, Gender, Elderly and Children
NCD	Noncommunicable Disease
NSTEMI	Non-ST Segment Elevation Myocardial Infarction
OPD	Outpatients Department
PC	Palliative Care
PCI	Percutaneous coronary intervention
PH	Pulmonary Hypertension
PORALG	President`s Office, Regional Administration and Local Government
PPE	Personal Protective Equipment
RT	Radiotherapy
SARS-CoV	Severe Acute Respiratory Syndrome - Corona Virus
SCD	Sickle Cell Disease
SGLT-2	Sodium-Glucose-Transporter-2 inhibitors
STEMI	ST Segment Elevation Myocardial Infarction
TOE	Transthoracic Echocardiogram
TTE	Transthoracic Echocardiogram
WHO	World Health Organization

FOREWORD

In response to the COVID-19 Pandemic and with the vision to achieve control of morbidity and mortality among patients with chronic Non-Communicable Diseases (NCDs), Tanzania has established a National NCD – COVID-19 Taskforce through the National NCD Prevention and Control Program. This Taskforce will work with the National Case Management and IPC team to implement COVID-19 rapid response, preventive, care, treatment and support interventions towards achieving NCD and Mental Health Risk reduction, SARS-CoV-2 infection prevention and reduce morbidity and mortality among NCD and Mental Health patients during the course of this pandemic. According to WHO COVID-19 Situation Report 121 on 20th May, 2020, globally there are over 4,789,205 confirmed cases (57,804 new cases) and a total of 318,789 COVID-19 related deaths worldwide. The rate of infection and Mortality is relatively low in African region with 65,956 confirmed COVID-19 cases and 2,435 COVID-19 related deaths.

People of all ages can be infected with SARS-CoV-2 viruses; however, studies and clinical reports suggests that people older than 60 years of ages and those who smoke cigarettes are more susceptible to infection. There is increased risk of morbidity and mortality in people of old age and those with pre-existing NCDs particularly Heart Diseases, Diabetes, Cancer, Chronic Obstructive Pulmonary Diseases, Sickle Cell Disease and Mental Health. COVID-19 can negatively affect health of children and adults with pre-existing NCDs through increased susceptibility to infection as well as delayed, incomplete or interrupted diagnosis, treatment and rehabilitation or palliative care. Due to fear of infections, some people with pre-existing NCD or with high risk are exposed to additional risk behaviours such as binge alcohol drinking, excessive eating, smoking and physical inactivity which predisposes them to vicious circle of NCD risks.

The Ministry of Health Community Development Gender Elderly and Children (MOHCDGEC) through the National NCD Program in collaboration with TANCDA and other partners, has observed significant burden of NCDs among COVID-19 patients and realized needs to strengthen NCD support services during this pandemic. Reports suggests that over 50% of all 21 people who died of/with COVID-19 had pre-existing NCDs and many more patients with NCDs with or without COVID-19 had difficulties to access essential care during the early stages of this pandemic. This global challenge amplified the underlying shortcomings of health systems to respond to healthcare needs of people living with NCDs attributed to inadequate preparation of facilities, NCD service providers, NCD patients and their treatment supporters on best ways to handle NCD – COVID-19 comorbidities. Recent developments and experiences in the field of COVID-19 and NCDs as well as established facts on comorbidities of NCDs and other Corona viruses' diseases such as MERS and SARS necessitated a review of case management of NCDs and establishment of NCD COVID-19 Taskforce to support the National IPC and Case Management Team.

This National **GUIDANCE ON PROVISION OF NCD AND MENTAL HEALTH SERVICES IN THE CONTEXT OF COVID-19 OUTBREAK IN TANZANIA** First Edition 2020 has adopted recommendations from scientific research, reports, and polices from WHO and local and international professional association on the management of specific disorders during COVID-19 pandemic. Some of the recommendations are on general measures to be observed for specific conditions or situations while others are very focused on COVID-19 and NCD comorbidities. However, since we anticipated that rapid changes will continue to take place on pathogenesis and clinical presentation of COVID-19, sharing of new emerging evidence and adoption of new interventions is highly encouraged from users of these guidelines. Facts established will be used to revise and update the guidelines, so as to keep them up-to-date with the scientific development.

Prof. Abel Makubi

CHIEF MEDICAL OFFICER

ACKNOWLEDGMENT

The Ministry appreciates and acknowledges the valuable technical and financial assistance from all the stakeholders involved in the revision of the Guidelines. I would like to recognize and congratulate all staff of the Ministry of Health, Community Development, Gender, Elderly and Children, President Office Regional Administrative and Local Government, Members of Tanzania NCD Alliances and WHO – Tanzania who took on this task with great courage and passion. The strong leadership and guidance of Dr. Grace Magembe (Director of Curative Services) and Dr. James Kiologwe (Assistant Director-NCD) was critical in its success.

I would like to appreciate the excellent coordination of Dr. Omary Ubuguyu, the Programme Manager National NCD Program and Prof. Andrew Swai, chairman of TANCDA who led the process of development of this guideline. It is difficult to mention all who played key roles in the development of the Guidelines, however the MOHCDGEC would wish to specifically recognize and thank all who participated at various consultative meetings and/or provided written contributions, either as individuals or as representatives of their institutions and organizations, including the following experts:

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It is my expectation that this Guideline will be useful in addressing NCD and COVID-19 risks reduction; early detection of NCD complications & COVID-19 infection; triaging, isolation and management of comorbid COVID-19 and NCDs that will improve quality of care for individuals with pre-existing NCD and address psychosocial issues during COVID-19 pandemic.

Dr. Grace E. Magembe
Director for Curative Services

1 INTRODUCTION AND BACKGROUND

1.1 Introduction

These Management Guidelines are intended for health care workers in Tanzania to inform them of the evolving management of the major comorbidities associated with COVID-19 infection. The main comorbidities include the major noncommunicable diseases (NCDs) all of which increase with age. A section on Mental Health and Psychosocial Support is included to address the psychosocial issues associated with the pandemic. These guides are summaries of information from various publications with local relevance and they will be updated as new information becomes available.

The summaries were prepared by a team of staffs from National NCD Prevention and Control Program (TaNCDP), representatives from case Management and IPC team, representatives of Professional Associations that are members of Tanzania Noncommunicable Diseases Alliance (TANCDA), other representatives include staffs from PORALG, MNH, MUHAS and representatives from RHMTs. The Team had a chance read, review and approved all the sections.

The guidelines are guides and final actions rest on individual patients together with their providers.

1.2 Scope and User of This Documents

This guideline aims to ensure that individuals and communities receive health services to address NCDs and other services during COVID-19 pandemic and beyond without compromising the quality of care they need. This document has 4 sections and it intends to cover and improve all services targeting NCD care from promotion, prevention, maintenance and restoration of health at facility and community level. It observes all principles for infection prevention control and other measures to control both NCDs and COVID – 19 diseases. The guidelines observe principles for Universal Health Coverage as it ensure clients access essential services during and after this pandemic without compromising quality or increasing financial burden.

Chapter one introduces the document and covers in details on COVID 19 pathogenesis to give insight to readers on the damage that can be caused by the SARS CoV 2 viruses and other sequelae that might be aroused as a consequence of infections or socioeconomic impacts of interventions.

Chapter two, connect these guidelines with established case management and IPC guidelines version one that gives basis of all general measures and coordination of COVID 19 interventions in the country. It also covers health promotion initiatives and other facts to address modifiable risk factors for NCD.

Chapter three covers a total of eleven diseases and/or interventions divided in subsections that cover basic details on specific challenges and highlighted steps to be observed during case management as well as health promotion services.

Service providers at all levels are strongly recommended to use these guidelines as supplement to existing protocols and guides on specific conditions. Since the document didn't cover all IPC and Case management issues, it is advised Health Care Workers to receive proper Case Management and IPC trainings prior to engagement to NCD – COVID 19 care. Other National and International Guidelines can be used concurrently with this document provided there is no contradictions that may compromise quality of care. Whenever there is a new development, providers are highly encouraged to reports those new findings to the case management lead person or NCD task force and the team will officially communicate those findings or meet to review the existing facts and update this document.

1.3 History of the Pandemic - Global and in Tanzania

The COVID-19 virus first appeared in Wuhan, China at the end of 2019 but quickly spread to many parts of the world and it was declared by WHO by the end of January 2020 to be a Pandemic. Tanzania reported its first imported case in March 2020 and by the end of April it was declared by the Ministry of Health to have community mode of transmission, with 509 confirmed cases and 21 deaths related to COVID 19 officially notified by 14th May 2020.

Much remains to be known about the COVID-19 virus. According to current evidence, COVID-19 virus is primarily transmitted between people through respiratory droplets and contact routes.

Early WHO reports noted that 80 percent of all cases were mild, and more recent studies show a far more widespread rate of infection and lower rate of serious illness. Half of all people testing positive for infection have no symptoms at all. Young adults and children in normal health have almost no risk of any serious illness from COVID-19 and do not need significant medical care if they catch this infection.

If one does not have an underlying chronic condition, chances of dying are small, regardless of age. The overwhelming evidence all over the world consistently shows that a clearly defined group especially older people and others with underlying conditions are more likely to have a serious illness requiring hospitalization and more likely to die from COVID-19.
During the Influenza A (H1N1) pandemic, the presence of diabetes tripled the risk of hospitalization and quadrupled the risk of ICU admission once hospitalized.

According to COVID-19 mortality data from the New York State, USA:

- Two-thirds of all deaths were in patients over 70 years of age; more than 95 percent were over 50 years of age
- About 90 percent of all fatal cases had an underlying illness

- Of 6,570 confirmed COVID-19 deaths fully investigated for underlying conditions to date, 6,520, or 99.2 percent, had an underlying illness.

Among COVID-19 mortality cases in Wuhan, China, major associated comorbidities included hypertension (53.8%), diabetes (42.3%), previous heart disease (19.2%), and cerebral infarction (15.4%).
Mortality among the confirmed COVID-19 cases in China by Feb 11, 2020:

- Overall mortality reported is 2.3% (refers mostly to hospitalized patients)
- Among persons with no underlying medical conditions, 0.9%
- With the presence of comorbid diseases:
    - Previous cardiovascular disease (10.5%)
    - Diabetes (7.3%)
    - Chronic respiratory disease, hypertension, and cancer, each at 6%.
    - Among 60-year-old people and older: 14.8% in those >80 years, 8% for those between 70 and 79 years and 3.6% in the group of 60–69 years.

In the absence of a vaccine or treatment, infected people without severe illness are the immediately available vehicle for establishing widespread immunity, if we can protect the high-risk group. By shading the virus to others in the low-risk group who then generate antibodies, they block the network of pathways toward the most vulnerable people. It is therefore a reasonable, achievable goal to target isolation policy to the high-risk group, including strictly monitoring those who interact with them. The strategy should therefore include:

- Strictly protect the known vulnerable
- Self-isolate the mildly sick
- Institute some prudent large-group precautions for all others

Such a strategy would allow the essential socializing to generate immunity among those with minimal risk of serious consequence, while saving lives, preventing overcrowding of hospitals and limiting the enormous harms compounded by total isolation (lockdown).

Studies show that chronic conditions such as cancer, diabetes, heart and lung diseases are the main underlying cause of morbidity and mortality for COVID-19. These conditions are largely driven by five main modifiable risk factors, namely tobacco use, unhealthy diet, physical inactivity, harmful use of alcohol, and air pollution.

In Tanzania prevalence of major NCDs in people over 25 years of age is alarmingly high with the National prevalence of hypertension 25.9%, Diabetes 9.1%, and Cancer (0.3%). The established risk factors were tobacco smoking 15.9%, alcohol intake 29.4%, inadequate intake of fruits/vegetables (about 32% of the people did not consume fruit and or vegetables daily and only 2.8% of the population consumed 5 or more servings of either fruit or vegetables on an average day) , and overweight/obesity

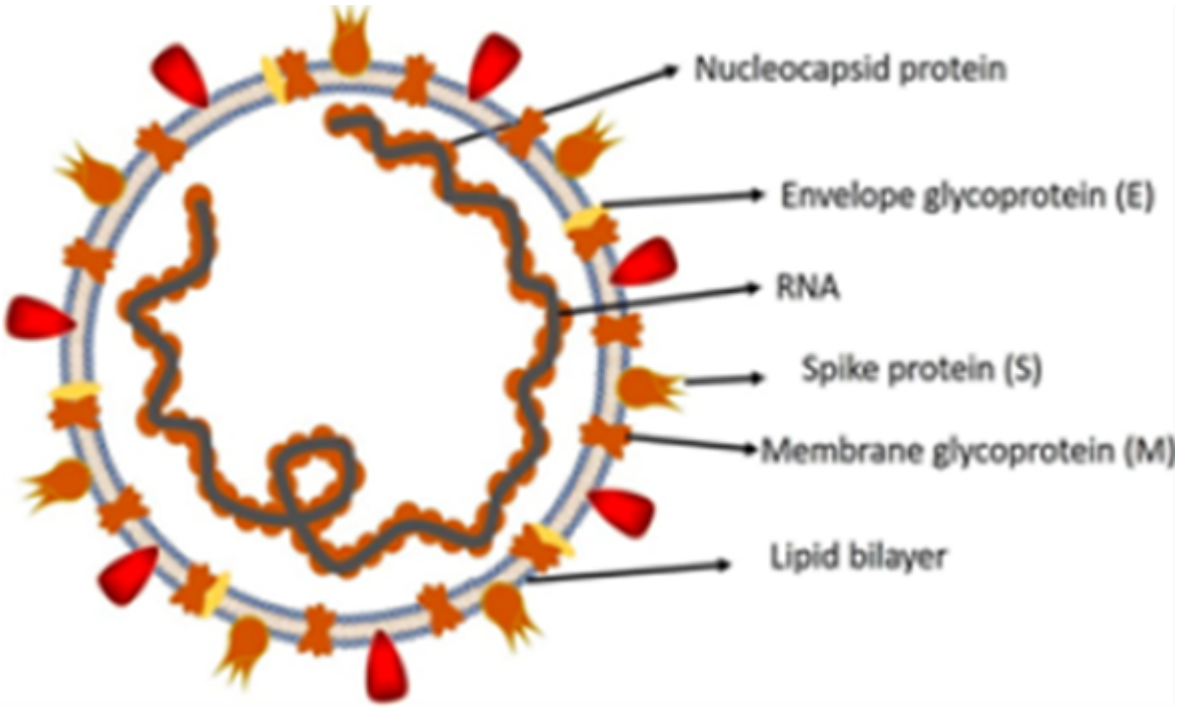
35% (STEPS survey 2012). In number of mortality surveys, it is established that NCDs account for about a third of all mortality and well over a half of the mortality in people over 50 years.

In view of the high risk of severe COVID-19 disease among people with NCDs, these guidelines aim to gather available information relevant to the management of the major NCDs and their risk factors in the setting of the COVID-19 pandemic for all players: the individual, community, healthcare providers, facility managers and policy makers. They are aimed at giving guidance to Service Providers and Policy Makers to ensure the continuation of services to patients and ensuring safety of staff, patients, and public at large during the COVID-19 pandemic in Tanzania.

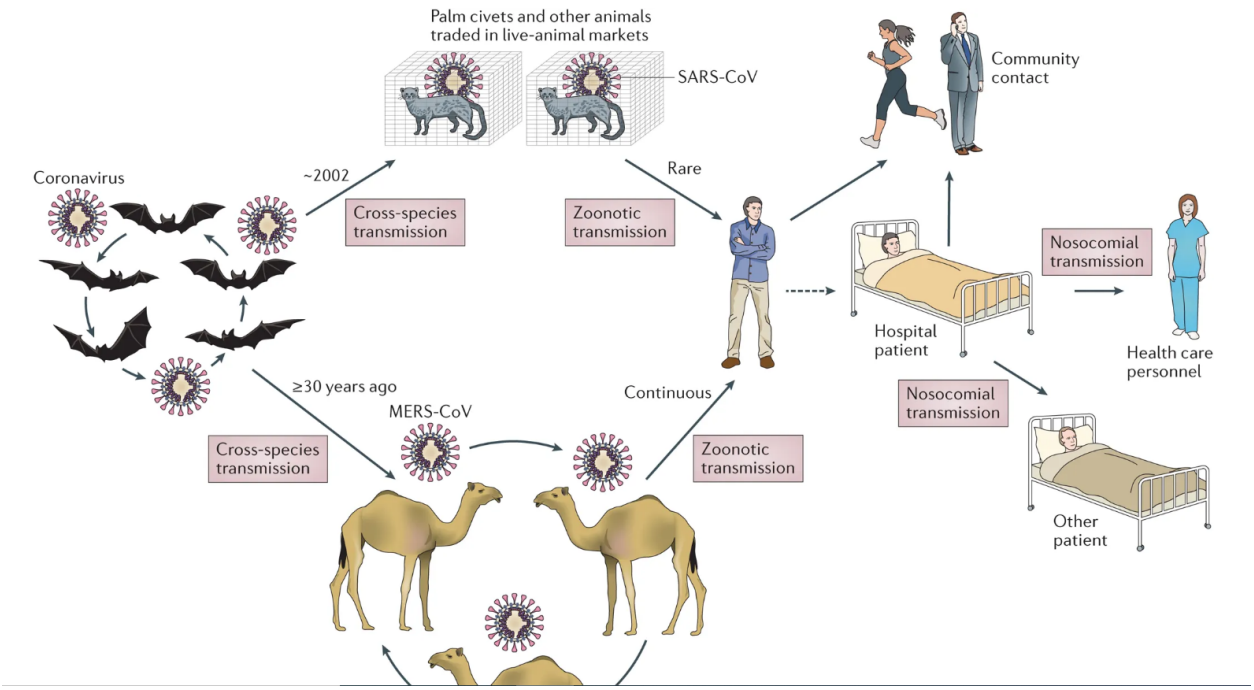
1.4 Pathogenesis and Clinical Manifestation of COVID-19

1.4.1 Characteristics of the Virus

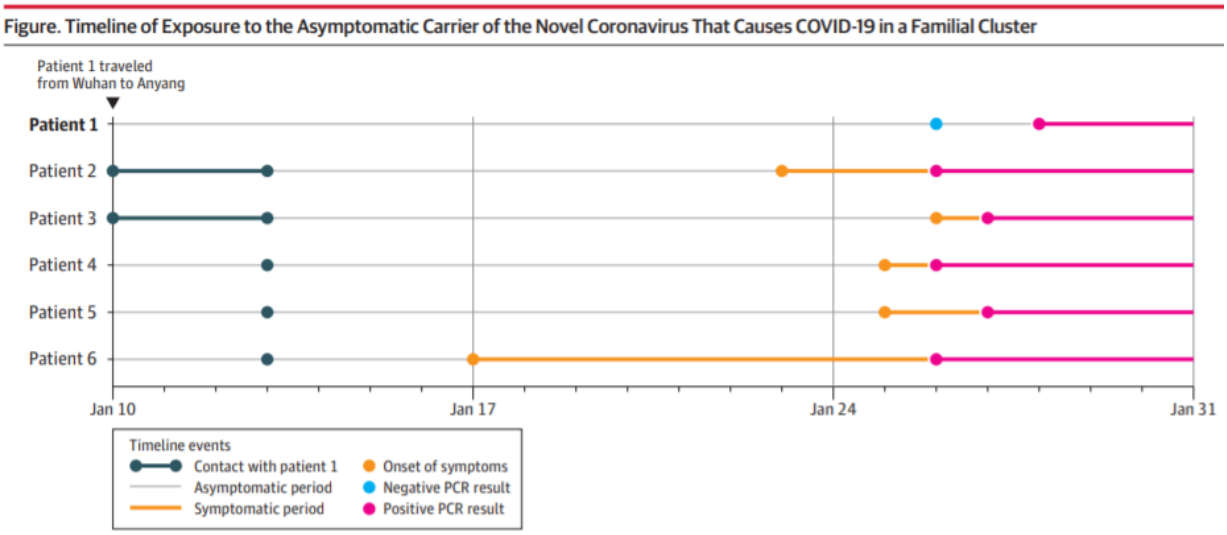
The COVID-19 is a single stranded RNA virus:



Diseases due to corona viruses are zoonoses: the viruses were transmitted from animals to humans (*zoonosis*). Infected humans infect others through aerosols, direct contact, or contact with infected objects/surfaces (*fomites*). *Nosocomial infections* occur among hospital personnel (patients or workers).



1.4.2 Transmission dynamics



- Very high viral loads in upper respiratory tract (10^8/ml sputum)
- Long shedding periods, already in asymptomatic phase and after cure
- High viral loads, peak shedding in week 2 after clinical symptoms
- The virus has high affinity specifically for nasal epithelium
    - nasal secretory cells (mucus producing goblets)
    - ciliated cells (moving particles)
- Duration of SARS-CoV viral load positivity is longer in stool than in respiratory or blood, due to active replication of SARS-CoV in the gastrointestinal tract.

Corona virus has been shown to present in various surfaces for different duration of time, which has an implication in its transmission to human being. Some of the routes of transmission based on survivability of viability of the virus are;

- Stable in aerosols for over 3 hours
- Plastic: 72 hours
- Stainless steel: 48 hours
- Copper, cardboard: 8 hours.

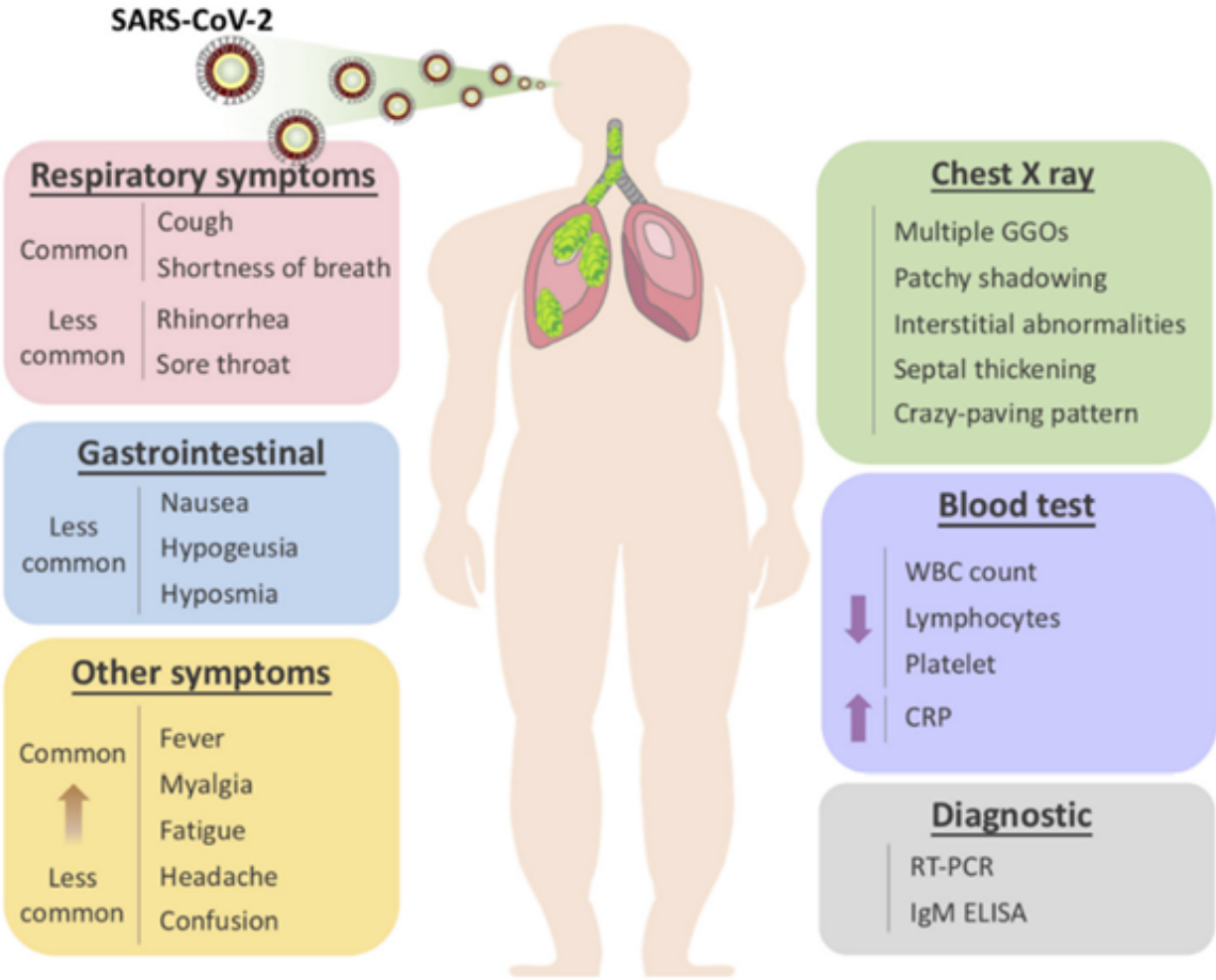
Following incubation, no infectious virus could be recovered from:

- Printing and tissue papers after 3 hours
- Wood and cloth on day 2
- Smooth surfaces:
    - Glass and banknote on day 4
    - Stainless steel and plastic on day 7
    - Outer layer of a surgical mask on day 7.

For various disinfectants, with the exception hand soap, no infectious virus could be detected after a 5-min incubation at room temperature.

1.4.3 Symptoms and diagnostics

Coronavirus probably causes direct damage to the lungs in addition to provoking a massive inflammatory response which may lead to circulatory collapse and generalised organ failure akin to that seen in septic shock.
The mean onset time is 5.2 days. The presentation is variable with the primary features being temperature and dry cough.
The majority of patients make a largely uneventful recovery, but a small proportion show an acute deterioration about day five of their illness.



In a case series diagnosed on the basis of clinical criteria and CT scans, the sensitivity of RT-PCR was only ~70%. Conversion from negative to positive PCR seemed to take a period of days, with CT scan often showing evidence of disease well before PCR positivity

A single negative RT-PCR doesn't exclude COVID-19 (especially if obtained from a nasopharyngeal source or if taken relatively early in the disease course). If the RT-PCR is negative but suspicion for COVID-19 remains, then ongoing isolation and re-sampling several days later should be considered.

1.4.4 COVID-19 symptoms dynamics

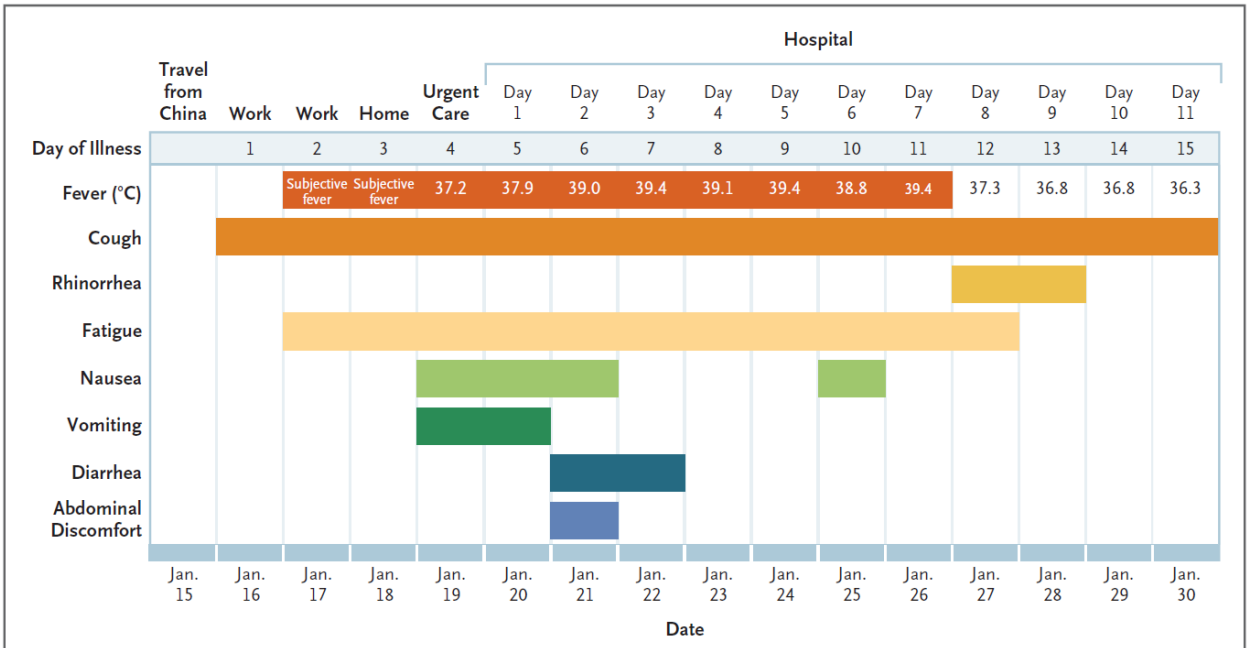
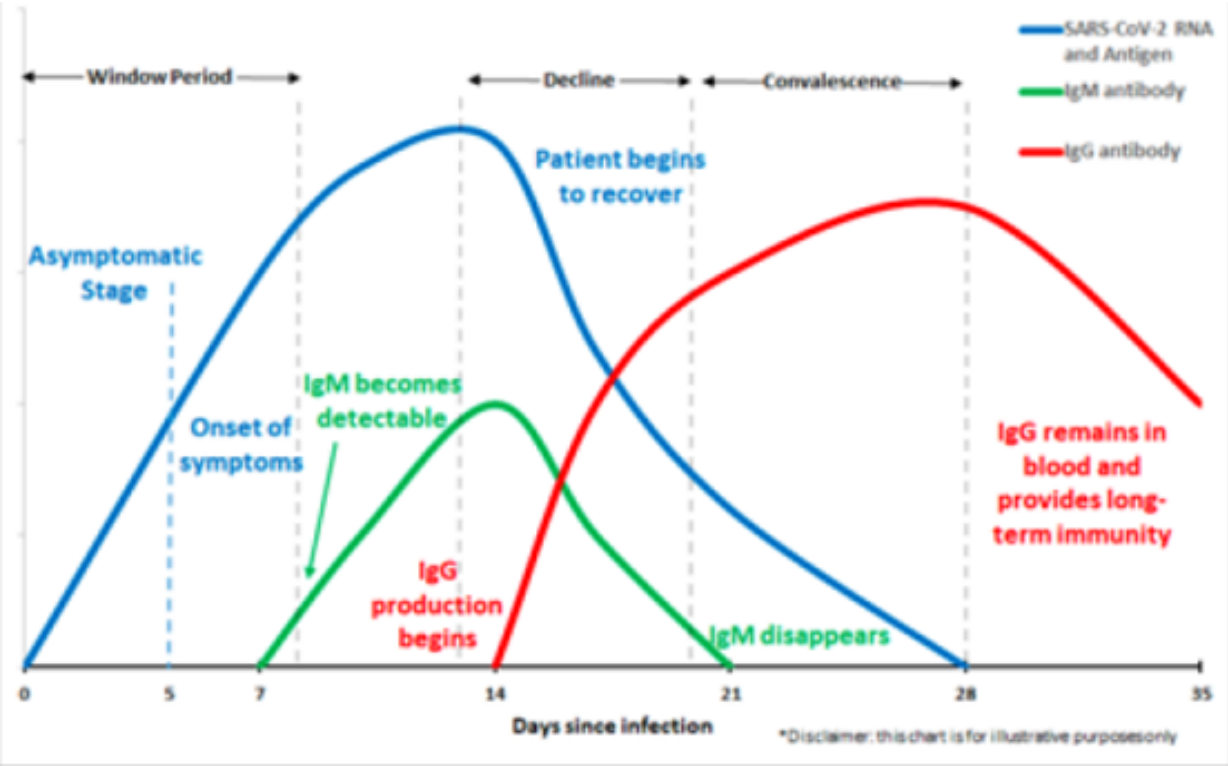


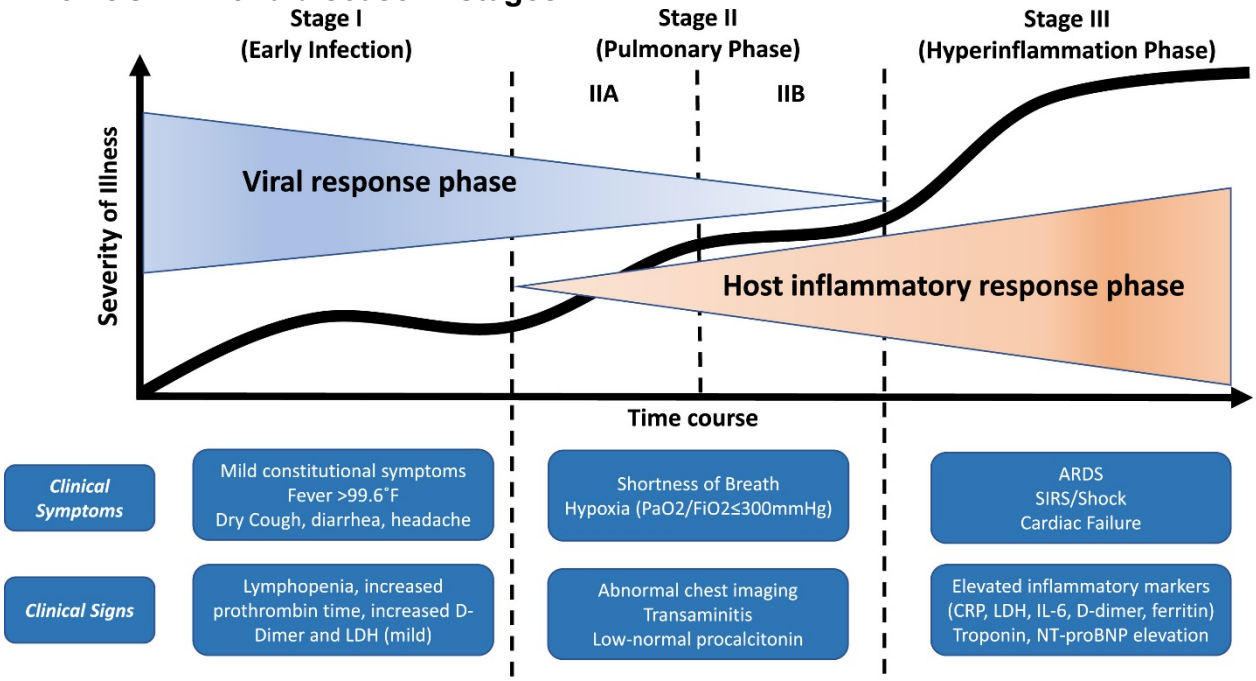
Figure 2. Symptoms and Maximum Body Temperatures According to Day of Illness and Day of Hospitalization, January 16 to January 30, 2020.

Infection dynamics

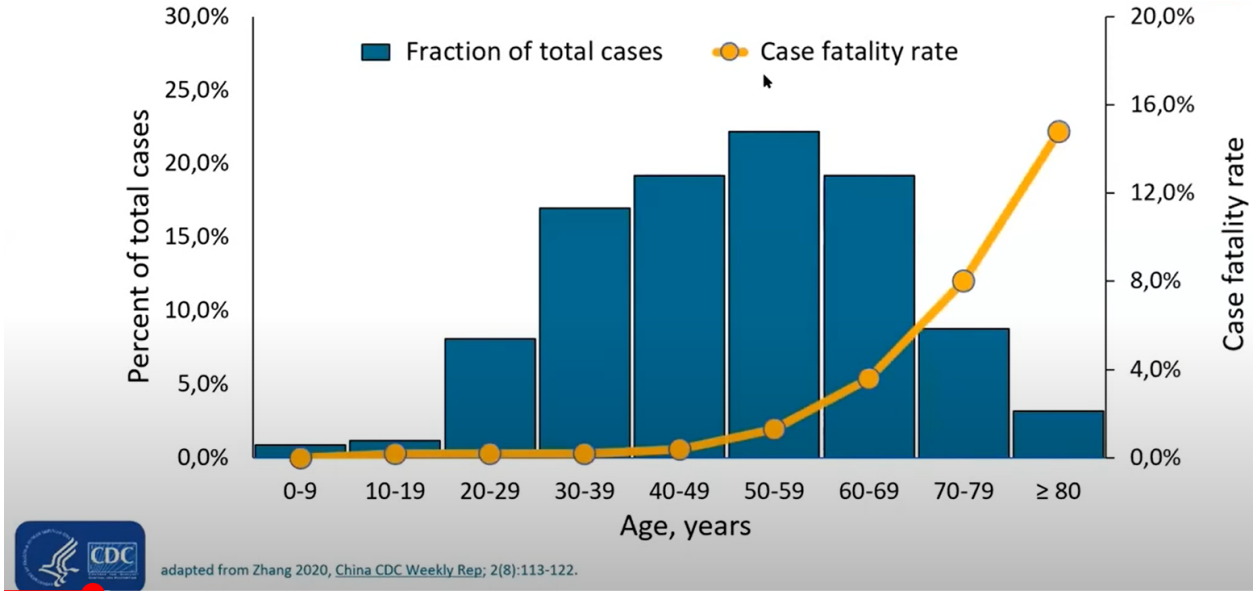


Source: WHO

1.4.5 COVID-19: a disease in stages



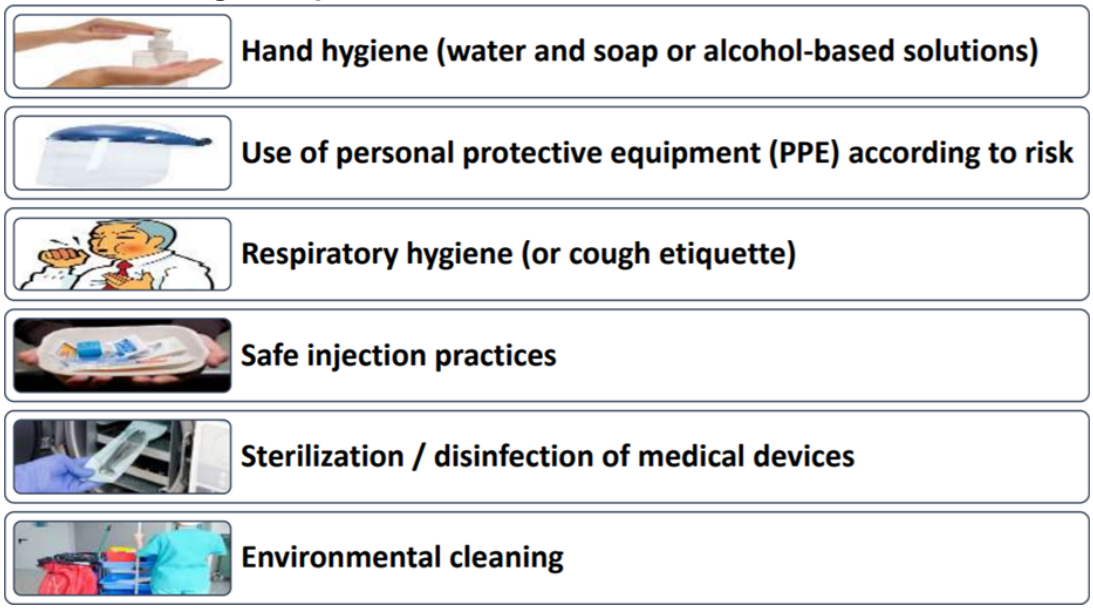
COVID-19 fatality rates



The mortality increases with age, due to age related increase in comorbidities and decrease in immunity. The probability of severe or fatal COVID-19 disease is highest in people aged ≥65 years and people of any age with certain underlying conditions, especially when not well-controlled, including:

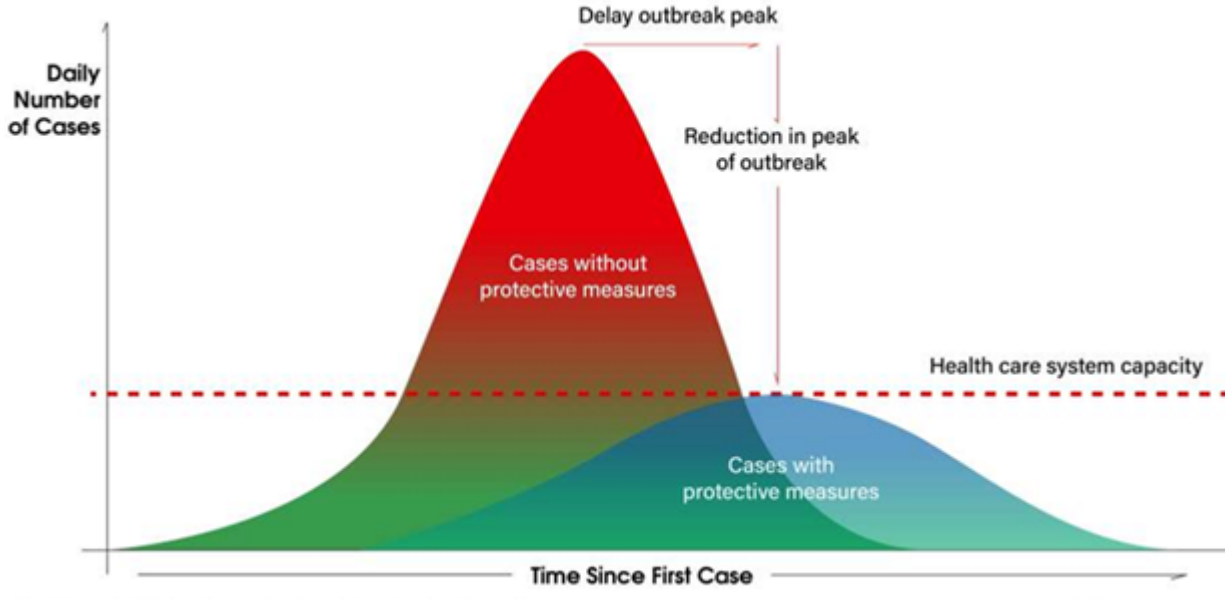
- Hypertension
- Cardiovascular disease
- Diabetes
- Chronic respiratory disease
- Cancer
- Renal disease, and
- Obesity.

1.4.6 Tackling the epidemic: Standard Precautions



1.4.7 Flattening the Curve

Without medicines to kill the virus or an effective vaccine, the virus will spread until about 60-70% of the non-immune (susceptible) population are infected and thus develop immunity (herd immunity). The infection will stop when the virus cannot find a non-immune person. Flattening the curve refers to preventive measures (isolation of cases, tracing and quarantine of contacts, and measures like physical distancing to prevent infection) to slow the rate of new infections to enable the health system to handle the epidemic: in the end the same number of people may become infected but at a slower rate.



2 GENERAL HEALTH SYSTEMS ISSUES FOR PROVISION OF NCD AND MENTAL HEALTH SERVICES IN THE CONTEXT OF COVID-19

This section provides overall guidance on coordination of COVID-19 intervention especially on issues related to NCD care, general health promotion on NCD prevention, prevention of SARS CoV 2 transmission through IPC measure to HCW and public at large with special emphasis on NCDs patients.

2.1 Coordination on Case Management and IPC in Chronic Care Units

Coordination of case management should be led by the National Case Management and IPC Team and Regional teams through NCD COVID Taskforce at the National and Regional levels respectively. The NCD Coordination mechanism is led by the ADNCD through consortium of experts under Tanzania NCD Alliance and representatives from local and international organizations.

The taskforce in collaborations with Case Management & IPC team should: -

- Ensure adequate and appropriate PPEs are provided to all staffs working on chronic care units to protect themselves and clients from exposure to SARS-CoV-2 infections.
- Ensure testing algorithm for exposed personnel for COVID-19 is clearly communicated and test kits/opportunity is consistently accessible to exposed staffs and NCD patients.
- Make clear strategies to ensure acceptable physical distancing is maintained at all time, this may include establishment of “screening camps” outside the hospital to reduce patient visits, teleconsultations as well as decongesting by spacing consultation visit to up to 3 months for stable patients. Other measures may include stringent restriction of relatives and friends in outpatient clinics and inpatient wards
- Establish a call center or toll-free line for access to “Mental Health and Psychosocial Team” professionals for anyone needing mental health and psychosocial support.
- To protect most vulnerable staffs, facilities might consider shifting those staffs on areas that have minimal contacts with patients and whenever necessary staffs should be screened for the complications of NCD and regularly screened for COVID 19.

2.2 Recommendations for Health Facility Managers and Health Care Workers

2.2.1 General Issues

2.2.1.1 ***Capacity building & Infrastructure development/re-organization***

- Training of Staffs working on chronic care units on COVID – 19 case management & IPC as per National Training Curriculum.

- Refresher Training for staffs working on chronic care units on NCDs and Mental Health as well as NCD – COVID 19 comorbidities.
- Redesign Chronic care clinics with proper settings that allow acceptable physical distancing and good ventilation in consultation room/service units.
- Identify holding room or space for suspected clients or staffs.
- Ensure unit is well equipped with PPEs, running waters or hand sanitizers all the time.

2.2.1.2 Establish COVID 19 Screening & IPC Protocols at the site

- Prepare a clear protocol and communicate with all staffs and clients on changes on routines.
- Post signs at the facility for the general public to raise awareness on COVID-19 prevention, as well as use of audiovisuals where available
- Post signs at clinic entrances with instructions for patients with fever or symptoms of respiratory infection to alert staff so appropriate precautions can be implemented
- Screen all patients and staff entering the facility.
- Ensure all staff, patients and visitors wash their hands or use the sanitizers to thoroughly clean their hands before entering the unit
- Practice strict hand hygiene at all times, preferably every 30 minutes (also apply the '5 Moments of Hand Hygiene')
- Ensure thorough cleaning of all surfaces of machines, tables, administrative desks, nursing stations, crash cart, weighing machine, trolleys, dialysis chairs, dialysis machines etc. is done after each session with the recommended disinfectants
- Decontamination of the clinic rooms and waiting areas should be done once per day
- Educate patients on:
    - Hand hygiene, respiratory hygiene, and cough etiquette (e.g. the Sneezing/Coughing Policy)
    - Use of facemasks, how to use tissues to cover nose and mouth when coughing or sneezing, how to dispose of tissues and contaminated items in waste receptacles, and how and when to perform hand hygiene
    - Importance of social distancing
- Patients should avoid touching their face, nose, mouth and eyes with their hands
- All patients should wear a mask (this can be clothing or surgical mask)
- All staff should wear a surgical mask all the time when they attend clients or while they are in high risk areas
- All staff should follow standard operating procedures for the disposal of used PPE and regulated medical waste
- If linens or disposable cover sheets are used, follow standard procedures for laundering or disposal of used items.

2.2.1.3 Coordination of NCD – COVID 19 Interventions

All NCD services stipulated in these guidelines will be coordinated through National NCD Prevention and Control Program at the MOHCDGEC. The Program has established the central NCD – COVID 19 Taskforce to coordinate these activities. The Taskforce is composed of Directors, heads or Managers of Departments, Sections, Units or Programs at Ministries or independent institutions as well as Heads of Professional Associations and their members. The Taskforce secretariat will be the overall in charge of all interventions and will liaise with Central National Case Management and IPC subcommittee of the National COVID 19 Response team whenever deemed necessary.

- At the Regional and Local Government levels, NCD coordinators and Emergency Response Coordinators at their respective levels will communicate to ensure services are coordinated smoothly.
- All NCD coordinators are supposed to follow local procedures and report to the local authorities before sharing any report to the next level.
- Surveillance and Research agenda will be coordinated via research and surveillance subcommittee.

2.3 Health Promotion Sessions Targeting NCD Risk Reduction

2.3.1 TOBACCO USE

COVID-19 is an infectious disease that primarily attacks the lungs. Smokers have a higher risk of getting coronavirus because they are constantly putting their hands to their lips.

And then, if they get coronavirus, they run a greater risk of getting a severe case because their lung function is impaired, making it harder for the body to fight off coronaviruses and other diseases.

Tobacco is also a major risk factor for NCDs like cardiovascular disease, cancer, respiratory disease and diabetes which put people with these conditions at higher risk for developing severe illness when affected by COVID-19. There is no proof that tobacco or nicotine could reduce the risk of COVID-19.

WHO recommends that smokers take immediate steps to quit.

Some of the benefits of quitting are immediate:

- *Within 20 minutes of quitting, elevated heart rate and blood pressure drop.*
- *After 12 hours, the carbon monoxide level in the bloodstream drops to normal. Within 2-12 weeks, circulation improves and lung function increases.*
- *After 1-9 months, coughing and shortness of breath decrease.*

The craving to smoke may be reduced if you:

- *Delay as long as you can before giving in to your urge.*
- *Take 10 deep breaths to relax yourself from within until the urge passes.*
- *Drinking water is a healthy alternative to sticking a cigarette in your mouth.*
- *Do something else to distract yourself: Take a shower, read, go for a walk, listen to music!*

2.3.2 AVOID HAZARDOUS AND HARMFUL ALCOHOL USE

Drinking alcohol does not protect against COVID-19 and can be dangerous. Frequent or excessive alcohol consumption increases your immediate risk of injury, as well as causing longer-term effects like liver damage, cancer, heart disease and mental illness.

WHO recommendations to Reduce Harmful Alcohol Consumptions, (WHO – Infographic Alcohol 2018)

2.3.3 PHYSICAL ACTIVITY

In spite of the advice to "stay home" during the COVID-19 pandemic, it's very important for people of all ages and abilities to be as active as possible.

WHO recommends the following amounts of physical activity:

Infants under 1 year of age

All infants should be physically active several times a day.
For those not yet mobile, this includes at least 30 minutes in prone position (tummy time), as floor-based play, spread throughout the day while awake.

Children under 5 years of age

All young children should spend at least 180 minutes a day in a variety of types of physical activities at any intensity
3-4 year old children should spend at least 60 minutes of this time in moderate- to vigorous-intensity physical activity

Children and adolescents aged 5-17 years

All children and adolescents should do at least 60 minutes a day of moderate to vigorous-intensity physical activity
This should include activities that strengthen muscle and bone, at least 3 days per week
Doing more than 60 minutes of physical activity daily will provide additional health benefits

Adults aged over 18 years

All adults should do at least 150 minutes of moderate-intensity physical activity throughout the week, or at least 75 minutes of vigorous-intensity physical activity throughout the week.
For additional health benefits, adults should increase their moderate-intensity physical activity to *300 minutes per week, or equivalent.*
For developing and maintaining musculoskeletal health, muscle-strengthening activities involving major muscle groups should be done on 2 or more days a week
In addition, older adults with poor mobility should do physical activity to enhance balance and prevent falls on 3 or more days per week.

Try the following activities:

- Dance to music
- Skipping rope
- Stand up while working, on the phone or watching TV
- Walk up and down the stairs or round and round the house
- Do some stretching exercises

Regular physical activity can: -

- Reduce high blood pressure, help manage weight and reduce the risk of heart disease, stroke, type 2 diabetes, and various cancers - all conditions that are associated with increased severity of COVID-19.
- Improves bone and muscle strength and increases balance, flexibility and fitness. For older people, activities that improve balance help to prevent falls and injuries.
- Can help give our days a routine and be a way to stay in contact with family and friends. It's also good for our mental health - reducing the risk of depression, cognitive decline and delay the onset of dementia - and improve overall feelings.

Short break from sitting every hour or so, by doing 3-4 minutes of light intensity physical movement, such as walking or stretching, will help ease your muscles and improve blood circulation and muscle activity.

2.3.4 HEALTHY DIET

What we eat and drink can affect our body's ability to prevent, fight and recover from infections.

To maintain a healthy diet:

- Every day, eat a mix of wholegrains like wheat, maize and rice; legumes like lentils and beans; plenty of fresh fruit asnd vegetables; with some foods from animal sources (e.g. meat, fish, eggs and milk).
- Choose wholegrain foods like unprocessed maize, millet, oats, wheat and brown rice when you can; they are rich in valuable fibre and can help you feel full for longer.
- Eat beans, peas, lentils, cowpeas, pigeon peas, soya, nuts and edible seeds regularly (at least four times a week).
- Eat lean meat, fish and sea food, poultry, insects or eggs at least twice a week

Eat a variety of vegetables and fruits

- Eat plenty of green leafy vegetables, red and yellow vegetables and fruits every day; and include a variety of other vegetables and fruit.
- The recommended number of servings for fruits and vegetables is five servings a day.
- Eat at least half a cup of cooked vegetables or 1 cup of raw vegetables in each meal.
- Eat fresh fruits and vegetables that are in season as they are cheaper and readily available.

Limit salt intake to 5 grams (equivalent to a teaspoon) a day.

- Use little salt when preparing food and do not add extra salt after cooking
- Reduce use of salt by using other seasoning such as pepper, herbs, lemon, garlic and ginger.
- Remove the salt shaker from the table, and experiment with fresh or dried herbs and spices for added flavor instead.
- Check the labels on foods, condiments, and commercial seasonings and choose products with lower sodium content.

Eat moderate amounts of fats and oils

- Use fats and oils sparingly when preparing mixed dishes.
- Use healthier methods of cooking like steaming, boiling and baking rather than frying.
- Use nuts and seeds as alternatives to oils and fats
- Limit consumption of foods containing high amounts of saturated fats e.g. cheese, ice cream and fatty meat
    - ✓ Replace butter, ghee and lard with healthier fats like olive, soy, sunflower or corn oil when cooking.
    - ✓ Choose white meats like poultry and fish which are generally lower in fats than red meat; trim meat of visible fat and limit the consumption of processed meats.
    - ✓ Select low-fat or reduced-fat versions of milk and dairy products.
    - ✓ Avoid recycling and recycled oil. Oil that has been heated many times is dangerous to your health due to presence of trans-fatty acids.

Limit sugar intake

- Limit intake of sweets and sugary drinks such as fizzy drinks, fruit juices and juice drinks, liquid and powder concentrates, flavoured water, energy and sports drinks, ready-to-drink tea and coffee and flavoured milk drinks.
- Choose fresh fruits instead of sweet snacks such as cookies, cakes and chocolate. When other dessert options are chosen, ensure that they are low in sugar and consume small portions.
- Salt and sugars should not be added to complementary foods given to children under 2 years of age, and should be limited beyond that age.

No foods or dietary supplements can cure COVID-19 infection, but healthy diets are important for supporting immune systems and can also reduce the likelihood of developing other health problems, including obesity, heart disease, diabetes and some types of cancer, all of which are associated with severe COVID-19

Stay hydrated: Drink enough water whenever available and safe for consumption. Drinking water instead of sugar-sweetened beverages is a simple way to limit your intake of sugar and excess calories.

Breastfeeding babies and children during COVID-19 pandemic

Women with COVID-19 can breastfeed if they wish to do so and should take infection prevention and control measures.

Postpartum and Newborn Care

AGOTA recommendations on Post-Partum and Newborn During COVID 19 Pandemic

- We do not recommend universal isolation of the infant from either confirmed of suspected infection in the mother. However, depending on a family's values and availability of resources they may choose to separate infant from mother until isolation precautions for the mother can be formally discontinued.
- Women should practice good handwashing before and use of a mask while engaging in infant care.
- Women who choose to breastfeed should be allowed to do so after appropriate handwashing and while wearing a mask. It is possible that the mother can transmit antibodies to the infant through breastmilk; however, there is limited evidence of this transmission and the potential benefits are unclear.

Breastmilk is safe, clean and contains antibodies which help protect against many common childhood illnesses. Babies should be breastfed exclusively during the first 6 months of life, as breast milk provides all the nutrients and fluids they need. From 6 months of age, breast milk should be complemented with a variety of adequate, safe

and nutrient-dense foods. Breastfeeding should continue until babies are 2 years of age or beyond.

Special Consideration Regarding Grocery

When shopping, practice physical distancing and avoid touching your eyes, mouth and nose.

If possible, sanitize the handles of shopping trolleys or baskets before shopping.

Once home, wash your hands thoroughly and also after handling and storing your purchased products.

Wash fruits and vegetables as usual. Before handling them, wash your hands with soap and water. Then wash fruit and vegetables thoroughly with clean water, especially if you eat them raw.

2.3.5 OBESITY

Obesity is associated with the usual predictors of poor COVID-19 outcome, including age and cardio metabolic diseases.

Severe obesity is associated to sleep-apnea syndrome, as well as to surfactant dysfunction, which may contribute to a worse scenario in the case of COVID-19 infection.

Moreover, obesity is an independent risk for hypoventilation syndrome in ICU patients and, thus, could contribute to respiratory failure in patients with acute respiratory distress syndrome (ARDS)

- Obesity is associated with decreased expiratory reserve volume, functional capacity, and respiratory system compliance.
- In patients with increased abdominal obesity, pulmonary function is further compromised in supine patients by decreased diaphragmatic excursion, making ventilation more difficult.

Furthermore, increased inflammatory cytokines associated with obesity may contribute to the increased morbidity associated with obesity in COVID-19 infections.

Obese people should be encouraged to lose weight by observing the following:

Build healthy eating patterns

- Select an eating pattern that meets nutrient needs over time at an appropriate level, depending on energy expenditure.
- Eating protein for breakfast: Protein can regulate appetite hormones to help people feel full

Eating plenty of fiber

Including plenty of fiber in the diet can increase the feeling of fullness, potentially leading to weight loss. Fiber-rich foods include:

- whole-grain breakfast cereals, whole-wheat pasta, whole-grain bread, oats, barley, and rye
- fruit and vegetables

- peas, beans, and pulses
- nuts and seeds

Tracking your diet and exercise

Be aware of everything that you eat and drink each day. The most effective way to do this is to log every item that you consume, in either a journal or an online food tracker.

Trying intermittent fasting

- Intermittent fasting (IF) is a pattern of eating that involves regular short-term fasts and consuming meals within a shorter time period during the day.
- Several studies have indicated that short-term intermittent fasting, which is up to 24 weeks in duration, leads to weight loss in overweight individuals.

Eating mindfully

Mindful eating is a practice where people pay attention to how and where they eat food. This practice can enable people to enjoy the food they eat and maintain a healthy weight. Techniques for mindful eating include:

- **Sitting down to eat, preferably at a table**: Pay attention to the food and enjoy the experience.
- **Avoiding distractions while eating**: Do not turn on the TV, or a laptop or phone.
- **Eating slowly**: Take time to chew and savor the food. This technique helps with weight loss, as it gives a person's brain enough time to recognize the signals that they are full, which can help to prevent over-eating.

Making considered food choices: Choose foods that are full of nourishing nutrients and those that will satisfy for hours rather than minutes.

2.4 Educate patients and staff on infection prevention

2.4.1 General Preventive measures

- Throughout the day, clean and disinfect frequently touched objects and surfaces
- Avoid touching your eyes, nose and mouth with unwashed hands. Teach yourself not to touch your face. If you must do so, then wash/sanitize hands, touch your face, wash hands/sanitize afterwards
- Avoid touching surfaces others have touched. Use your knuckles to push buttons, elbows to open doors, disinfectant wipes to clean tables or chairs. Use gloves or wipes to pump gas or when pushing grocery carts
- Make yourself a cloth face mask to wear in public, especially in high traffic areas (i.e. the grocery store)
- When coughing and sneezing cover mouth and nose with flexed elbow or tissue – throw tissue away immediately and wash hands
- Avoid close contact with anyone who has a fever and/or cough
- Avoid direct unprotected contact with live animals and surfaces in contact with animals
- Avoid consumption of raw or undercooked animal products and handle with care raw meat, milk or animal organs

- If you have a fever, cough and/or difficulty breathing seek medical care early and share previous travel history with your healthcare provider. Contact your healthcare provider via phone/portal first. Going into clinic can expose you to the virus, so if you are told not to go in then don't.
    - If the person is advised to go to the hospital, it is recommended to put on a face mask
    - Since the majority of cases are mild, only a limited amount of people will require hospitalization for supportive care
    - In case of confinement at home
        - Follow proper measures for infection prevention and control: Focus on prevention of transmission to others
        - Monitoring for clinical deterioration, which may prompt hospitalization
        - Affected persons should be placed in a well ventilated single room, while household members should stay in a different room or, if that is not possible, maintain a distance of at least one meter from the person affected (e.g., sleep in a separate bed)
        - Perform hand hygiene (washing hands with soap and water for at least 20 seconds) after any type of contact with the affected person or their immediate environment. When washing hands, it is preferable to use disposable paper towels to dry them. If these are not available, clean cloth towels should be used and replaced when wet.
        - To contain respiratory secretions, a medical mask should be provided to the person affected and worn as much as possible. Individuals who cannot tolerate a medical mask should use rigorous respiratory hygiene—i.e., the mouth and nose should be covered with a disposable paper tissue when coughing or sneezing. Caregivers should also wear a tightly fitted medical mask that cover their mouth and nose when in the same room as the person affected.
- This issue is not likely to go away soon: therefore, learning how not to get infected is important. Preventing transmission to older people is most vital and therefore electronic communication is a better way to connect with grandchildren than in-person visits.

2.4.2 Staying at home

- Get up and go to bed at similar times every day.
- Eat healthy meals at regular times.
- Exercise regularly.
- Allocate time for working and time for resting.

- Make time for doing things you enjoy.
- Minimize newsfeeds. Try to reduce how much you watch, read or listen to news that makes you feel anxious or distressed. Seek the latest information at specific times of the day, once or twice a day if needed.
- Maintain social contacts. If your movements are restricted, keep in regular contact with people close to you by telephone and online channels.
- Limit the amount of alcohol you drink or don't drink alcohol at all. Don't start drinking alcohol if you have not drunk alcohol before. Avoid using alcohol and drugs as a way of dealing with fear, anxiety, boredom and social isolation.
    - There is no evidence of any protective effect of drinking alcohol for viral or other infections.
    - The harmful use of alcohol is associated with increased risk of infections and worse treatment outcomes.
    - Alcohol and drug use may prevent you from taking sufficient precautions to protect yourself again infection, such as compliance with hand hygiene.
- Limit screen time and make sure that you take regular breaks from on-screen activities.
- Use your social media accounts to promote positive and hopeful stories. Correct misinformation wherever you see it.
- If you are able to, offer support to people in your community who may need it, such as helping them with food shopping.
- Take opportunities online or through your community to thank your country's health-care workers and all those working to respond to COVID-19.
- Be kind:
    - Don't discriminate against people because of your fears of the spread of COVID-19.
    - Don't discriminate against people who you think may have coronavirus.
    - Don't discriminate against health workers. Health workers deserve our respect and gratitude.
    - COVID-19 has affected people from many countries. Don't attribute it to any specific group.
- If you are a parent:
    - Maintain familiar routines as much as possible, or create new ones, especially if you must stay at home.
    - Discuss the new coronavirus with your children in an honest way, using age-appropriate language.
    - Support your children with at-home learning and make sure time is set aside for play.
    - Help children find positive ways to express feelings such as fear and sadness. Sometimes engaging in a creative activity, such as playing or drawing, can help you with this process.

- Help children stay in contact with friends and family members through telephone and online channels.
- Make sure that your children have time away from screens every day and spend time doing off-line activities together. Do something creative: draw a picture, write a poem, or build something. Bake a cake. Sing or dance, or play in your garden, if you have one.
- Try and ensure that your children do not spend significantly more time than usual on video games.

- If you are an older adult:
  - Keep in regular contact with loved ones, for example by telephone, e-mail, social media or video conference.
  - Keep regular routines and schedules as much as possible for eating, sleeping, and activities you enjoy.
  - Learn simple daily physical exercises to do at home when in quarantine so you can maintain mobility.
  - Make sure you have a one-month supply or longer of your regular medicines. Ask family members, friends or neighbours for support, if needed.

2.4.3 Outpatient clinics

- Follow up visits for patients who are stable should be extended to 6 months to 1 year
- Establish and use telephone helpline services to provide advice in case of any non-serious health issues.
- Provide patients with their doctors/hospital phone numbers for further communication regarding their health.
- Establish patient's social media communication channels such as WhatsApp groups, Instagram or twitter for continued health education purposes including:
  - Preventive measures such as staying at home, hand hygiene, 6 foot physical distancing and wearing of masks
  - Advise to show up in the facility when they have symptoms that need to be addressed. Unless necessary, to reduce congestion, they should not be accompanied.
  - Support in their mental and emotional wellbeing to alleviate any anxiety and fear they may have about COVID-19.
- Consider regimens and schedules that reduce frequent hospital visits without compromising the benefits of the treatment, e.g.
  - Prescriptions of three or more months
  - Relatives or patient support peers to collect refills
  - Treatment regimes that require less visits to facilities
  - Provide larger dressing packs to patients to allow them to continue dressing their wounds for a longer period i.e. 2 - 4 weeks

- All high risk patients should be advised to stay at home, self-isolate, social distance, wear masks and adhere to frequent cleaning of hands. They should show up in the facility only when they have symptoms that need to be addressed. High risk patients include those with:
    - Cardiovascular disease (heart disease, hypertension)
    - Diabetes
    - Sickle cell disease
    - Cancer patients:
        - ✓ Patients receiving chemotherapy, or who have received chemotherapy in the last 3 months
        - ✓ People who have had bone marrow or stem cell transplants in the last 6 months, or who are still taking immunosuppressive drugs
        - ✓ People with some types of blood or lymphatic system cancer which damage the immune system, even if they have not needed treatment (for example, chronic leukaemia, lymphoma or myeloma).
- Counsel patients and parents to not delay seeking medical help for fever and other signs of infection
- Advocacy for use of private transport whenever possible, and taking necessary precautions when using public transport.
- Suspend outreach activities, mass screening campaigns as well a routine vaccinations in order to reduce patient and staff exposure and to free up clinical staff to deal with more urgent needs.
- Triage patients who attend for treatment
    - Establish 'checkpoints' for all patients attending health facilities.
    - Clinical staff at checkpoints should wear PPE
    - Handle immediately according to facility guidelines patients with recent new symptoms that are suspicious (fever, cough, difficulty in breathing, etc.). These should be dealt with immediately.
- In case manual medical files or investigation forms are used, only hospital staff should be allowed to carry the file from one service point to the other.

2.4.4 Patient Admissions

a) Only seriously ill patients and those with great need with inpatient services should be admitted
b) Separate high risk patients from other patients (reverse quarantine)
c) Number of Visitors and health care workers entering the wards should be strictly limited
d) Hospital stay should be minimized whenever possible
e) If available, airborne infection isolation rooms (AIIRs) should be used for patients who will be undergoing any aerosol-generating procedures.

During these procedures, all staff should wear N95 respirators or powered, air-purifying respirators (PAPRs) rather than a surgical mask.

2.4.5 Workers/staff safety

Health workers in health facilities have a higher exposure to pathogens, long working hours, psychological distress, fatigue, occupational burnout, stigma, and physical and psychological violence. The protection of physical and mental health, safety and wellbeing of health workers and responders in COVID19 requires collaboration and team work across infection prevention and control, occupational health and safety, mental health and psychosocial support, and human resource, under the leadership of the managers of healthcare facilities. The following measures, roles, responsibilities and rights are essential for protecting occupational safety, health, and wellbeing of all staff in the context of COVID19 outbreak.

- All staff shall be screened for COVID-19 daily before entering the facility. Screening shall include temperature measurement and history of exposure or respiratory conditions. Temperature checks should be initiated by the first person to arrive at the unit. Anyone who has a fever should be evaluated and tested to determine the cause of fever and to exclude COVID-19.
- Staff without symptoms should avoid exposing their family members by changing clothes, leaving shoes outside and bathing before returning home
- Staff found to have COVID-19 symptoms should not be allowed to work. They should immediately wear a surgical mask and then see a medical professional for evaluation and treatment.
- Staff who test positive should self-isolate or be sent to a designated treatment centre for further management
- The managers of each section and the facility Covid-19 surveillance officer shall be responsible for surveillance and must investigate any clusters of 3 or more staff developing a fever or on leave for respiratory illness
- Staff returning to work following isolation must be screened for COVID-19 and only those cleared shall be allowed to return to posts.
- All staff should be aware that they are responsible to report any COVID-19 symptoms and self-isolate if symptomatic to the facility Covid19 response team. There should be no heroes, all staffs with symptoms should self-isolate regardless of their roles.
- When some staff are quarantined, the remaining staff shall be reorganized in care teams that will help to ensure continuity of service in the facility.
- Staff should adhere to physical distancing – (separate rooms/minimize contact) or working remotely if possible

- The hospital's clinical areas shall be partitioned into three zones of varying contamination/protection levels including:
    - Clean Zones: administrative offices, staff lounges, etc.
    - Semi-contaminated Zones: changing rooms, patient corridors, restrooms, waiting areas, etc.
    - Contaminated Zones: front desk area, OPD clinics, radiology rooms, laboratory areas, inpatient wards, operating theatres, etc.
- All staff are required to stay in their zones unless in special circumstances where movement cannot be prevented.
- Consider tele-meetings whenever possible.

3 SPECIFIC NCD AND MENTAL HEALTH SERVICES ISSUES IN THE CONTEXT OF COVID-19

3.1 PULMONARY DISEASE

3.1.1 Introduction

COVID-19 is primarily a pulmonary disease, with symptoms ranging from mild to critically severe as follows:

Mild: Mild symptoms including fever, fatigue + absence of radiographic features + absence of pneumonia-like symptoms

Moderate: Fever + respiratory symptoms + presence of radiographic features

Severe: Dyspnea, respiration rate of >30/min or O2 saturation of <93% or PaO2/FiO2 of <300 mmHg (PaO2 = Partial pressure of oxygen; FiO2 = Fraction of inspired oxygen).

Critical: Respiratory failure or septic shock or multiple organ failure

Severe cases may be associated with:

- Acute respiratory distress syndrome (ARDS)
- Septic shock that may represent virus-induced distributive shock
- Cardiac dysfunction
- Elevation of multiple inflammatory cytokines that provoke a cytokine storm involving severe inflammation and thrombosis, and/or exacerbation of underlying co-morbidities.

In addition to pulmonary disease, patients with COVID-19 may also experience cardiac, hepatic, renal, and central nervous system disease. Renal and hepatic

dysfunction are consistently described in patients with severe disease, requiring renal replacement therapy.

COVI-19 infection has been associated with inflammation and a prothrombotic state, with increases in fibrin, fibrin degradation products, fibrinogen, and D-dimers and these markers have been associated with worse clinical outcome

Currently, the critical care management of patients with COVID-19 is essentially the same as that of other critically ill patients, but paying special precautions to prevent environmental contamination by SARS-CoV-2, attention to the primary process leading to the admission, and to other comorbidities and nosocomial complications.

In the care of patients with acute respiratory syndrome, interventions with demonstrated benefits include lung protective ventilation, positive-end expiratory pressure, prone positioning if needed, a conservative fluid management strategy, and paired awakening and spontaneous breathing trials. Consider the following:

3.1.2 Minimize nosocomial infections

- Minimize the use of aerosol-generating procedures such as endotracheal intubation and extubation; bronchoscopy; open suctioning; high-flow nasal cannula (HFNC) or face mask; nebulizer treatment; manual ventilation; physical proning of the patient; disconnecting a patient from a ventilator; mini bronchoalveolar lavage; noninvasive positive pressure ventilation (NIPPV); tracheostomy; or cardiopulmonary resuscitation. Whenever possible, carry out any necessary aerosol-generating procedures in a negative-pressure room, also known as an airborne infection isolation room (AIIR).
- Surgical masks block large particles, droplets, and sprays, but are less effective in blocking small particles (<5 μm) and aerosols. Use fit-tested respirators (N95 respirators) rather than surgical masks, in addition to other personal protective equipment (i.e., gloves, gown, and eye protection such as a face shield or safety goggles). In situations without ventilated patients, there are no statistical differences in protection between surgical masks and N95 respirators.
- Leave endotracheal intubation to be done by health care providers with extensive airway management experience, if possible

3.1.3 For acute hypoxemic respiratory failure despite conventional oxygen therapy:

- Options include high-flow nasal cannula (HFNC), noninvasive positive pressure ventilation (NIPPV), or intubation and invasive mechanical ventilation.
- Prefer HFNC oxygen over (NIPPV). Use a closely monitored trial of NIPPV if HFNC is not available

- For mechanically ventilated adults prefer low tidal volume (Vt) ventilation (Vt 4–8 mL/kg of predicted body weight) over higher tidal volumes (Vt >8 mL/kg)
- For mechanically ventilated adults with severe ARDS and hypoxemia despite optimized ventilation:
    - Prefer prone ventilation for 12 to 16 hours per day over no prone ventilation
    - Try inhaled pulmonary vasodilator

3.1.4 Venous Thromboembolism Prophylaxis and Screening:

- Patients who are receiving anticoagulant or antiplatelet therapies for underlying conditions should continue these medications if they receive a diagnosis of COVID-19
- For non-hospitalized patients, anticoagulants and antiplatelet therapy should not be initiated for prevention of venous thromboembolism (VTE) or arterial thrombosis unless there are other indications.
- Patients who experience an incident thromboembolic event or who are highly suspected to have thromboembolic disease at a time when imaging is not possible should be managed with therapeutic doses of anticoagulant therapy as per the standard of care for patients without COVID-19
- Patients who require extracorporeal membrane oxygenation or continuous renal replacement therapy or who have thrombosis of catheters or extracorporeal filters should be treated with antithrombotic therapy per the standard institutional protocols for those without COVID-19
- Hospitalized adults should receive VTE prophylaxis per the standard of care for other hospitalized adults
- Anticoagulant or antiplatelet therapy should not be used to prevent arterial thrombosis outside of the usual standard of care for patients without COVID-19
- Hospitalized patients should not routinely be discharged on VTE prophylaxis
- Extended VTE prophylaxis can be considered in patients who are at low risk for bleeding and high risk for VTE as per protocols for patients without COVID-19
- There are currently insufficient data to recommend for or against routine deep vein thrombosis screening in COVID-19 patients without signs or symptoms of VTE, regardless of the status of their coagulation markers.
- For hospitalized patients, the possibility of thromboembolic disease should be evaluated in the event of rapid deterioration of pulmonary, cardiac, or neurological function, or of sudden, localized loss of peripheral perfusion
- Management of anticoagulation therapy during labor and delivery requires specialized care and planning and should be managed similarly in pregnant patients with COVID-19 as other conditions that require anticoagulation in pregnancy
- Unfractionated heparin, low molecular weight heparin, and warfarin do not accumulate in breast milk and do not induce an anticoagulant effect in the

newborn; therefore, they can be used in breastfeeding women with or without COVID-19 who require VTE prophylaxis or treatment. In contrast, direct-acting oral anticoagulants are not routinely recommended due to lack of safety data.

3.1.5 Concomitant medication

- Persons who are prescribed ACE inhibitors or ARBs for cardiovascular disease (or other indications) should continue these medications
- It not recommended to use systemic corticosteroids for the treatment of mechanically ventilated patients without acute respiratory distress syndrome (ARDS). For patients with ARDS, there is insufficient evidence to recommend for or against the use of systemic corticosteroids
- For adults with refractory shock, it is prudent using low-dose corticosteroid therapy (i.e., shock reversal) over no corticosteroids
- It is not recommended to use systemic corticosteroids for the treatment of COVID-19 in hospitalized patients, unless they are in the intensive care unit
- Oral corticosteroid therapy used prior to COVID-19 diagnosis for another underlying condition (e.g., primary or secondary adrenal insufficiency, rheumatological diseases) should not be discontinued. On a case-by-case basis, supplemental or stress-dose steroids may be indicated
- Inhaled corticosteroids used daily for patients with asthma and chronic obstructive pulmonary disease for control of airway inflammation should not be discontinued in patients with COVID-19.
- The antenatal corticosteroids betamethasone and dexamethasone are known to cross the placenta and therefore are generally reserved for when administration is required for fetal benefit. Other systemic corticosteroids do not cross the placenta, and pregnancy is not a reason to restrict their use if otherwise indicated
- The American College of Obstetricians and Gynecologists recommends against offering antenatal corticosteroids for fetal benefit in the late preterm period (34 0/7 weeks–36 6/7 weeks) because the benefits of antenatal corticosteroids in the late preterm period are less well established. Modifications to care for these patients may be individualized, weighing the neonatal benefits of antenatal corticosteroid use with the risks of potential harm to the pregnant patient
- Persons who are prescribed statin therapy for the treatment or prevention of cardiovascular disease should continue these medications
- Persons who are taking NSAIDs for a co-morbid condition should continue therapy as previously directed by their physician. There be no difference in the use of antipyretic strategies (e.g., with acetaminophen or NSAIDs) between patients with or without COVID-19.
- For the treatment of shock, broad-spectrum empiric antimicrobial therapy is standard of care: otherwise broad spectrum antimicrobial therapy only if evidence of bacterial infection.

3.1.6 Inadequate Response

In case of deteriorating hemodynamic or respiratory status consider the full differential diagnosis of shock to exclude other treatable causes of shock:

- Bacterial sepsis due to pneumonia or an extra-pulmonary source. Watch out for nosocomial infections and other complications of critical illness care, such as VAP, HAP, catheter-related bloodstream infections, and venous thromboembolism.
- Hypovolemic shock due to unrelated gastrointestinal hemorrhage
- Cardiac dysfunction related to COVID-19 or comorbid atherosclerotic disease (Myocarditis and pericardial dysfunction occurs in approximately 20% of patients and acute cardiac injury and arrhythmias have also been described)
- Stress-related adrenal insufficiency

3.1.7 Asthma and COVID-19

What impact does asthma have in COVID-19?

- In the first large UK study, patients with asthma had twice the average hospital admission rate for COVID-19.
- Asthma does not appear to increase death rates in COVID-19, either in the UK data or internationally.
- Inhaled corticosteroids do not appear to increase the risk of infection with COVID-19. In fact, they may be protective against the adult respiratory distress syndrome which leads to respiratory failure in this disease.
- COVID-19 does not appear to cause asthma exacerbations.

What are the respiratory consequences of COVID-19 in the general population?

- COVID-19 produces an interstitial pneumonitis with many patients also having multiple pulmonary emboli.
- 20-60% of patients with SARS or MERS develop long-term physiological impairment and imaging changes consistent with pulmonary fibrosis.
- For patients with severe illness (usually those admitted to hospital), cough and breathlessness should have substantially reduced by six weeks, but fatigue may persist for up to six months.
- Patients who have been on a ventilator may take more than a year to fully recover due to ICU-acquired weakness, and some never get back to their pre-illness baseline.
- The physical and psychological consequences of severe illness are significant.

Management Recommendations

- Patients should be encouraged to continue with their preventative asthma treatments.
- Patients with severe asthma should not leave the house for any reason until the pandemic is low. They should get assistance to have groceries and medicines delivered. These people include:
    - People who have had four or more prescriptions for prednisolone over the six months
    - People on regular inhalers AND long term steroid tablets, OR
    - Regular injections to control asthma
    - All patients with asthma treated with biological agents
- Patients with mild-moderate asthma should be encouraged to "socially distance" and avoid contact with those outside the household where possible. These include:
    - People over 70
    - Those with asthma, COPD, or emphysema
    - Pregnant women
    - Obese people

Increasing age and male sex all confer significantly higher risk.

What about oral corticosteroids?

Oral corticosteroids were used extensively in the SARS outbreak of 2002-3. Evaluation later showed that there was little evidence of benefit and some evidence of harm. It appears that steroid treatment impaired clearance of the virus.

- Oral corticosteroids are not advised routinely in COVID-19.
- In asthma, they should be used in exacerbations as we usually would.
- Patients who think they are having an exacerbation, should follow their individualised COPD self-management plan and start a course of oral corticosteroids and/or antibiotics if clinically indicated.
- Patients should **not** start a short course of oral corticosteroids and/or antibiotics for symptoms of COVID-19, for example fever, dry cough or myalgia.

What should we be doing as GPs?

- Clinicians should titrate asthma medications using the usual stepped-care approach at this time.
- Optimise asthma control with telephone or video consultations.
- Use video consultations to teach inhaler technique. Videos can be texted to patients to reinforce the correct method.
- Encourage patients to continue with their regular medication. Oral and inhaled steroids should not be stopped abruptly.
- Support attempts at smoking cessation.

- Support obese patients with weight management.
- Encourage patients to “pre-habilitate” (get fit before a likely physiological stressor).
- Minimise face-to-face encounters by using remote consultations and prescription delivery services.
- Avoid patients having to wait in the waiting room for face to face appointments.
- Patients should not be routinely prescribed antibiotics for continuing symptoms unless there is evidence of bacterial infection such as:
    - sudden worsening of symptoms
    - high fever
    - purulent sputum
    - unilateral lung signs
        - pleuritic pain.

3.2 CARDIOVASCULAR DISEASE

3.2.1 Background

Severe forms COVID-19 have significant implications for the cardiovascular care of patients. Those with pre-existing cardiovascular disease have an increased risk of severe disease and death, the infection has been associated with multiple direct and indirect cardiovascular complications including acute myocardial injury, myocarditis, arrhythmias, and venous thromboembolism, therapies under investigation for COVID-19 may have cardiovascular side effects, the response to COVID-19 can compromise the rapid triage of non-COVID-19 patients with cardiovascular conditions, and the provision of cardiovascular care may place health care workers in a position of vulnerability as they become hosts or vectors of virus transmission

- A systemic infection generally increases demand on the heart, and can exacerbate underlying cardiac conditions.
- When the lungs are heavily involved, as seen in COVID-19 patients, this may have a major impact on cardiac function, particularly that of the right ventricle.
- COVID-19 may have direct effects on the heart, as may some drugs being used in its treatment.
    - SARS-CoV binds to cells expressing appropriate viral receptors, particularly angiotensin-converting enzyme 2 (ACE2). Angiotensin-converting enzyme 2 is also expressed in the heart, providing a link between coronaviruses and the cardiovascular system

    - SARS-CoV can down-regulate myocardial and pulmonary ACE2 pathways, thereby mediating myocardial inflammation, lung oedema, and acute respiratory failure.
    - Pro-inflammatory cytokines are up-regulated in the lungs and other organs of SARS patients, and the systemic inflammatory response syndrome provides a possible mechanism for multi-organ failure (usually involving the heart) in severe cases.
- Cardiovascular complications of COVID 19 infection, including
    - Myocarditis (evidenced by electrocardiographic changes and troponin elevation)
    - Acute Myocardial Infarction (AMI)
    - Exacerbation of heart failure have been well-recognized during previous historical epidemics and make a significant contribution to mortality.
- Hypotension, tachycardia, bradycardia, arrhythmia, cardiomegaly, arrhythmias, or even sudden cardiac death are common in patients with SARS.
- Echocardiography frequently demonstrates sub-clinical left ventricular diastolic impairment (with a higher likelihood of the need for mechanical ventilation in those with systolic impairment and reduced ejection fraction).
- Chronic cardiovascular disease may become unstable in the setting of viral infection as a consequence of imbalance between infection-induced increase in metabolic demand and reduced cardiac reserve.
- Patients with coronary artery disease and heart failure may be at particular risk as a result of coronary plaque rupture secondary to virally induced systemic inflammation which may increase the likelihood of stent thrombosis.

For adults with shock:

- Use dynamic parameters, skin temperature, capillary refilling time, and/or lactate over static parameters to assess fluid responsiveness
    - Dynamic parameters used in these trials included stroke volume variation (SVV), pulse pressure variation (PPV), and stroke volume change with passive leg raise or fluid challenge. Passive leg raising, followed by PPV and SVV, appears to predict fluid responsiveness with the highest accuracy.
    - The static parameters included components of early goal-directed therapy (e.g., central venous pressure, mean arterial pressure).
- Use norepinephrine as the first-choice vasopressor and then consider adding either vasopressin (up to 0.03 U/min) or epinephrine to norepinephrine to raise mean arterial pressure to target, or adding vasopressin (up to 0.03 U/min) to decrease norepinephrine dosage.

When norepinephrine is available, dopamine should not be used, nor should low-dose dopamine be used for renal protection

- Consider using dobutamine in patients who show evidence of cardiac dysfunction and persistent hypoperfusion despite adequate fluid loading and the use of vasopressor agents
- For adults with refractory shock, use low-dose corticosteroid therapy ("shock-reversal")
    - A typical corticosteroid regimen in septic shock is intravenous hydrocortisone 200 mg per day administered either as an infusion or intermittent doses. The duration of hydrocortisone therapy is usually a clinical decision

3.2.2 Measures to decrease the risk of patient to patient, patient to imager, and imager to patient contamination

- Perform cardiac imaging test only if appropriate and only if it is likely to substantially change patient management or be lifesaving
- Use the imaging modality with the best capability to meet the request, but consider also the safety of medical staff regarding exposure
- Elective non-urgent and routine follow-up exams may be postponed or even cancelled
- Possible/significant risk of contamination of equipment and facilities
- Avoid widespread contamination due to transportation of critically ill or high-risk patients—the echo machine should be brought to the patient
- Prolonged duration of a cardiac imaging study will increase the likelihood of contamination
- The risk of contamination of equipment and personnel is very high during Transthoracic Echocardiography (TOE) - consider repeat TTE, CT scan, or Cardiovascular Magnetic Resonance (CMR) as alternatives
- If TTE is required to change patient management, we recommend a focused cardiac ultrasound study (FoCUS) to reduce the duration of exposure
    - At a minimum, such a focused echocardiographic study in patients with verified or suspected COVID-19 should include the following.
    - *Left ventricle*: systolic global function (ejection fraction), signs of regional dysfunction, end-diastolic cavity dimension.
    - *Right ventricle*: global function [right ventricular fractional area change (RVFAC) or tricuspid annular plane systolic excursion (TAPSE)], end-diastolic cavity dimension, tricuspid regurgitation pressure gradient (TRP) (if possible).
    - *Valves*: gross signs of valvar disease, but only in cases of critical clinical importance should an in-depth evaluation be considered.
    - *Pericardium*: thickening or effusion.

    - ECG monitoring during imaging can be omitted and measurements should be performed offline to reduce exposure and contamination. If a curtailed echocardiogram is performed because of the COVID-19 situation, this should be stated in the report.
  - Chest CT is frequently used to confirm COVID-19 pneumonia and might provide possible synergies and opportunities of cardiac imaging
  - Coronary CT angiography can exclude or confirm an acute coronary syndrome in COVID-19 pneumonia where elevated troponins are common
  - Echocardiography should not routinely be performed in patients with COVID-19 disease
  - LV function can be assessed by LV angiogram in patients with acute coronary syndromes during the invasive revascularization procedure
- Positive troponins and myocardial dysfunction or severe arrhythmia suggestive of Tako-tsubo or myocarditis may be an indication for acute CMR if of vital importance for treatment, and patient can be safely transferred for imaging
- Indications for foetal echocardiography remain the same as outside the COVID-19 pandemic
- To reduce the time of exposure with the patient and to decrease the risk of contamination, hand-held or smaller lap-top-based scanners may have an advantage as they are easier to cover, clean, and disinfect than larger machines with higher capability.
- Some procedures (pulmonary artery catheter placement, pericardiocentesis and intra-aortic balloon pump insertion) now need to be considered to be performed in bed, to avoid transport of patients.

3.2.3 Issues in Catheterization Laboratory during Covid-19 Outbreak

- It seems acceptable to avoid elective procedures on patients with significant comorbidities or in whom hospitalization is expected to be >1 to 2 days, or in whom requirement of intensive care unit is anticipated.
- Procedures that can be postponed are: Percutaneous coronary intervention (PCI) for stable ischemic heart disease,
- Postponing of procedures in some patients may have adverse effects and therefore individualized decisions should be made, weighting risk of COVID-19 exposure vs. risk of delay in diagnosis or therapy

3.2.4 STEMI patients

- A report from China described a protocol of rapid nucleic acid testing and fibrinolytic therapy in COVID-19 patients with STEMI
- However, in many countries primary PCI is routine procedure in STEMI patients and there a limitation in access to rapid nucleic testing. In relatively stable STEMI patients infected with COVID-10, fibrinolysis can be a therapeutic option.

- When primary PCI is performed in STEMI patients with active COVID-19, personnel should wear personal protective equipment (PPE). Use of Powered Air Purifying Respirator (PAPR) systems is also reasonable, in particular for vomiting patients or those who require CPR and/or intubation.

3.2.5 NSTEMI patients

- There is time for diagnostic testing for COVID-19 in most patients with NSTEMI before they will undergo cardiac catheterization, resulting in more information in relation to infection control. In those who have been revascularized, rapid discharge is important to maximize bed availability and reduce exposure in the hospital for the NSTEMI patients.
- In appropriately selected NSTEMI patients with COVID-19 infection, particularly those with type 2 MI and patients who are hemodynamically stable, conservative therapy has been suggested
- Recent reports published a 7% rate of acute cardiac injury in COVID-19 patients, representing type 2 MI or myocarditis
- If possible, cases of (suspected) COVID-19 should be done at the end of working day when considering the requirement for terminal cleaning. Or one lab should be designated for COVID-19 patients
- Staff could become infected/exposed/quarantined and in combination with strain on home situation due to school closures, this could result in staff shortages. Specific considerations for care subspecialty teams seems reasonable, such as separation of individuals with overlapping skillsets.
- We should protect ourselves, we should be really selective in who we take, and we should be very careful that we're not going to see one of these 'mimics' of STEMI that is a really just a COVID-19-positive myocarditis,"

3.2.6 Other Treatments

- Consider use of plaque stabilizing agents (aspirin, statins, beta-blockers, and angiotensin-converting enzyme inhibitors)
- Consider intensified anti-platelet therapy in those with a history of previous coronary intervention
- Currently used cardiovascular drugs (including ACEI, and ARBs) should be continued.

3.3 HAEMODIALYSIS SERVICE DELIVERY

3.3.1 Overview of COVID-19 and Kidney Disease

All patients with kidney disease are not only more prone to acquire infections but also are more likely to develop severe COVID-19 diseases (needing High Dependency Unit (HDU) or ICU management) as compared to general population.

- Patients with nephrotic/nephritic glomerular diseases are usually under significant immunosuppression (prolonged doses of oral corticosteroids and intravenous methylprednisolone pulsing) that renders them extremely vulnerable to contract infections including COVID-19.
- Post- kidney transplant recipients are always under heavy immunosuppression and prolonged prophylactic antimicrobials to protect them from allograft failure. This further compromise their immunity and exposes them to a number of infections and makes them especially vulnerable to contracting COVID 19.
- Chronic Kidney Disease stage-5 (CKD-5) patients on maintenance hemodialysis (MHD) or continuous ambulatory peritoneal dialysis (CAPD) are vulnerable group because of:
    - their existing comorbidities (mainly diabetes mellitus and hypertension)
    - repeated unavoidable exposure to hospital environment (i.e attending for hemodialysis therapy every other day)
    - immunosuppressed state due to CKD-5.

Some aspects of routine care should be modified to minimize this vulnerability:

- Efforts should be made to avoid intravenous methylprednisolone pulsing for patients with nephrotic-nephritic conditions
- Antimetabolites should be avoided as part of immunosuppressant regimen among post-kidney transplant recipients.
- Pre-dialysis and post-kidney transplant recipients can be managed remotely (i.e. reduce routine hospital visits, modify treatment regimens etc.)

Patients on maintenance hemodialysis are relatively immunosuppressed and in our settings have to visit a center (twice to thrice a week) to receive this therapy. This makes them extremely vulnerable to contract COVID-19. The following recommendations are aimed at minimizing COVID-19 infections in hemodialysis units.

3.3.2 For All Areas

- All patients should wear a mask while in the dialysis room (this can be clothing or surgical mask)
- All staff should wear a surgical mask while in the dialysis room
- All staff should follow standard operating procedures for the disposal of used PPE and regulated medical waste
- If linens or disposable cover sheets are used on the dialysis chairs or beds, follow standard procedures for laundering or disposal of used items.

3.3.3 Screening of Dialysis Patients and Staff

- Only dialysis patients and staff working in the unit should be allowed to enter dialysis units.
- Other persons including family members of patients should not be allowed to congregate within the unit waiting area.
- Ask all patients about symptoms consistent with COVID-19 preferably by phone call one day prior to the day of dialysis therapy
- Dedicate staff(s) for screening of ALL dialysis patients.
- Use symptoms checklist for
    - Fever
    - Cough
    - Shortness of breath
    - Loss of sense of smell and taste
    - Any household or family member with recent international travel, contact with a person with COVID or presenting similar symptoms (fever, dry cough, shortness of breath)
- This screening should be complemented with examination for
    - Body temperature
    - Oxygen saturation (using portable pulse oximeter)

If a patient presents with any symptoms/signs or has alerted the staff of symptoms prior to presentation at the dialysis unit, please do the following:

- Place the patient in a dedicated space and provide a facemask
- Ensure that the person is seen by a doctor as soon as possible and alert the head of unit immediately
- Do not allow the patient to enter the dialysis treatment area until they have been seen by a doctor and the head of unit is informed
- If the patient in question urgently requires dialysis, have the patient wear a N95 mask or equivalent and do one session only before further investigation or referral is carried out
- The patient should be placed in a bed that is appropriately spaced (2 meters away from any other patient in all directions and ideally located at the corner or end-of-row station, away from the main flow of traffic) and isolated as feasible (e.g. medical treatment screens)
- The above should also be applied to patients reporting symptoms from home
- Follow the hospital protocols for isolation and testing for COVID-19
- The following tests are recommended for evaluating a patient suspected to have COVID-19
    - FBP and ESR
    - Serum Ferritin, CRP and D-Dimer
    - Chest X-ray
    - CT Chest

3.3.4 Dialysis of Patients Suspected of Covid-9

For patients who do not have diagnosis of COVID-19, standard measures of infection prevention and control should be followed for dialysis.

Suspected patients should be dialyzed in a dedicated room: if a room is not available the patient should be dialyzed at a machine furthest away from other patients (maintaining 6 feet).

3.3.5 Dialysis of Covid-19 Positive Patients

- Dialysis staff providing dialysis therapy for these patents should use full Contact and Droplet Personal Protective Equipment including:
    - Gloves
    - Facemask
    - A cap
    - Eye protection (e.g. goggles, a disposable face shield that covers front and sides of the face). Personal glasses and contact lens are NOT considered adequate eye protection
    - Isolation gown. Place used gown in a dedicated container for waste or linen before leaving the dialysis station. Discard disposable gowns. Cloth gowns should be laundered after each use.
- All COVID-19 positive patients should:
    - Be dialyzed in an isolated room OR dialyzed on dedicated days OR dialyzed on a dedicated shift until they have tested negative for COVID-19 or for 14 days or have cleared their symptoms
    - Not be kept at the waiting bay with other patients: If possible they should wait in their cars and to be called when they are due for treatment
    - Wash their hands before entering the dialysis unit
    - Wearing surgical mask all the time and during the dialysis therapy
    - Observe cough etiquette all the time
    - *When stable be allowed to stay at home and come for dialysis on their scheduled days and time.*

3.4 ONCOLOGY SERVICES

3.4.1 Background

Available data suggest that there is a higher risk for infection or severe illness with COVID-19 for cancer patients due to the immune suppression by radiation and many of the chemotherapeutic agents used in cancer therapy. Additionally, recent studies from developed countries including China, Italy and USA have documented that 28.6% of cancer patients were suspected to have been infected with COVID-19 from hospital-associated transmission.

The following recommendations include options on how to safely continue important cancer care while minimizing the risk of infection to staff, patients and the general public.

3.4.2 OPD Clinics

a) Consider rescheduling of routine procedures such as HBV testing and vaccination for new clients and instead focus should be on those returning for 2nd and 3rd dose of vaccination. Resume those services to near normal when enough resources including PPEs are available to ensure patients are not denied access to basic services.

b) For patients on oral hormonal therapy and who can be monitored remotely, provide 3 months courses of treatment to reduce congestion in the hospital. Make regular follow up by phone or other virtual means to ensure patients are closely monitored.

c) More intensive surveillance/follow up for 'high risk' (elderly, those with lung tumours or underlying co-morbidities) patients who are on treatment.

d) Tumour Board meetings can be conducted virtually or very few members can meet whenever deemed necessary.

3.4.3 Radiotherapy

a) Continue treatment for COVID19-positive cancer patients who had started treatment

Treatment should be done at a set time with RT machines dedicated for patients who are known/suspected for COVID-19, and are stable for radiotherapy. Radiotherapist treating these patients should wear full PPE during treatment.

b) Categorize patients in order to reduce congestion at the RT unit.

- Select longer neo-adjuvant chemotherapy regimens in order to delay RT for at risk patients (cancer patients with other co-morbidities like diabetes, heart disease etc), thus, consider hormonal treatments (e.g. prostate ca)
- Continue routine treatment for patients who should not be delayed: oncologic emergencies (Spinal Cord Compression), rapidly growing/progressing solid tumours (HNCs?), paediatric tumours
- Consider shorter courses (hypofractionated RT) of treatment where appropriate and feasible
- Patients should arrive and be treated at the RT unit based on the allocated time of the day, thus timetable for treatment should be made available so that each patient knows his/her time of treatment
- Radiotherapist should always enquire about fever and respiratory symptoms among patients receiving radiotherapy

c) Decontaminate radiotherapy equipment after each use

d) Adhere to physical distancing between staff – oncologists, physicists (separate rooms/minimize contact) or working remotely if possible

3.4.4 Chemotherapy

a) Chemotherapy should be planned and administered to patients whose condition is life threatening, clinically unstable, and/or the magnitude of benefit qualifies the intervention as high priority (e.g. significant overall survival gain and/or substantial improvement in quality of life).

b) Oncologist should discuss with patients and family members the benefits and risks of present cancer therapy in the setting of the COVID-19 pandemic, disease prognosis, patient comorbidities, patient preferences, probability and risks from COVID-19 infection. Chemotherapy should be individualized.

c) If local treatment for early stage (surgery) is planned, explore possibilities of postponing using a “wait and see” approach (like in some prostate cancer) or prioritise treatment balancing the cost/benefit ratio according to age, comorbidities and impact on outcome of the surgical procedure.

d) Cancer patients who are not COVID-19 positive should continue with their chemotherapy treatment as planned and should ensure they were surgical masks. Some patients on intravenous treatment can switch to oral formulation if it suits the purpose and available.

e) For cancer patients who are COVID-19 positive, chemotherapy should be postponed, and the patient should be isolated based on National Guideline until he/she test negative. Chemotherapy can only continue for COVID-19 positive patients if it is needed urgently to control the cancer; and proper protection for staff and other patients should be adhered to including isolated room/ward for the chemotherapy.

f) Palliative team should discuss the benefits and risks of palliative therapies and the options of “therapy holidays” “Stop and Go”, maintenance, switch to oral drugs, if available, during the pandemic.

g) For the priority patients, doctors should consider regimens and schedules that reduce frequent hospital visits without compromising the benefits of the treatment. For example weekly chemotherapy versus three weekly regimen.

h) Higher risk cancer patients should be advised to wear surgical mask, self-isolate at home and adhere to frequent cleaning hands/ IPC. Higher risk cancer patients include:

- Patients receiving chemotherapy, or who have received chemotherapy in the last 3 months
- People who have had bone marrow or stem cell transplants in the last 6 months, or who are still taking immunosuppressive drugs
- People with some types of blood or lymphatic system cancer which damage the immune system, even if they have not needed

treatment (for example, chronic leukaemia, lymphoma or myeloma).

3.5 DIABETES

3.5.1 Background

The risk of infection with COVID-19 in people with diabetes has not been shown to be higher than in the general population. However, if they get the virus, people with diabetes can have serious illness with increased risk of morbidity and mortality.

- Hyperglycemia and diabetic ketoacidosis (DKA) contribute to morbidity and mortality in COVID-19 - including among people without a prior diabetes diagnosis
- Persistent hyperglycemia (≥ 180 mg/dL) was associated with a fourfold greater risk for mortality in patients with COVID-19, rising to sevenfold among those without a pre-existing diabetes diagnosis.
- A study from China found that fasting blood glucose independently predicted multiorgan injury, poor outcomes, and death among patients with COVID-19.
- Extreme levels of insulin resistance, hyperglycemia, and DKA - both hyperglycemic and euglycemic – are seen in COVID-19 patients with type 1 and type 2 diabetes
- The covid-19 pandemic is associated with far more than the usual numbers of new-onset cases of both types of diabetes: it is possible that the virus could be directly attacking the islets, or the cytokine storm associated with COVID-19 is just overwhelming the system in a way that other infections don't.

An acute increase of glycaemia is accompanied by a huge increase of inflammatory mediators.

- Glycosylation of the ACE2 in tissues is needed for the linkage of the virus to this cellular receptor: therefore, high and aberrantly glycosylated ACE2 in the tissue in uncontrolled hyperglycemia could favor the cellular intrusion of SARS-CoV2, thus leading to a higher propensity to COVID-19 infection and a higher disease severity.
- The hyperglycemia-related glycosylation is at the beginning a reversible process: therefore, it is conceivable that a fast normalization of hyperglycemia during COVID-19 may results in a decrease of inflammatory cytokines release and in a lower ACE2 binding capacity for the virus, two facts which consistently might help in improving the prognosis in people affected by SARS-CoV- 2.

Chronic hyperglycemia negatively affects immune function and increases the risk of morbidity and mortality due to any infection and is associated to organic complications. Deterioration of glycemic control is associated with an impairment of ventilatory function and thus may contribute to a worse prognosis in these patients.

In view of the above, ideally, all patients with diabetes and COVI-19 should be hospitalized.

3.5.2 Special Education to People with Diabetes

- Wash your hands and clean your injection/infusion and finger-stick sites with soap and water or rubbing alcohol.
- Maintain a good glycemic control (to reduce the risk of infection itself and may modulate the severity of the clinical expression of the disease). Optimum blood glucose are:
    - ✓ Fasting plasma glucose concentration: 4–6 mmol/L
    - ✓ Post prandial plasma glucose concentration: 6–10 mmol/L
- Hydroxychloroquine (HCQ) and chloroquine are associated with hypoglycaemia and cardiac effects and there is currently no clear evidence for their use as prophylaxis against COVID-19
- If/When infected (may experience a deterioration of glycemic control during the illness, like in any other infectious episodes) implement “Sick day rules” to overcome potential diabetes decompensation
    - Monitor your blood sugar and ketones more than usual. This is highly important if you are not eating or drinking much, or if you are taking medication to address symptoms such as fever and muscle aches.
    - It may be necessary to take extra insulin to bring down higher blood glucose levels.
    - Be on the lookout for ketones, as very high levels could lead to diabetic ketoacidosis (DKA), a dangerous condition that demands immediate medical attention, and can be fatal if left untreated. If you are vomiting, or have moderate or large ketones or symptoms of DKA, contact your healthcare provider immediately and seek emergency assistance.
    - Drink lots of fluids. If you are having trouble keeping water down, have small sips every 15 minutes or so throughout the day to avoid dehydration. Lactic acidosis will probably occur if patients are dehydrated, and therefore consider insulin instead of metformin and follow the sick day rules.
    - If you are experiencing a low (blood sugar below 70 mg/dl or your target range), eat 15 grams of simple carbohydrates that are easy

to digest like honey, jam, hard candy, juice or regular soda, and re-check your blood sugar in 15 minutes to make sure your levels are rising. Check your blood sugar extra times throughout the day and night (generally, every 2-3 hours)

- Contact healthcare provider team for advice concerning the measures to avoid risk of deterioration of diabetes control or the possibility to be referred to another specialist (pneumologist or infectious disease doctor) or in the Emergency Services of the referral hospital to avoid the most serious systemic complication of the viral infection itself.
- Be sure to renew and refill prescriptions well before you run out and have a maximal number of refills available
- Diabetes UK advices to stop Sodium-Glucose-Transporter-2 inhibitors (SGLT-2i), the Glucagon-Like-Peptide-1 Receptor Agonists (GLP-1RAs), and Pioglitazone:
    - They might induce an over-expression of the ACE2 receptor therefore increasing the risk of people with diabetes to have more serious consequences if infected
    - Inflammation plays a key role during the SARS-CoV-2 infection. The role of the known anti-inflammatory effects of DPP4-inhibitors, GLP-1 receptor analogues and SGLT-2I in people with diabetes infected with the virus needs to be evaluated.
- "Staying at home" comes with increased stress associated with social isolation and lack of physical activity and provides ground for worsening glycemic and blood pressure control, further predisposing these vulnerable patients to COVID-19 infections. Patients should strictly adherence to measures for stress reduction and ensure adequate physical activity.
- Patients with diabetes heading to the hospital with suspected COVID-19, should bring everything they can - all the equipment they currently use, including glucose meters, test strips, and CGM, and insulin pump supplies, particularly if the patient is taking a type not typically available on hospital formularies, to avoid having to do any transitioning to alternative medication.

3.5.3 Acute Diabetes Management

About 9% of people 25-64 years in Tanzania have diabetes, but only 22% of these are diagnosed. If infected, those undiagnosed will also present with severe illness.

The following have been observed regarding diabetes and COVID-19:

- COVID-19 infection in people with or without previously recognized diabetes increases the risk of the emergencies of:
    - hyperglycaemia with ketones
        - For people with type 2 diabetes, risk is even greater if on a SGLT-2 inhibitor

        - For people with newly diagnosed diabetes COVID-19 disease precipitates atypical presentations of diabetes emergencies (e.g., mixed DKA and hyperosmolar states)
    - Diabetic Ketoacidosis (DKA)
    - Hyperosmolar Hyperglycaemic State (HHS)
- Fluid requirements may differ in those with DKA/HHS and evidence of “lung leak” or myocarditis
- Significant insulin resistance is seen in people with type 2 diabetes in ICU settings

Therefore being acutely unwell with suspected/confirmed COVID-19 requires adjustment to standard approaches to diabetes management:

- Check blood glucose in everybody on admission.
- Do HBA1C in those who were otherwise well but comes in with a random blood glucose of 180-230 mg/dl
- Check ketones in:
    - everybody with diabetes being admitted
    - everybody with an admission glucose over 12 mmol/l
- Stop SGLT-2 inhibitors in all people admitted to hospital
    - There is also some agreement that other noninsulin glucose-lowering medications be stopped as well, due to too much variation in their renal function.
    - Dipeptidyl peptidase 4 (DPP-4) inhibitors in people with type 2 diabetes may help with diabetes control and reduce the severity of the COVID-19 infection but these patients are so insulin resistant when they come in, and DPP-4 inhibitors may not touch them. Insulin is literally the only option, and in very high doses.
- Consider using 10-20% glucose where ketosis persists despite treatment in line with usual protocols
- After restoring the circulating volume the rate of fluid replacement regimen may need to be adjusted where there is evidence of “lung leak”, myocarditis, or acute renal failure:
    - Most have acute kidney injury, resulting in fluid overload. Renal function should be carefully monitored for acute kidney injury
    - In critically ill patients, withholding fluids may be needed to avoid cardiopulmonary compromise
    - But treatment of DKA requires adequate fluids to just get past the ketosis-forming stage, and this should be the priority.
- Use alternative s/c regimens to manage
    - Hyperglycaemia
    - Mild DKA
- IV insulin protocols may need amending (people seen requiring up to 20 units/hr)

- Patients are often nursed prone so feeding may be accidentally interrupted – paradoxical risk of hypoglycaemia

Always continue usual long acting basal insulin

Patients who are very sick or not eating should have a Variable Rate Intravenous Insulin Infusion, with usual basal subcutaneous (SC) insulin continued alongside.

Patients with blood ketones > 1.5 have an increased risk of DKA. Consider:

- Oral or IV fluids
- Rapid acting insulin if glucose above 16mmol/L

If blood ketones =>3mmol/L, DKA is confirmed if:

- Blood glucose > 11 mmol/L (or history of diabetes) and
- pH < 7.3 or bicarbonate <15

  NOTE: Glucose can be <11mmol/L if patients are

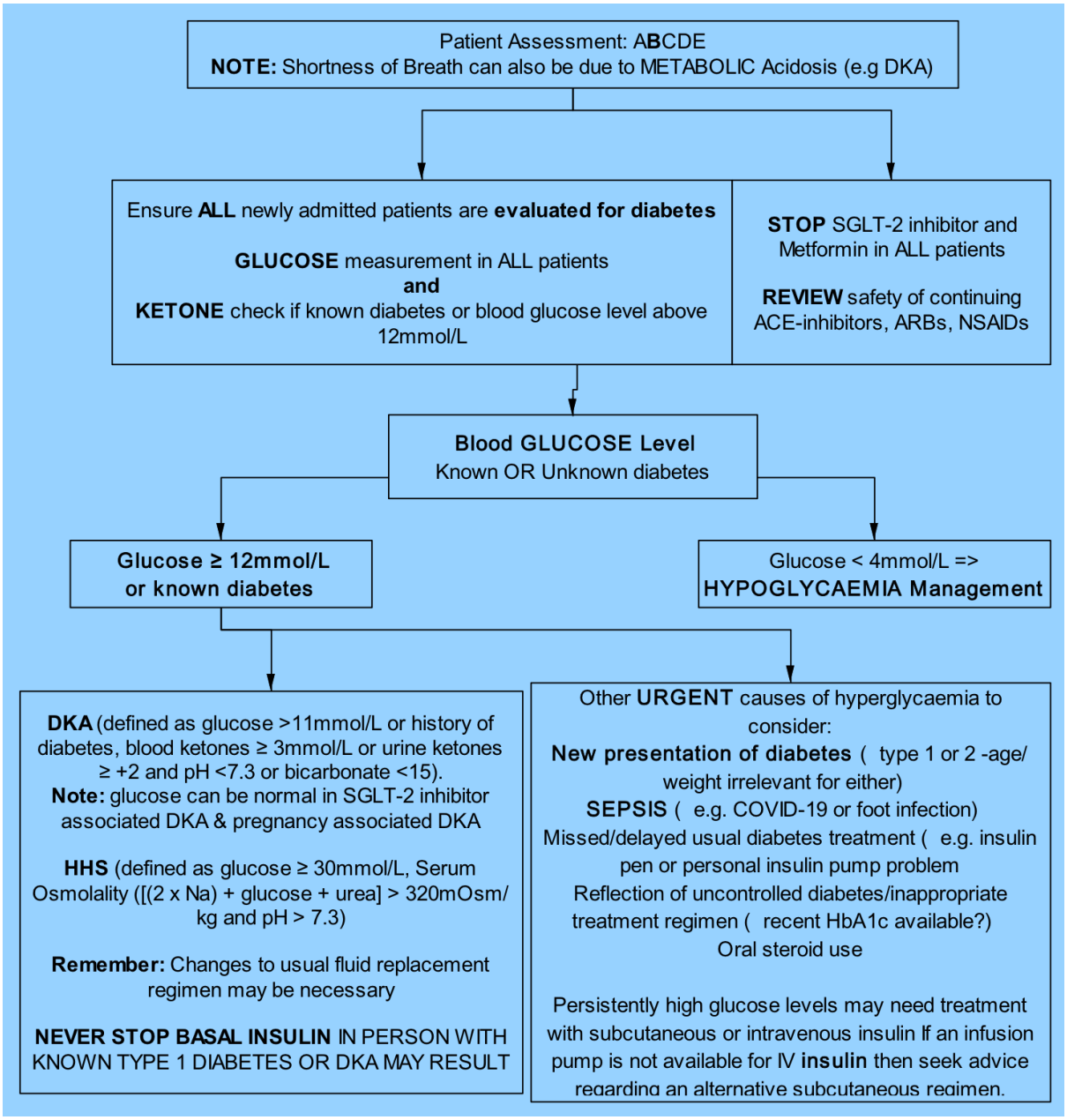
  - On SGLT-2 inhibitor treatment
  - Pregnant AND/OR
  - Severe COVID-19 infection

Beware of hypoglycemia: The COVID-19 patients are glucotoxic in the beginning, but as soon as you catch up, all of a sudden you have horrible hypoglycemia.

- Where possible, encourage patients to perform glucose monitoring themselves and report the results to the nurses to reduce the amount of time nurses need to spend in the patient's room, and the associated use of personal protective equipment (PPE).
- If patients are unable to manage their personal insulin pump, after removing the pump, start subcutaneous basal-bolus insulin.
- Calculate total daily insulin dose using 0.5 units/kg and give half the total dose as basal/background insulin and half as bolus/mealtime rapid acting insulin. Example, 0.5 units x 60 kg = total daily insulin dose of 30 units. Give half dose (15 units) as basal insulin and 15 units as bolus insulin (5 units at each meal-time).

ALWAYS exclude acute foot infection (may be the source of sepsis) or critical limb ischaemia and always protect the foot. The algorithm below summarizes the required actions.

Algorithm for acute diabetes management



In summary, during illness:

- Renal function should be carefully monitored because of the high risk of chronic kidney disease or acute kidney injury
- Patients should avoid initiating therapy during respiratory illness
- Dehydration is likely to lead to a serious illness so patients should be closely monitored. Adequate fluid intake and regular meals should be encouraged
- Insulin therapy should not be stopped
- Regular self-monitoring of blood-glucose every 2–4 hours should be encouraged, or continuous glucose monitoring
- Carefully adjust regular therapy if appropriate to reach therapeutic goals according to diabetes type, comorbidities, and health status

3.6 ADRENAL INSUFFICIENCY

3.6.1 Background

Patients with Addison's disease (primary adrenal insufficiency) and congenital adrenal hyperplasia have a slightly increased overall risk of catching infections and an overall increased mortality, due to:

- an impaired natural immunity function with a defective action of neutrophils and natural killer cells
- an insufficient compensatory increase of the hydrocortisone dosage at the time of the beginning of an episode of infection.

3.6.2 Actions required

- Prompt modification of the replacement treatment as indicated for the "Sick days" should be established when minor symptoms appear. This means in the first instance to at least double the usual doses of glucocorticoid replacement, to avoid adrenal crisis.
- Patients to have sufficient stock at home of steroid pills and injections in order to maintain social confinement

3.7 SICKLE CELL DISEASE

Patients with SCD are at increased risk of severe complications if they become infected with SARS-CoV-2. This is due to underlying reduced immune function and well as increased risk of pulmonary complications, particularly Acute Chest syndrome which may predispose patients to poor outcomes if they become infected with SARS-CoV-2.

3.7.1 Preventive Measures

- Educate patients to continue with hydration.
- Educate patients to continue with regular medications at home including penicillin prophylaxis, folic acid and use of hydroxyurea.
- Educate the patients/ parents on pain assessment so that they can self-manage mild to moderate pain at home
- Make sure patients adhere to the general COVID prevention measures as per MOH guidelines and promptly seek care if COVID 19 symptoms develop.

3.7.2 Health measures for SCD during COVID-19

Patients with SCD have chronic illness that is characterised by acute episodes as well as end-organ damage. Regular review at clinics is required to ensure maintenance of good healthcare as well as identification of end-organ damage. In addition, during acute episodes, patients require prompt diagnosis and treatment to prevent severe illness and death.

The following are recommended for SCD patients during COVID-19

- Continue regular medicines, vaccinations and health maintenance measures.
- Access to health facilities for review for acute or chronic complications. This is recommended to be in a health facility near their home.
- If possible, active support can be provided through telephone calls to patients, telephone calls to health facilities as well as home visits by community health workers where appropriate,
- Education should be provided so that patients seek health services for any symptoms. This is to avoid patients staying at home and presenting with advanced stage of complications.

3.7.3 Psycho-social support for SCD

Patients with SCD have chronic illness that associated with significant psychological illness due to the disease and its complications such as leg ulcers, frequent pain etc. Furthermore, the chronic nature of the illness results in significant socio-economic consequences such as reduced capacity to attend school, employment and stigma that may be associated with the disease. This leads to poor quality of life. Therefore, patients with sickle cell disease require additional psycho-social support

- Education to patients and providers about
- Provide counselling where possible
- Encourage peer support through existing patient support groups. This can be done via telephone and e-platforms.
- Where possible, provide social support such as transport to health facilities, food and other social services.

3.7.4 Clinical Care for COVID-19 in SCD

SCD patients with COVID-19 have a high-risk of severe disease due to:

- An already increased risk of pneumonia and pulmonary vaso-occlusive disease, including acute chest syndrome in SCD even without COVID
- Reduced cellular oxygenation, pneumonia, and acute respiratory distress syndrome in severe cases of COVID
- Immune dysfunction that predisposes them to increased risk of pneumococcal infection leading to pneumonia.
- Children with COVID-19 have been reported to present with a multisystem inflammatory syndrome which is similar to Kawaski syndrome. This is a vasculitis that is similar or may worsen the acute respiratory illness seen in COVID-19.
- There have been reports of coagulopathy in COVID-19 which may increase risk of venous thromboembolism, including pulmonary embolism in SCD

If SCD patient presents with COVID 19 clinical features the followings should be considered:

- Follow standard of care for managing SCD and fever including full blood picture, malaria test, culturing of blood and other specimen as indicated
- Manage fever and pain according to standard of care
- Administer broad-spectrum antibiotics to cover encapsulated organisms
- Follow guidelines and collect and submit appropriate sample for COVID testing
- Admit the patient in isolation ward pending results
- Assess for signs of acute chest syndrome (ACS) especially in adults (thrombocytopenia, acute kidney injury, hepatic dysfunction, altered mental status, and multi-organ failure) and plan for management according to the standard of care
    - Use standard treatment protocols for ACS which includes empiric antibiotics and use of supplemental oxygen, incentive spirometry, and good pain control to reduce atelectasis
    - Transfusion should be performed in patients with worsening anemia, evidence of hypoxia and chest x-ray changes.
        - ✓ Initiate simple transfusion if patient is symptomatic or there is significant anemia (refer to standard of care).
        - ✓ Initiate exchange transfusion for progression of hypoxia or clinical deterioration
- SCD patients often have undiagnosed pulmonary hypertension (PH) which could affect management of COVID-19. This should be considered in those who are acutely ill as patients can develop increased pulmonary pressures and, at times, right sided heart failure during ACS (particularly in those with known PH). If these are present, consultation with Cardiology or Pulmonary.
- Patients with SCD who are discharged from the hospital and known to be COVID-19 positive remain at risk for serious complications including the acute chest syndrome and secondary bacterial infection: only discharge the patient when fully recovered and has tested negative for COVID-19
- If COVID-19 test becomes negative consider discharging as soon as patient stabilizes
- Upon discharge refill the patient with routine drugs enough for use for up to 3 months
- Counsel on adhering to COVOD 19 preventive measures.

3.8 MENTAL HEALTH AND PSYCHOSOCIAL SUPPORT

3.8.1 Introduction

The COVID-19 pandemic has generated stress, worry, fear, uncertainty, stress, loneliness, helplessness, frustration, guilty, anger, fatigue, distress, stigma, and discrimination, with significant impacts on the wellbeing of those affected. The effect goes beyond an individual and affects family and community members as well as health care workers.

New realities of life disruption, loss of livelihood, lack of physical contact and significant others may in turn generate mental health crisis and emergencies such as violence, suicidal and homicidal tendencies.

The sources of mental health and psychosocial problems may be due to:

- Identification and treatment of COVID-19 far from the families, sometimes in other countries with variable socio- cultural differences.
- Self-isolation of a person who have COVID-19 and being managed at home can be stressful to individuals, families and community. This happens in the context whereby an individual is struggling between recovery and protection for family members and community.
- Being in a quarantine, particularly when it happens outside home or in the house where there are children or old people around or in a foreign country.
- Fear of becoming infected and the consequences of stigma, morbidity, and death.

Hence there is need for:

- Promoting mental and psychosocial wellbeing of all affected groups
- Promoting the integration (to the community) of people who have been affected by COVID-19 without increasing stigma.
- Understanding the sources of stress, distress, worries, fears or stigma and the steps that can be taken to dispel any unnecessary misconceptions.
- Setting out mechanisms to reach to people with psychosocial problems due to COVID-19.

Mental health experts, Psychologists, Counselors, and Social Workers should work with:

- The COVID-19 risk communication and community engagement teams when conducting outreach services to community members, influential leaders (i.e. local leaders, traditional leaders and religious leaders) as well as at risk population groups such as survivors of COVID-19.
- Case management teams
- Contact tracing teams
- Burial teams.

3.8.2 Rationale

This section focuses on guiding the implementation of mental health and psychosocial support services during the COVID-19 outbreak to general population, health care providers and health facilities, people who have COVID-19, contacts and/or persons in isolation and quarantine, children, family and community members.

3.8.3 Mental and Psychosocial Team

3.8.4 Composition

- Social Workers/Social Welfare Officers/Para-social workers
- Counselors
- Psychologists (Clinical, Health, Organizational and Community/Social Psychologists)
- Risk Communication and health Promotion Experts
- Charity Social Care Organization Representatives
- Community Development Officers
- Nurses
- Mental Health Experts such as Clinician and Psychiatrists.

3.8.5 Roles of the Mental Health and Psychosocial Team

	Social Welfare Officer	Counselors	Psychologists	Risk Communication and Health Promotion Experts	Social Services Organization	Community Development Officer	Nurses	Mental Health Experts
1. Prevent and address stigma and discrimination	Y			Y	Y	Y	Y	
2. Reaching out to communities in order to identify affected and vulnerable people	Y			Y	Y	Y		
3. Train those directly involved in providing health care to assess individuals infected for anxiety, stress, depression and suicide risk			Y				Y	Y
4. Assessing needs, planning considerations, linking and referring	Y		Y	Y	Y	Y		
5. Provide psychological first aid for self-quarantined persons in homes or appropriate facilities, people in isolation, people with underlying health conditions, families, caregivers, friends of deceased, older adults, children, adolescents, health care providers and social welfare responders	Y		Y				Y	Y

	Social Welfare Officer	Counselors	Psychologists	Risk Communication and Health Promotion Experts	Social Services Organization	Community Development Officer	Nurses	Mental Health Experts
6. Providing psychological, mental health assessment and support for affected individuals			Y				Y	Y
7. Support health care provider's mental health, psychological and social wellbeing	Y		Y	Y			Y	Y
8. Communicating with other institution for supporting families of affected individuals such as social service needs or material support	Y				Y	Y	Y	
9. Help families and the general population to cope with distress, anxiety, uncertainty, sadness and grief caused by the pandemic and adjust to life changes on improving their quality of life	Y	Y	Y				Y	
10. Engaging other social welfare structures to facilitate restoration of livelihood activities in post epidemic phase	Y				Y	Y		
11. Continue to train and support healthcare providers, community health workers and other responders on mental health, psychosocial support and risk communication	Y	Y	Y	Y				Y
12. Recording and reporting on various services provided and possible areas for improvement	Y	Y	Y				Y	
13. Participate in dissemination of health messages	Y	Y	Y				Y	Y
14. Promoting self-care among mental health and psychosocial team members also to provide (tele-) forums for staff and clients to share experiences locally and nationally and involve all private providers	Y	Y	Y	Y	Y	Y	Y	Y
15. Provide people with mental health needs with the same quality of information regarding COVID- 19 awareness and prevention given to all citizens, wherever they are, at home or in mental health facilities. They have the same			Y				Y	Y

	Social Welfare Officer	Counselors	Psychologists	Risk Communication and Health Promotion Experts	Social Services Organization	Community Development Officer	Nurses	Mental Health Experts
need for information and would require additional support should they be infected								
16. Ensure information on COVID-19 pandemic and preventative measures to mental health care users are properly addressed and received; develop the easy to read pamphlets that explain COVID-19 awareness and prevention information in simple and understandable symbols and basic words for persons with cognitive disabilities and those with low literacy			Y					Y
17. Build a system of services via Internet or telephone to reach out to people, communicate and interact with them to retain contact, as suggested in e-mental health experiences; access to teletherapy for outpatients already engaged in care to avoid loss of continuity and follow-up and prevent relapses			Y					Y
18. Minimize involuntary treatments and hospitalizations to reduce exposure to risk, through preventive and alternative programs, considering ethical issues			Y				Y	Y
19. Continue to train and support healthcare providers, community health workers and other responders on mental health, psychological, social support and risk communication	Y	Y	Y	Y			Y	

3.8.6 Mental Health and Psychosocial Support to General Population during the COVID-19 Pandemic

- It is normal to feel sad, stressed, confused, scared or angry during a crisis.
- Talking to people you trust can help. Contact your friends and family.
- General population should understand people with COVID-19 have not done anything wrong and they should be treated with empathy and compassion
- Get the facts and gather information that will help you accurately determine your risk so that you can take reasonable precautions. Find a credible

source you can trust such as WHO website or, National Task force or the resources from the Ministry of Health. Limit worry and agitation by lessening the time you and your family spend watching or listening to media coverage that you perceive as upsetting.

- General population should protect themselves and provide support to people who have been affected by COVID-19
- General population should support the efforts of frontline health care workers
- If you must stay at home, maintain a healthy lifestyle - including proper diet, sleep, exercise and social contacts with loved ones at home and by email and phone with other family and friends.
- Don't use smoking, alcohol or other drugs to deal with your emotions.
- If you feel overwhelmed, talk to a health worker or counsellor online (number to be added). Have a plan, where to go to and how to seek help for physical and mental health needs if required.
- Draw on skills you have used in the past that have helped you to manage previous life's adversities and use those skills to help you manage your emotions during the challenging time of this outbreak.

3.8.7 Psychosocial Support to Healthcare Workers

In order to provide psychosocial support to COVID healthcare workers, it is recommended to follow this guidance before, during and after deployment of teams, in conjunction with the SOPs "Health Worker's Occupational Safety and Health Management in the context of the COVID-19 pandemic".

a) Arrange sessions (once weekly) for healthcare workers to voluntarily attend and share COVID-19 experiences and conduct debriefing sessions as need arises.
b) Discuss with the healthcare workers on how to enhance coping mechanisms and to maintain a respectful working relation and encourage those with serious distress (if any) to seek medical or psychological care.
c) Ensure that workers are not negligent on following standard guidelines and remind them to take precautions while consulting each other in case of doubt while executing their work, using buddy system.
d) Always be sure that psychosocial issues for healthcare workers are all addressed for them to improve their working environment.
e) Raise awareness among the community about the important role of health workers in the prevention and response to COVID19, and stimulate social mechanisms and social media for respect to and praise of health workers, complying with public health measures to reduce the workload of healthcare facilities, to establish zero-tolerance to violence against health workers and social support.
f) Psychosocial personnel must evaluate the level of distress/worries about exposure and conduct stress management session to the workers

g) Encourage positive self-talk, attitude and disclosure to treatment in case the health workers are suspected of contracting COVID-19.
h) Encourage compliance to treatment and disclosure to family members.
i) For healthcare workers succumbing death while in operation, it is recommended to ensure that employer communicates with the family of the deceased about death, time, place and burial procedures and ensure few family members attend burial ceremony.
j) Ensure that fellow health care workers are provided with appropriate time for moment of grieving.
k) Arrange through mental health clinicians to conduct medical evaluation using standard tools for health workers whenever necessary.
l) Refer to mental health care, as appropriate, all cases of mental health disorders and substance abuse, caused by or aggravated by the work in COVID-19 related response.

3.8.8 Psychosocial Support to Individuals, Families, Rejected/Neglected Persons and Community Members Affected by COVID Outbreak

When providing psychosocial support to these groups, follow these steps:
a) Interact with the client while observing recommended safe distance of more than one metre apart. Establish rapport/alliance.
b) Promote active listening to the client and show that you are willing to offer help to them while expressing empathy, using open-ended questions and understandable language.
c) Client must be provided with adequate information to counteract false beliefs about the disease and told that anxiety is a common reaction in the face of extreme situations like what they are going through.
d) Promote positive thinking among community members at risk, stress management and relaxation techniques, encourage healthy eating and drinking habits as recommended by medical experts.
e) During confinement, allow contact to connect with their social networks either by phone or through alternative safe approaches
f) In case of a mental emergency (such as suicidal/homicidal tendencies, violence and aggression or delirium tremens) or psychiatric condition in community suspected to be relating to COVID-19 perform the following:
    - Alert security personnel to prepare to restrain the contact in question.
    - Refer client to health facility for assessment of mental health condition and further medical management due necessary
g) For COVID-19 cases with psychiatric conditions admitted in dedicated facilities, make sure that they are attended by mental health specialists and psychologist. Note, some of medications such as chlorpromazine can cause CNS depression, use other alternative antipsychotics such as haloperidol.

h) For other patients at isolation facilities it is advised to ensure that they are observed for any psychiatric changes (when occurs) and managed accordingly.
i) When connecting COVID-19 contacts to their social networks or spiritual support ensure that client's social network (family members and significant others) are oriented about COVID and safety precautions before linking with the client.
j) Encourage family members to regulate their emotions before contact with client and provide necessary support through the available safety procedures.
k) When preparing recovering COVID-19 patient for discharge, follow the following steps:
    - Collaborate with risk communication and community engagement team to organize a meeting with patient's family, neighborhood and local leaders and inform them about the health status of the recovering patients. Tell them to observe preventive measures all the time.
    - Talk to the patient about anticipated stigma, and stress. Equip them with stress management skills.
l) When communicating death to the family members after confirmation of death from case management team, it is advised to the psychosocial team to follow the following steps:
    - Contact and invite family members of the deceased to witness the body of their relative.
    - Communicate the death of their beloved one, the time he died, the cause of death (use laboratory results) and burial arrangements.
    - In case of a very ill relative to the deceased within the Treatment Unit the psychosocial team will consider their health state to or not to communicate information about the death of a beloved one.
    - In case the very sick relative is aware of the death of a close relative within the Treatment Unit support the person in grief process.
    - Discuss with family member about alternative ritual practices and safe mourning.
    - Remind them of the nature of illness, risks and the safe burial procedures.

3.8.9 Helping children cope with stress during the COVID-19 outbreak

a) Children may respond to stress in different ways such as being more clingy, anxious, withdrawing, angry or agitated, bedwetting, etc. It is important to help children to find appropriate ways to express COVID-19 related distress, fear and sadness in a safe and supportive environment.
b) Respond to your child's reactions in a supportive way, listen to their concerns and give them extra time, attention and reassurance and speak to them kindly.

c) Children need adults' love during difficult times. Give them extra love.
d) If possible, make opportunities for the child to play and relax.
e) Try and keep children close to their parents and family and avoid separating children and their caregivers to the extent possible. If separation occurs (e.g. hospitalization) ensure regular contact (e.g. via phone) and re-assurance.
f) Keep to regular routines and schedules as much as possible, or help create new ones in a new environment, including school/learning as well as time for safely playing and relaxing.
g) Provide facts about what has happened, explain what is going on now and give them clear information about how to reduce their risk of being infected by the disease in words that they can understand depending on their age.
h) This also includes providing information about what could happen in a re-assuring way (e.g. a family member and/or the child may start not feeling well and may have to go to the hospital for some time so doctors can help them feel better).

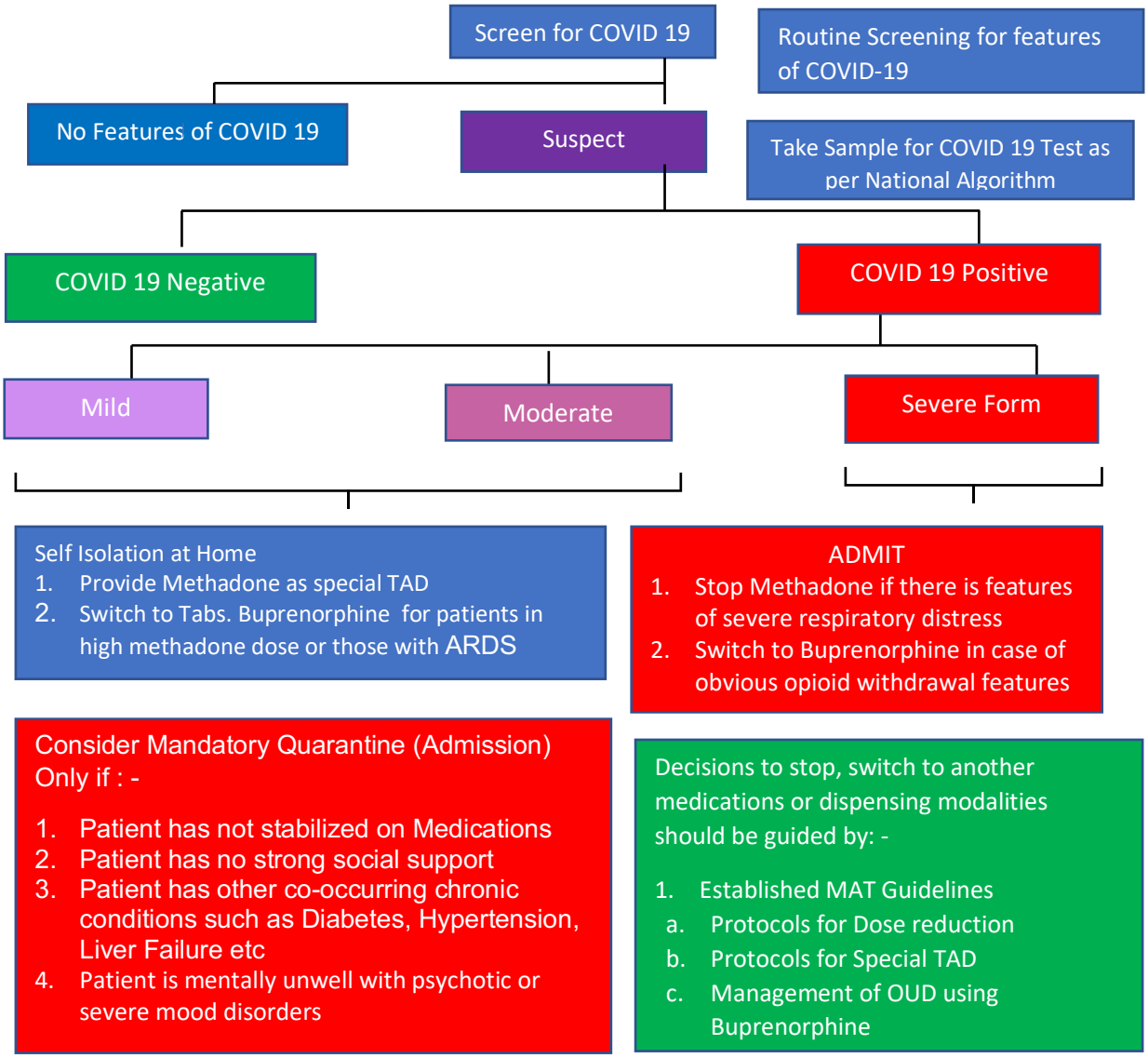
3.9 MANAGEMENT OF COVID 19 IN PATIENTS WITH OPIOID USE DISORDERS ATTENDING MAT CLINICS

There is an increased risk of SARS CoV 2 infection among people with Opioid Use Disorders since many are homeless or live in ghetto or poor and congested suburbs of the inner city and therefore social distancing is impractical. In Tanzania with less than 30% of all PWUDs having access to medical care and preventive measure significant number of PWUDs have little or no access to sanitizers or clean running water and soaps; poor access to masks as well as access to testing and treatment services.

Over the past 6 weeks Tanzania is testing the soar test of this pandemic, with the trend suggestive of community transmission hence pose high risk to most vulnerable members of the community that include PWUDs. So far there is no confirmed case of MAT clients or death of SUD patient in any facility that serves OUD clients. However due to congestion on MAT clinics in Tanzania and current protocols whereby all patients are on directly observed therapy within very short period of time, this posse threat to recipient of care and services providers serving at MAT clinics and entire hospital communities.

This SOP focus on giving guidance on the best ways to address COVID 19 in drug using communities with specific plans on Prevention, screening, diagnosis and treatment of COVID 19. Figure 1 below describe flow chart on management of COVID 19 among MAT clients

Figure 1: Algorithm for Management of OUD & COVID 19 at MAT clinic



3.10 PALLIATIVE CARE SERVICES DURING COVID 19 PANDEMIC

Palliative care (PC) Is the discipline of medicine that aims at improving the quality of life of patients and their families facing the problems associated with chronic and life-threatening illness, through the prevention and relief of suffering by means of early identification and impeccable assessment and treatment of pain and other problems, physical, psychosocial and spiritual (WHO, 2002). In our local context, Palliative care patients might include people living with Cancer, HIV/AIDS, Advanced Diabetic complications, severe forms of cardiac complications, and elderly people with chronic diseases and multiple organ failures, etc.

All patients with these Palliative care categories are among the most vulnerable to Covid-19. People in this group happen to have many risk factors for severe disease and possibly death from COVID-19, including low immunity status, advanced age, comorbidities (e.g. Diabetes, Hypertension, Tuberculosis, Chronic Obstructive Lung Diseases, etc.)

Although some of these patients are admitted in hospital, the vast majority are attended at homes by their family members, community volunteers and palliative care teams through home visits and daycare. This arrangement for home and community care might serve as a great alternative for management and prevention of COVID-19, but it also carries high risk of infection among the health care providers, community based volunteers and the members of patients' families. Hence the need for more investment in education, PPEs and essential medical supplies, and locally available remedies both for prevention and treatment of COVID-19 complications.

The following are some of the suggested areas of engagement and consideration for Palliative care service providers in Tanzania.

A. Underlying principles (Patients at homes)

- Patients have rights to pain relief and other distressing symptoms.
- Holistic approach (physical, emotional, spiritual and social) is crucial in Palliative care patients
- Care should involve the entire family to address fear and anxiety during COVID-19, but with strong guidance on safety practices for COVID-19 prevention at community and household level
- COVID-19 can be a rapidly progressive disease and some patients will need very intensive symptom control urgently. Proper management of the early symptoms reduces the complications for the late stage disease. Patients and their families must utilize both locally available remedies as well as clinically accredited protocols of management of COVID-19 cases
- Expert consultative back up by palliative care service is crucial for PC clients with COVID 19. PC professionals need to be on the front line in the management of PC conditions. Their long-term relationship with the families and their patients can be used as a resource to help with both onsite and

remote clinical assessment to identify COVID-19 cases and enroll them into proper care
- Aim to optimize relief and minimize staff exposure
- Sensitive and effective communication is a core element of care.

B. Guidelines for palliative care providers

- Adherence to WHO approach. The WHO approach of health promotion, prevention, early detection, isolation and treatment of patients should be used.
- Rehabilitation and palliative care should be part of any COVID-19 response to improve the quality of life of those infected at all levels of care.
- To beat the COVID-19 pandemic, MOHCDGEC will engage multisectoral responses that protect the uninfected, provide care for the infected and preserve the general health of the country and economy. Orchestrated comprehensive multisectoral actions by MOHCDGEC, Finance, Trade and Industry, local government (PORALG) and other stakeholders will go a long way in avoiding ineffective singular responses by the ministries of health alone.
- Health care providers in PC teams should:
    - Arrange home care services to patients with anticipated high palliative care needs
    - Wear masks, other protective gears and consider other precautions during home visits and attending patients at the facilities.
    - Consider telephone consultation to some of the issues
    - Make sure clients adhere to their treatment including those on OPIOIDS and other drugs used for symptom management in Hospice and Palliative care work
    - Educate on COVID-19 transmission, prevention and control, during home visits and when attending patients at the facilities. The education should include nutrition and supportive home remedies, and infection prevention at the facilities with emphasis on busting the immunity of the patients.
- In case of suspected cases identified at home, communication should be sent to the District Medical Officer using the available channels for proper handling of cases.
- Home care teams need to have a budget to enable efficient transportation to the communities and efficient case referrals from community to hospital levels.
- Most of the patients with Palliative Conditions have been sick for a long time and are unable to meet the cost of their own health care. MOHCDGEC should allocate resources for free care for all confirmed cases, but also provision of all preventive care supplies and support.

C. Prevention and Management of the COVID-19 patients

1. The care of infected persons and aggressive contact tracing should be prioritized by all facilities and teams involved in PC service provision.
    a. Treatment of patients at community and hospital level should follow the MOHCDGEC guideline on COVID-19 treatment (antibiotic, antipyretic, blood thinners, anti-inflammatory drugs, etc. and as needed)
    b. Intense contact tracing at both community and facility level to curb new infections
    c. Multisectoral collaboration with PC providers will make it easier for a fast response.
    d. Prevention should include social distancing, frequent washing of hands with soap and running water and avoiding contact with infected persons.
        i. Nutritional supplements (food rich in Vitamin C and Zink will be helpful aspects of prevention for high risk groups
        ii. Patients be advised to take fruits and other locally available remedies for prevention or at the onset of COVID-19 like conditions (lemons, ginger, roosted pumpkin seeds and other locally available and cost effective products which have been studied by our local authorities like NIMR to be effective against flue and symptoms similar to those of COVID-19
        iii. Vitamin C and Zink drug supplements should be made available free of charge for all patients under this category. These drugs might be introduced into the routine HIV/AIDS care and treatment facilities and other home care outreach services
        iv. MOHCDGEC to prepare and introduce Specific Protocol for “Home Based Care” during COVID-19 pandemic so as to protect the patients, staff, volunteers and other relatives/members of family intending to visit their sick relatives
        v. The high-risk populations and all people with PC conditions in Tanzania should avoid crowds and all risky environment for COVID-19 new infections – including funerals, markets, weddings and other religious gatherings where COVID-19 protocols are not adhered to.
        vi. Palliative care patients must wear masks if they must go outside their homes.
    e. Health worker safety protocols: Healthcare workers should follow protocols for the IPC in hospitals, hospices, community and home care settings to mainstream evidence-based safe care delivery practices, which protect health workers as well as community and family caregivers.
2. Ambulatory patients should try to be active through basic physical exercises

3.11 REHABILITATIVE CARE SERVICES DURING COVID-19 PANDEMIC

COVID-19 is overwhelming healthcare services and care giver globally.

Recovering COVID-19 patient who were under Intensive care or high dependence are at increased risk of several adverse health effects especially psychological and musculoskeletal including skin breakdown, muscles weakness, joint stiffness, reduced range of motion, changes to bowel and bladder functioning. Other complications may include venous stasis, oedema, decreased rate of metabolism and respiratory movements as well as lower mood or depression, impaired cognitive status and increased risks for delirium. These experiences are not unique to COVID 19 rather they are common in patient recovering from severe illness that require admission in ICU, with prolonged bed rest/paralysis and that require mechanical ventilation, coupled with sedation.

Guidance needed to ensure the safety of care giver involved in the provision of rehabilitation services at home based or at health facilities of all level.

The following recommendations are essential in the consequences of COVID-19`s impact on rehabilitation care and support continued health with reduced risk of disability:

- All interventions should include Rehabilitation and other direct care in home and community-based settings in their plans for personal with required protecting gear and training.
- Sharing of knowledge Globally for Rehabilitation Professionals, Resources, Instruction Tools, Education and Training packages on how patients and families can continue with rehabilitation services at home during pandemic response.
- Public health messaging on Mental and Physical rehabilitation services while social distancing needs to expand with input from rehabilitation professionals to provide guidance for personal living with or without caregivers.
- To promote Telehealth programmes in the country, this can limit several issues which are needed to manage rehabilitation clients affected with COVID- 19.
- Unification of Rehabilitation Community on valuation of outcomes of approaches of COVID-19 patients such that can be used as practice evidence for future transformation of techniques.

List of recommendations of Rehabilitation interventions adopted from PAHO

Phase of care	Rehabilitation interventions	Typical delivery setting
Acute	While patients with severe COVID-19 are receiving ventilatory support, rehabilitation professionals may be involved in supporting acute respiratory management, and the maintenance and improvement of functioning to facilitate early recovery. Specialized rehabilitation professionals can provide interventions that assist in improving oxygenation, airway secretion clearance, and ventilation weaning, and can also play a role in promoting nutrition and preventing aspiration pneumonia, especially post-intubation and/or in patients with a tracheostomy.	Intensive and/ or critical care units, high dependency units (including in SARI centres)
Sub-acute	In the early recovery period, once patients have returned to a hospital ward or stepdown facility, or for patients where illness severity did not warrant admission to an intensive care unit and who have been managed in a hospital ward, rehabilitation interventions may focus on addressing ongoing impairments in mobility, respiratory function, cognition, swallow and nutrition, and communication. Interventions during this period further aim to promote independence with activities of daily living, and to provide psychosocial support. Rehabilitation professionals also contribute significantly to discharge preparation and planning, which can be particularly complex for older patients and those with comorbidities.	Hospital wards, stepdown facilities (including in SARI centres)
Long-term	Following discharge, rehabilitation professionals can provide graded exercise, education on energy conservation and behaviour modification, home modification, and assistive products, as well as rehabilitation for any specific individual impairments. During the long-term recovery of severe COVID-19, patients may benefit from pulmonary rehabilitative interventions, which target physical and respiratory impairments, and include a combination of graded exercise, education, activity of daily living, and psychosocial support.[37] In many contexts, pandemic related constraints (physical distancing, limited human resources and limited public transport) and infection risks mean that telehealth[iii] is likely to be required following discharge. This could be extended to include remote exercise (e.g. "virtual group" education and exercise) and peer-to-peer support from COVID-19 patients who have received the appropriate training. Rehabilitation services located in people's communities are often best placed to deliver longer-term care.	Rehabilitation centres, outpatient programmes, in-home services, mobile services, telehealth

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