

# NUTRITION AND DIETETICS ADVISORY NOTE ON NUTRITION CARE OF PATIENTS IN THE WAVE OF COVID-19 (SARS –COV 2) PANDEMIC

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## **Preamble**

Coronavirus disease 2019 (COVID-19) is a new respiratory disease which is highly contagious and is spread mainly from person -to-person.<sup>(1)</sup> Coronavirus Disease (COVID-19) also referred to as SARS-COV 2 is an infectious disease first reported in Wuhan China in December 2019 and has continued to spread worldwide. Patients with COVID-19 primarily present with fever, Myalgia, and dry cough and older patients and those with pre-existing chronic conditions tend to have worse outcomes compared to other groups whose prognosis appear to be more favorable.<sup>(2)</sup>

The signs and symptoms of COVID-19 include but are not limited to high body temperature, coughing and sneezing, sore throat, headache and difficulty in breathing. The symptoms start within 14 days of being infected and the virus is mainly spread through contact with droplets from an infected person who is sneezing or coughing or contaminated surfaces or objects. COVID-19 is preventable through; Hand washing with soap and water or using an alcohol based hand sanitizer, keeping a social distance of at least 2 meters or 2-3 steps from people with flu-like symptoms, avoiding shaking hands, hugging or kissing with people with flu-like symptoms and staying at home and avoiding travel when you have flu-like symptoms. <sup>(1, 2)</sup>*Follow the Ministry of Health detailed case definition for the COVID-19.*

If you have recently travelled or been in contact with someone who travelled from a country reporting COVID-19 cases, you will be required to self-quarantine for 14 days to monitor if you develop flu-like symptoms. During self-quarantine, you are advised to stay in a separate room, disinfect surfaces and clothing, avoid sharing household items, including utensils, towels and bedding, not receive visitors, wear an appropriate face mask if you must be around other people and if in need call Ministry of Health emergency teams on: 0729471414 and 0732353535 for help.<sup>(3)</sup> With the coronavirus (COVID-19) spreading globally, the Kenya Nutritionists & Dieticians Institute (KNDI), Nutrition Association of Kenya, Nutrition and Dietetics Academy (NDA), Kenya Nutrition and Dieticians Union wishes to remind the public and policy makers that nutrition care is vital, particularly in patients with infections. A multidisciplinary approach and easy flow of information in the management of Covid-19 among healthcare teams; nurses, doctors, nutritionists, and other cadres is encouraged.

This guideline is intended to help both patients with nutritional needs and the Nutritionists or Dietitians who are involved in their care to protect themselves from possible harm even as they continue to offer care as needed. The guidelines contained in this document have borrowed

heavily from evidence based literature and sources which have had wider exposure and experience in managing patients with COVID – 19.

This document is up to date as of Tuesday 24<sup>th</sup> March 2020 and will be updated in line with new information that arises. Kindly contact the authors if you have any valuable information that may be useful to share with others.

### **Facts and Figures**

- ✓ Globally, approximately 335,000 cases of COVID 19 have been confirmed with about 15,000 deaths.<sup>(19)</sup>
- ✓ Locally there are about 25 confirmed cases with no recorded deaths so far as at 24<sup>th</sup> Mar 2020.
- ✓ The mortality rate stands at 3-4% globally.<sup>(22)</sup>

### **Vulnerable patient groups<sup>(4)</sup>**

- Older people (Age > 55 years)
- Pre- existing pulmonary disease
- Cardiovascular disease: Heart failure, Ischemic heart disease Hypertension
- Chronic kidney disease
- Chronic liver disease: cirrhosis secondary to viral or alcoholic or auto-immune hepatitis
- Underlying malignancy: Solid tumors and hematological malignancies
- Human immunodeficiency virus (HIV) regardless of CD4 count
- Liver, kidney and other solid organ transplant recipients
- Patients on immunosuppressive/disease modifying therapies due to various underlying conditions such as connective tissue, multiple sclerosis etc.
- Pregnant females may be at risk

### **Recommendations for preventing transmission of coronavirus**

Standard recommendations from World Health Organization to prevent the spread of infection include:

- Frequently clean hands by using alcohol-based hand rub or soap and water.
- When coughing and sneezing cover mouth and nose with a flexed elbow or tissue – dispose tissue immediately and wash hands.
- Avoid close contact with anyone who has a fever and cough.
- If you have fever, cough and difficulty in breathing, seek medical care early and share previous travel history with your healthcare providers.

In addition to the consistent application of routine practices, follow contact and droplet precautions. This procedure includes the appropriate selection and use of personal protective equipment:

- ❖ Gloves; and
- ❖ A long-sleeved gown; and

- ❖ Facial protection: Surgical/procedural mask and eye protection face shield, or surgical/procedural mask with visor attachment.
- ❖ N95 respirator (plus eye protection) should be used when performing aerosol-generating medical procedures (AGMPs) on a person under investigation (PUI) for COVID-19 infection.

Hand hygiene should be performed whenever indicated, paying particular attention to during and after removal of PPE, and after leaving the patient care environment. Note that no single respirator or any type of personal protective equipment (PPE) can be expected to provide protection against all types of hazards. Be sure you are wearing the correct PPE for the task. If PPE is used, it should be managed as part of a complete PPE program which will include selection, fitting, training, inspection, use, cleaning, maintenance, and storage as appropriate.<sup>(5)</sup> Nutritionists and Dieticians can make home-made face masks if there is a shortage. <https://www.deaconess.com/How-to-make-a-Face-Mask>.

### **Nutrition outpatient clinics ensure the following precautions**

- Avoid crowding at the patient waiting area ensuring the 1.5 meter distance between patients is maintained.
- Ensure the waiting area is well ventilated.
- Any over flow of patients should be advised to wait outside in an open space until their appointment time arrives.
- A sanitizer must be present at the entrance of the waiting area with a minimum of 70% alcohol and should be used by each patient entering the waiting area.
- Encourage hand washing with soap and flowing water from a tap or an improvised tap for all patients in areas where the sanitizers may not be available.
- Any suspected case attending the nutrition clinic must be encouraged to use a mask to avoid contaminating any surfaces or their nutritionist contact while talking, sneezing or coughing.
- The clinicians, nurses, nutritionists and receptionist staff must avoid shaking hands with the patients.
- Encourage use of electronic money transfer services for payment of clinical services to avoid coming into contact with currency notes and coins that are known vehicles of transmission.
- The nutritionist must wash his/her hands thoroughly with soap and water following the designated 7 steps of handwashing before and after coming into contact with each patient.
- We recommend 0.5 % chlorine based solutions to decontaminate all floors, clinical surfaces including countertops, desk tops, tables, chairs.
- We recommend 0.05% chlorine based solutions to decontaminate all clinic equipment e.g. stethoscopes, blood pressure machines and glucometers to prevent spread of the coronavirus. Ensure the nutritionist's desktop is sanitized as frequently as possible.
- Ensure that the examination couch is decontaminated regularly and draped in linen.

- Tissue liners should be rolled over the examination couch and discarded after each patient is examined. Avoid touching your nose, eyes and face. <sup>(6)</sup>

### **Nutrition Consideration**

Patients at higher risk of developing Acute Respiratory Distress Syndrome (ARDS) prognosis and subsequent death include older patient population, those with neutrophilia, organ and coagulation dysfunction. <sup>(7)</sup> Malnutrition is a prevalent feature in critically ill patients with ARDS. Poor nutrition has been associated with increased susceptibility to infections, worse respiratory muscle function and subsequent mortality. <sup>(8)</sup> Initiating enteral feeding in critically ill within 24 hours of admission has been greatly associated with better outcomes which include shorter hospital length of stay, reduced gastrointestinal permeability, reduced activation of inflammatory cytokines, decreased infections morbidity and mortality. <sup>(9)</sup> COVID-19 having a close relationship with the ARDS diseases therefore requires patients to be managed alongside nutrition interventions to prevent mortality.

There is also evidence that modification of nutrition given to patients with ARDS to include foods with anti-inflammatory effects such as Omega 3 fatty acids (EPA and DHA) could help in reducing lung inflammation and improve health outcomes. <sup>(16)</sup> Supplementation with Glutamine in critically ill patients was associated with reduced risk of infectious complications, reduced length of hospital stay and shorter mechanical ventilation period as compared to those patients without glutamine supplementation. <sup>(17)</sup> Thus enteral and parenteral nutrition need to be carefully considered as an integral part of management and treatment in COVID 19 emergencies.

Many patients will present with gastrointestinal dysfunction on admission. (e.g. diarrhoea, abdominal pain, vomiting) Patients with type 2 diabetes seem to be at higher risk for COVID-19 and patients are may require very high insulin doses therefore enteral / parenteral feeding regimens will need to take these factors into account. <sup>(21)</sup>

### **Nutrition considerations for infants and breastfeeding children**

There are no scientific studies that have been conducted on the risk of transmission of COVID-19 from mother to child during breastfeeding. There is therefore no developed guidance on this. However, CDC, UNICEF and WHO advise on continuation of breastfeeding with caution. Mothers are advised to practice both hand and respiratory hygiene. The main risk of transmission between a caregiver and their child is through close contact (respiratory air droplets). For caregivers with suspected or confirmed COVID-19 infection, precautions to prevent transmission, such as frequent hand washing, are recommended when feeding infants and young children. Breastfeeding mothers should not be separated from their newborns, although breastfeeding mothers with suspected or confirmed COVID-19 infection can consider asking someone who is well to feed the infant; for example with expressed breast milk from a spoon or cup. Breastfed children of patients who are too unwell to breastfeed or who have died may require replacement feeding with a nutritionally adequate diet.

With regard to feeding children expressed breast milk, as per the Operational Guidance on Infant and Young Child Feeding in Emergencies (OG-IFE), the use of breast pumps should only be considered when their use is vital and where it is possible to clean them adequately, such as in clinical settings. They should be thoroughly disinfected. The use of feeding bottles and teats is discouraged due to high risk of contamination and difficulty in cleaning. **Avoid pacifiers, dummies and any such.** <sup>(23)</sup>

### **Home Care for patients not requiring Hospitalization**

Assessment for the Suitability of the Residential Setting for Home Care use in consultation with MOH or county health department is paramount. This will help to confirm whether:

The patient is stable enough to receive care at home.

- Appropriate caregivers are available at home.
- There is a separate bedroom where the patient can recover without sharing immediate space with others.
- Resources for access to food and other necessities are available.
- The patient and other household members have access to appropriate, recommended personal protective equipment (at a minimum, gloves and facemask) and are capable of adhering to precautions recommended as part of home care or isolation (e.g. respiratory hygiene and cough etiquette, hand hygiene).
- There are NO household members who may be at increased risk of complications from COVID-19 infection (.e.g., people >65 years old, young children, pregnant women, people who are immune-compromised or who have chronic heart, lung, or kidney conditions).

Read the MOH guidelines for Home Care <http://www.health.go.ke/wp-content/uploads/2020/03/Coronavirus-Home-Based-Care-Guidance.pdf> <sup>(10)</sup>.

### **Home-based Nutritional Care and Support for COVID-19 Patients**

Effective nutritional care and support can improve the nutritional status of patients with COVID-19 in:

1. Maintaining body weight and strength.
2. Replacing lost micronutrients.
3. Improving the function of the immune system and the body's ability to fight infection.

### **Boosting immune system through diet**

The immune system can be boosted through diet. However, there is no evidence that such a technique can cure Covid-19. Moreso, no specific supplement has been demonstrated to prevent a person from being infected with Covid-19. Therefore, good hygiene practices remain the best means of prevention and avoiding infection from all disease-causing agents.

There are several nutrients that are involved with the normal functioning of the immune system; therefore maintaining a healthy and well balanced diet in will help to support immune function. (Include copper, folate, iron, selenium, zinc and vitamins A, B6, B12, C and D)

No one food is recommended over another as a better contributor to normal functioning of the immune system, but instead eating a variety of foods to maintain a health balanced diet is recommended. <sup>(11)</sup> Artificial supplementation of these micronutrients have also not shown high quality levels of evidence unless in cases of deficiencies. As it stands there is no evidence that intake of the micronutrient supplements will prevent coronavirus or contribute to better health outcomes.

Consumers therefore need to be protected from fraudulent products which claim to help prevent, diagnose, treat or cure COVID-19. Untested supplements and other products that are not regulated by the Pharmacy and Poisons board and Kenya Nutritionists & Dieticians Institute (KNDI) may be dangerous and potentially life threatening. <sup>(12)</sup>

### **Agent, Diet and Host Relationship**

This will require to the extent possible evaluation of pre-infection nutrition in the management approach of COVID-19 and nutrition status at the time of pathogenesis to full blown infection.

Inadequate nutrition impairs the functioning of the immune system, thus resulting in increased susceptibility to infection. However, current work suggests that not only can the nutritional status of the host affect the immune response, but it can also affect the viral pathogen. Oxidative stress status of the host can have a profound influence on a viral pathogen <sup>(18)</sup> and thus the influence of oxidative stress on nutrients cannot be ignored. Nutrition status, specifically systemic inadequacy (not sure to call it deficiency) of selenium, vitamin E might make the viruses mutate to develop into a more lethal and dangerous virus but with same traits as the original virus able then to cross infect both the well-nourished and undernourished).

From the agent, host and diet perspective, it is clear that there is a relationship between patients' immunity and the role it will play in the severity and virulence of the virus. In addition to the oxidative nutrients specific symptoms there is also a definition of nutrient use in the system during disease development. As such, the symptoms should be used to help design other nutrient needs of the patient. For instance the presence of Fever in COVID-19 infections is an indicator of catabolic reactions. This should be based on the severity of the manifestation of the symptoms like what level of fever would indicate catabolic reactions thus to what extent is the general energy requirement increment required. This will also be based on the nutritionist's experience in dealing with clinical cases and judgment for stable patients after working out the nutrient requirement and the target of feeding.

## **Public health Nutrition Approach**

Ministry of health in Kenya has set up directives to help contain the spread of the virus through observing the following guidelines. <sup>(1)</sup>

1. Hand washing with soap and water or using an alcohol based sanitizer
2. Avoiding shaking of hands, hugging, kissing and close physical contact with people
3. Maintaining a social distance of about 2 meters or 2-3 steps from people with flu like symptoms
4. Staying at home and avoiding travel when you experience flu like symptoms.
5. Early detection and treatment for those infected.

Based on the roles of public health nutritionists we can look at the WHO approach and general guidelines basing on food safety and safe stocking. These include and mainly focus on the hygiene of the environment. Hygiene should extend to food stocking, food sales, food buying standards and food sharing. This may involve for example; washing hands after cash buying (or handling cash or encourage cashless buying), maintain social distance, avoid touching the 'kibanda', wash the fruits after buying or before selling, clean/disinfect the storage surfaces and work areas.

Food can be a media for spreading the corona virus if not hygienically handled. Ensure proper hygiene during preparation and service food. Contamination can be also through serving utensils. Ensure the utensils are well cleaned and disinfected. Wash hands before serving young children food. Avoid using the same serving spoon for eating food. Do not share utensils during eating time.

## **Household food security**

Stock up on nutrition-packed foods that will stay fresh for a week or longer.

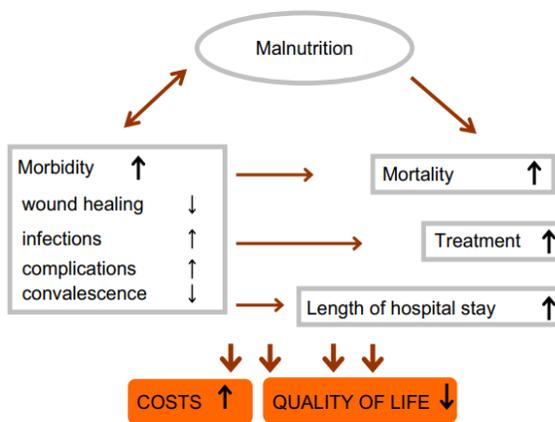
- Breads— breads, buns
- Grains— quick cooking pasta, rice, maize, millet, sorghum, wheat (flour)
- Fruits— fresh fruit (apples, mangoes, dates) or dried fruits
- Vegetables— fresh vegetables (Kales, cabbages, broccoli, onions), frozen traditional vegetables e.g.terere, managu
- Sauces—tomato, pasta sauce,
- 100% Juice—refrigerated, frozen, canned, boxed
- Milk—fresh, canned, powdered, shelf-stable packages
- Eggs—fresh eggs
- Beans/Legumes—canned beans (black beans, chickpeas), dry beans, green grams, lentils, peas
- Nuts and seeds—bagged, canned, ground nuts, peanuts

- Chicken—frozen or canned
- Seafood—frozen ready-to-cook fish fillets, frozen shrimp, canned tuna, fish –Nile perch tilapia
- Beef—meat, mutton, minced meat frozen, pre-made frozen lean meat or meatballs
- Flavorings—add zing with dried herbs & spices, vinegars, mustard, hot/steak sauces, lemon/lime juice, light dressings, honey, Greek yogurt, salt

Go easy on the frozen dinners—most are high in sodium, fat, and calories. <sup>(13)</sup> Support your health through good nutrition, ensuring food safety, practice home food safety strategies. <sup>(12)</sup>

### Care for the vulnerable and critically ill

A staffing level of 0.05-0.1 nutritionist per critical care bed is recommended. This level is necessary to meet the capabilities expected for advanced clinical practice. <sup>(20)</sup> Malnourished hospitalized patients are associated with higher hospital costs, longer stays, and increased mortality. See *Malnourished*. <sup>(14)</sup>



Norman, Kristina et al. (2007). <sup>(15)</sup>

Currently guidelines lack a detailed explanation as to what nutrition intervention should be employed for COVID -19 patients in the ICU. It is therefore prudent that nutritionists continue providing nutrition support matching their current condition (ARDS) but also supporting the control and management of their underlying medical condition. This also applies to other groups who may be vulnerable such as the obese and immunosuppressed patients.

### Enteral feeds, feeding pumps and ancillaries

1. Calculate the number of additional pumps and ancillaries that may be required. This includes rationalizing pump usage across ICU by not using more than one pump per patient.

2. Contact your enteral feeding pump supplier to determine if they can meet the demand and order additional ancillaries. Alternative suppliers may need to be contacted.
3. Consider alternative enteral feeding methods should enough pumps not be available (e.g. gravity / bolus feeding more stable patients on the general wards so that pumps can be available for ICU patients) and devise a plan should this happen. *Nutricia have produced guidance that may be helpful.*
4. Plan for the potential to have increased numbers of patients requiring volume restricted / low electrolyte enteral feeds (e.g. should dialysis machines be in short supply).
5. Contact enteral feed suppliers to determine capacity to provide required enteral feeds. Provisions for flexitainers for decanting oral nutrition supplements may need to be made.
6. Consider where enteral feed stock will be delivered and stored in spaces being made available for ICU beds. In addition to increased stock supply there may be a need for alternative enteral feeds depending on your ICU normal feed provision. This requires close liaison with senior ICU management teams follow ESPEN guidelines on [https://www.espen.org/files/ESPEN-Guidelines/ESPEN\\_guideline-on-clinical-nutrition-in-the-intensive-care-unit.pdf](https://www.espen.org/files/ESPEN-Guidelines/ESPEN_guideline-on-clinical-nutrition-in-the-intensive-care-unit.pdf).<sup>(21)</sup>

### **Fluid management**

A restrictive fluid management strategy may be used for COVID-19 patients thus the need to limit the volume of enteral and parenteral feeds.

### **Renal replacement Therapy**

Volume restricted / low electrolyte enteral feeds maybe considered where necessary based on usual practice.

### **Non-invasive ventilation (NIV)**

- ❖ Consider placement of an NG tube on admission to facilitate feeding and hydration.
- ❖ If NGT feeding is not adopted, monitor oral intake and utilize oral nutrition support (ONS) if appropriate with the progression to NG feeding if oral intake remains poor (<65% of energy and protein targets).
- ❖ Patients who have been extubated to NIV are likely to have poor oral intake and NG feeding should be continued until they have been assessed and are managing sufficient oral intake.

### **Other useful resources:**

- ✓ Start Up-skilling proposed ICU dietitians immediately (*see links here for resources*) and arrange for computer access to ICU specific systems as appropriate. <https://www.bda.uk.com/uploads/assets/f5215258-7a34-4426-83620ba89f87c638/64ef52d9-3c81-414d-a95284470f787f5c/200324-CCSG-Guidance-for-COVID-19-Formatted-v12.pdf>

- ✓ <https://ff504.lmsportal.com/ets/home>
- ✓ <https://5e45a.lmsportal.com/ets/home>

#### **Additional links:**

- ✓ [HCPC advice on working outside of your scope](#)
- ✓ [ICNARC report on 196 patients critically ill with COVID-19](#)

#### **Recommendations**

- There is a need to carefully follow the given guidelines and health directives to prevent the spread of COVID 19.
- Health facilities should actively include at least 1 clinical nutritionist in all their COVID-19 management facilities to ensure that adverse effects during treatment as a result of delayed nutrition intervention are prevented or minimized.
- Nutritionists working in ICU and incorporated in the emergency response teams to keep abreast with current information on management of COVID-19 even as the others nutrition team members continue to learn and improve their disaster preparedness skills.
- Provision of IPC and PPE should be advanced to all nutritionists working in the frontline of this outbreak in the country to ensure safety of the involved personnel.

#### **References**

1. <https://www.health.go.ke/wp-content/uploads/2020/03/General-information-about-COVID-19.pdf>
2. Wu C, Chen X, Cai Y, *et.al* (2020)‘Risk Factors Associated with Acute Respiratory Distress Syndrome and Deaths in Patients with Coronavirus Disease; 2019 Pneumonia in Wuhan, China. JAMA Int. Med.
3. <https://www.health.go.ke/wp-content/uploads/2020/03/Coronavirus-Disease-2019-COVID-19-Information.pdf>
4. Centers for Disease Control and Prevention (CDC). (2020) ‘COVID-19 Guidance and Directives’ Massachusetts Department of Public Health (DPH) and other state agencies related to COVID-19.
5. Directorate of Occupational Safety and Health Services. (2020)‘Occupational Safety and Health Advisory on Coronavirus (COVID-19)’
6. Kenya Diabetes Study Group (KDSG). (2020)‘COVID-19: Kenya Diabetes Study Group Statement on recommendations for Health Care Providers and Patients Living with Diabetes’ Kenya.

7. Wu C, Chen X, Cai Y, *et.al* (2020) 'Risk Factors Associated with Acute Respiratory Distress Syndrome and Deaths in Patients with Coronavirus Disease 2019: Pneumonia in Wuhan' China. *JAMA Int. Med.*
8. Loi M, Wang J, Ong C, and Lee JH., (2017) 'Nutritional Support of Critically Ill Adults and Children with Acute Respiratory Distress Syndrome: A clinical review. Elsevier; *Clinical Nutrition; ESPEN.*
9. Krzak A, Pleva M, and Napolitano MN, (2011) 'Nutrition Therapy for ALI and ARDS. *Critical Care Clin.* (27).
10. <http://www.health.go.ke/wp-content/uploads/2020/03/Coronavirus-Home-Based-Care-Guidance.pdf>
11. <https://www.bda.uk.com/resource/covid-19-corona-virus-advice-for-the-general-public.html>
12. <https://www.eatright.org/coronavirus>
13. <https://nutrition.org/making-health-and-nutrition-a-priority-during-the-coronavirus-covid-19-pandemic/>
14. <https://www.nutritioncare.org/uploadedFiles/Documents/Malnutrition/ASPEN-HCUP-Infographic-MAW2019-FINAL.pdf>
15. Norman K, *et.al*(2007) 'Prognostic Impact of Disease-Related Malnutrition' *Clinical Nutrition*, (27) 1; 5 – 15.
16. Dushianthan A, Cusack R, Burgess VA, Grocott MPW, Calder PC, (2019) 'Immunonutrition for Acute Respiratory Distress Syndrome (ARDS) in Adults' *Cochrane Lib.* [https://www.cochrane.org/CD012041/EMERG\\_immunonutrition-acute-respiratory-distress-syndrome-ards-adults](https://www.cochrane.org/CD012041/EMERG_immunonutrition-acute-respiratory-distress-syndrome-ards-adults)
17. Tao K, Li X, Yang L, Yu W, *et.al* (2014) 'Giving Glutamine Supplements to Critically Ill Adults' *COCHRANE Lib* [https://www.cochrane.org/CD010050/EMERG\\_giving-glutamine-supplements-critically-ill-adults](https://www.cochrane.org/CD010050/EMERG_giving-glutamine-supplements-critically-ill-adults)
18. Melinda A. Beck, Orville A. Levander, (2000) 'Host Nutritional Status and its Effect on a Viral Pathogen' *The Journal of Infectious Diseases*, (182) 1; S93–S96, <https://doi.org/10.1086/315918>
19. EPI.WIN (2020) 'WHO Information Network for Epidemics' World Health Organization
20. <https://www.ficm.ac.uk/sites/default/files/gpics-v2.pdf>
21. <https://www.bda.uk.com/uploads/assets/f5215258-7a34-4426-83620ba89f87c638/64ef52d9-3c81-414d-a95284470f787f5c/200324-CCSG-Guidance-for-COVID-19-Formatted-v12.pdf>
22. World Health Organization, (2020) 'Corona Virus Disease 2019 (COVID-19) Situation Report'(46) National Authorities [https://www.who.int/docs/default-source/coronaviruse/situation-reports/20200306-sitrep-46-covid-19.pdf?sfvrsn=96b04adf\\_2](https://www.who.int/docs/default-source/coronaviruse/situation-reports/20200306-sitrep-46-covid-19.pdf?sfvrsn=96b04adf_2)
23. <https://www.enonline.net//fex/62/gtamcovid19>

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