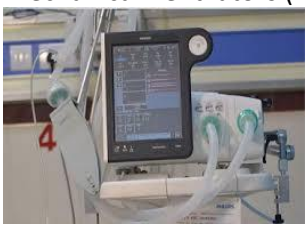
Item*	Use	Quantity
Education on breathing distress assessment by providers	• Patients with COVID19 can be separated into mild disease, moderate disease, or severe disease presentation. • Standardized assessment of breathing rate per minute and the difficulty to breath, is a quick and easy method to separate individuals who have mild disease, moderate disease. • Standardizing such assessment will enable appropriate use of resources to the patients who need it the most.	• Ethiopia will need to train large number of front-line providers, including extension health workers and call center responders, to triage care based on assessment of the respiratory rate and respiratory distress. • Education can be provided using online methods, existing training facilities, and at healthcare centers
Battery Operated Pulse Oximeter 	• A portable battery-operated pulse-oximeter can measure heart rate and breathing rate at health care facilities, as well as on the field • An increase in heart rate or breathing rate, is a critical tool to identify patients with moderate or severe disease, who will require hospital admission. • Titration of oxygen therapy can also be based on pulse oximetry.	• Each provider, or team of providers, will need to be equipped with a pulse oximeter and battery, so they can accurately triage care
Nasal Canula 	• Oxygen concentration in natural is 21%. • A nasal canula gets connected to an oxygen source and can increase oxygen delivery up to 40%. • Patients with mild disease can be treated with nasal canula oxygen until their symptoms are better.	• Patients with mild to moderate disease can be rescued with nasal canula • It is estimated that ten to fifteen percent of patients with COVID19 infection will require nasal canula oxygen supplementation

	• Patients can also be discharged home on oxygen on nasal canula oxygen and with a pulse oximeter to save hospital beds,	
Non-Rebreather Mask 	• A non-rebreather mask can provide up to 60% oxygen concentration to patients with moderate disease. • A non-rebreather mask can be administered in hospital wards or makeshift oxygen therapy centers with adequate supervision. • A non-rebreather mask creates a closed system that limits aerosolization and exposure to medical staff	• It is estimated that 5 to 10% of patients with COVID19 will have moderate disease and require care at a make shift health care center or in a hospital.
High Flow Nasal Canula (HFNC) 	• High flow nasal canula can deliver up to 100 % of oxygen with increased pressure (flow) which improves delivery to the lungs • High flow nasal canula has been found one of the most effective therapies for COVID19 pneumonia • High Flow Nasal Canula allows a patient to speak and eat, while receiving a high dose of oxygen treatment • HFNC requires electronic outlet and is administered in intensive care units • HFNC is significantly cheaper that mechanical ventilators and with the right training, can avoid mechanical ventilation in some patients.	• It is believed that three to five percent of patients with COVID19 will have severe disease • Up to half of these patients can potentially be treated with high flow nasal canula without requiring mechanical ventilation

Assessment of oxygen production and distribution capacity in Ethiopia	• Oxygen is the most important therapy for COVID19 Pneumonia. • Industrial and medical oxygen generators and concentrators need to be incentivized to surge their capacity and keep up with demand to health care centers. • A centralized control of oxygen supply in the country will ensure access of this resource to areas with the highest need • Logistics and distribution, inventory, of oxygen supply will need to be pre planned.	• It is estimated that up to twenty percent of patients will require oxygen support. • Oxygen therapy can be administered at home for the less sick patients via nasal canula. • Patients with severe disease in tertiary hospitals or intensive care units will require high doses of oxygen therapy.
Oxygen Tanks/Cylinders 	• Oxygen cylinders contained pressured 100% oxygen. • Cylinders come in several sizes, with jumbo sized cylinders containing up to 6800litres of oxygen. • Oxygen cylinders are connected in pairs, with a second cylinder acting as a backup when the first cylinder runs out	• Large oxygen cylinders will be needed for patients with high volumes of oxygen requirement, especially in hospitals and intensive care units • Smaller oxygen cylinders can be used at home or in outpatient facilities for patients with mild disease and only requiring low oxygen support
Medical Oxygen Regulators 	• Oxygen regulators connect to oxygen tanks and allow controlled flow of oxygen based on patient's needs	• Oxygen regulators should be supplied for each patient that will require oxygen therapy from an oxygen cylinder
CPAP or BIPAP Machines (Non-Invasive Positive Pressure Ventilation or NIPPV)	• NIPPV Machines provide up to 100% oxygen with some pressure to ensure delivery to affected lungs	• NIPPV will be beneficial for the 2-3 % of patients with severe disease. • It will have to be used in emergency rooms

	• NIPPV can be used in patients who fail High Flow Nasal Canula • NIPPV can be used in patients with severe disease with an attempt to avoid mechanical ventilation • NIPPV allows patients to stay awake and interactive while getting high doses of oxygen. • NIPPV should not be used in patients who are not awake or who have a severe respiratory distress • NIPPV is cheaper to purchase and easier to operate than mechanical ventilators	or intensive care units. • Each intensive care unit or emergency room should have a combination of ventilators and NIPPV machines
CPAP Helmets /NIPPV Helmets 	• NIPPV helmets prevent leak of virus containing exhaled air into the environment • NIPPV helmets are not FDA approved in the United States, but are widely used and have been important in the treatment of COVID19 in Europe • NIPPV helmets are connected to viral filter/HEPA filter that purifies air before it is exhaled into the environment	• NIPPV helmets will be required for the 2-3% of patients that will require NIPPV. One NIPPV helmet will be used per 1 machine.
Viral Filters /HEPA Filters for Ventilator Tubing 	• These filters ae connected to ventilator, NIPPV, or Bag Masks to filter air that is exhaled by patients with CVODI19 to avoid exposure to medical staff • Viral filters are changed every 24 hours	• Viral filters are needed for the one to three percent of patients who may be on NIPPV or mechanical ventilators • Viral filters will need to be changed every 24 hours. Thus, given

		an average 14 day stay per patient on a ventilator, many these will be required
Laryngoscopes 	• Laryngoscopes are used to place airways for patient that require mechanical ventilation • Laryngoscopes are not the preferred methods for use in patients with COVID19 due to a higher risk of transmission to the medical provider • There is probably a good supply of these instruments in country already.	• Each intensive care unit will require a combination of different blades and bases of laryngoscopes
Video Laryngoscopes 	• Portable, battery operated, video laryngoscopes, allow placement of airways for patients that require mechanical ventilation • Video laryngoscopes are the preferred tools for patients with COVID19 Pneumonia due to a lower exposure risk to the medical provider • Anesthesiologists and intensive care providers need to be trained on the use of video laryngoscopes if they have not used these in the past.	•
Intubation Sets: 	• Intubation sets are required to place patients on mechanical ventilation • Specialists in Emergency Medicine, Critical Care, and Anesthesia perform these high-risk procedures • Components of an intubation set include: Bag Mask, HEPA filter, different sized of ET	• Several of this equipment are single use only and will be used for every patient requiring mechanical ventilation. (ET tube, HEPA Filter, End Tidal Monitor, Viral Filter) • Some of this equipment can be

	Tubes, different kinds of laryngoscopes, End Tidal Monitor, Oral Airway, LMA, Boogie • These procedures are done in secondary and ideally tertiary facilities	cleaned with bleach and reused (Bag Mask, Laryngoscope)
Mechanical Ventilators (MV) 	• Mechanical ventilation provides up to 100% oxygen at high pressures for the sickest of patients. • There is debate if Ethiopia should invest in mechanical ventilation as a significant death rate exists for patients who require MV. • Given that Ethiopia has a young population, it is very likely that the death rate will not be as high as other countries in patients with mechanical ventilation. • The science on the use of mechanical ventilation for COVID19 is growing rapidly and the death rates are going to decrease due to this change • There is a significant growth curve in learning how to use mechanical ventilation for COVID19. This needs to be coordinated with the Diaspora and any available resources to Emergency Medicine, Critical Care, and Anesthesia specialists	• One to three percent all patients with COVID19 Infection are anticipated to require mechanical ventilation.
Education on Proning Patients	• Laying patients on their chest (called Proning), with or without the ventilator, has been found one of the most effective	• There needs to be an education campaign at tertiary hospitals on how to safely prone patients

	treatments for severe COVID19. • This does not require any technology or purchase of equipment, but it requires a safe and standard way of doing it. • This is not a new concept for Critical Care Specialists, however an increase in education and standardized approach is essential.	

* Pictures attached are not an endorsement of any manufacturer's device. They are merely for a demonstration of the item size and type.