THE REPUBLIC OF THE UNION OF MYANMAR

MINISTRY OF HEALTH

DEPARTMENT OF MEDICAL SERVICES

Guidance on oxygen therapy

for patients with COVID-19

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Guidance on oxygen therapy for patients with COVID-19

Although coronavirus disease 2019 (COVID-19) is asymptomatic to mild in about 80% of cases, about 15% of patients show a severe and about 5% a critical course, which is usually based on lung involvement with respiratory failure. The SARS CoV-2 virus affects the respiratory system leading to an inflammation of the alveoli and thrombosis in pulmonary vessels.

In severe cases, this may lead to hypoxaemia, which is the leading cause of death among the patients with COVID-19. Therefore, oxygen therapy is utmost important in management of COVID-19 together with other treatments including respiratory supports. Oxygen is a treatment for hypoxaemia, not breathlessness. It is realized in mind that supplemental oxygen is given to improve oxygenation, but it does not treat the underlying causes of hypoxaemia. Oxygen is medical gas which should be prescribed by doctors for the treatment of patients.

Target population

Patients with COVID-19 at community centers and hospitals

Goal of Oxygenation

The optimal oxygen saturation (SpO_2) in adults with COVID-19 is uncertain. However, a target SpO_2 of 92% to 96% seems logical considering that indirect evidence from experience in patients without COVID-19 suggests that an SpO_2 <92% or >96% may be harmful.

General assessments

1. How many days they are infected with the SARS CoV-2 virus
2. Underlying co-morbidities (especially risk of hypercapnic respiratory failure)
3. Existing and acceptable oxygen saturation level (SpO_2%)
4. Vital signs -Temperature, BP, PR, Respiratory rate and respiratory distress, conscious level
5. Available oxygen sources
6. Level of medical care – community centers/ hospitals, Volunteers/ health care personnel like nurses, doctors, physicians, intensivists

Acceptable oxygen saturation

- Most patients have an acceptable oxygen saturation of 92-94%
- The following patients should have a lower target of 88-92%
    - Chronic respiratory diseases with possible CO_2 retention
    - Obesity (BMI>40)
    - Neuromuscular disease
- Always use the lowest flow rate possible to achieve target SpO_2 as Oxygen likely to be in short supply in the hospital.
- Lower saturation targets (eg 85-90%) may be appropriate in patients receiving palliation/ end of life care in conjunction with other palliative interventions
- There is no point in aiming for saturation of 100%.

Oxygen administration and delivery devices

- Oxygen delivery devices and flow rates should be adjusted to keep the oxygen saturation in the target range. Prompt clinical assessment is required if oxygen therapy needs to be initiated or increased due to a falling saturation level.
- The initial oxygen therapy is nasal cannulae at 2–6 L/min (preferably) or simple face mask at 5–10 L/min unless stated otherwise.
- For patients not at risk of hypercapnic respiratory failure who have saturation below 85%, treatment should be started with a reservoir mask at 15 L/min and the recommended initial acceptable oxygen saturation target is 94%.
- Change to reservoir mask if the desired saturation range cannot be maintained with nasal cannulae or simple face mask (Ensure that the patient is assessed by senior medical staff).
- If these patients have coexisting COPD or other risk factors for hypercapnic respiratory failure, aim at a saturation of 88–92%.
- Maternal peripheral oxygen saturation (SpO_2) should be maintained at ≥ 95 % in patients with COVID -19 during pregnancy.

Respiratory supports with oxygen delivery

- High flow nasal oxygen (HFNO) includes high flow nasal cannula and high velocity nasal insufflation. High flow oxygen systems provide oxygen-rich heated humidified gas to the patient's nose at flow levels sufficient to deliver a constant, precisely set high FiO_2. HFNO flow rates reach up to 60 L/min.
- Non-invasive positive pressure ventilation: Continuous positive airway pressure (CPAP) or bi-level positive airway pressure (BiPAP) are respiratory support devices that deliver positive airway pressure through tight fitting facial or nasal masks. The hallmark of these devices is that they deliver this positive pressure through all phases of the respiratory cycle. These devices can provide a FiO_2 of up to 100% in a closed circuit.
- Mechanical ventilation through an endotracheal tube may be necessary for patients with frank respiratory failure or multisystem organ dysfunction. These devices can provide a FiO_2 of up to 100% .

Signs of respiratory deterioration

1. Increased respiratory rate > 30/min
2. Decreased SpO_2
3. Increased oxygen dose needed to keep SpO_2 within acceptable range
4. Serial decreased ratio of SpO_2/FiO_2

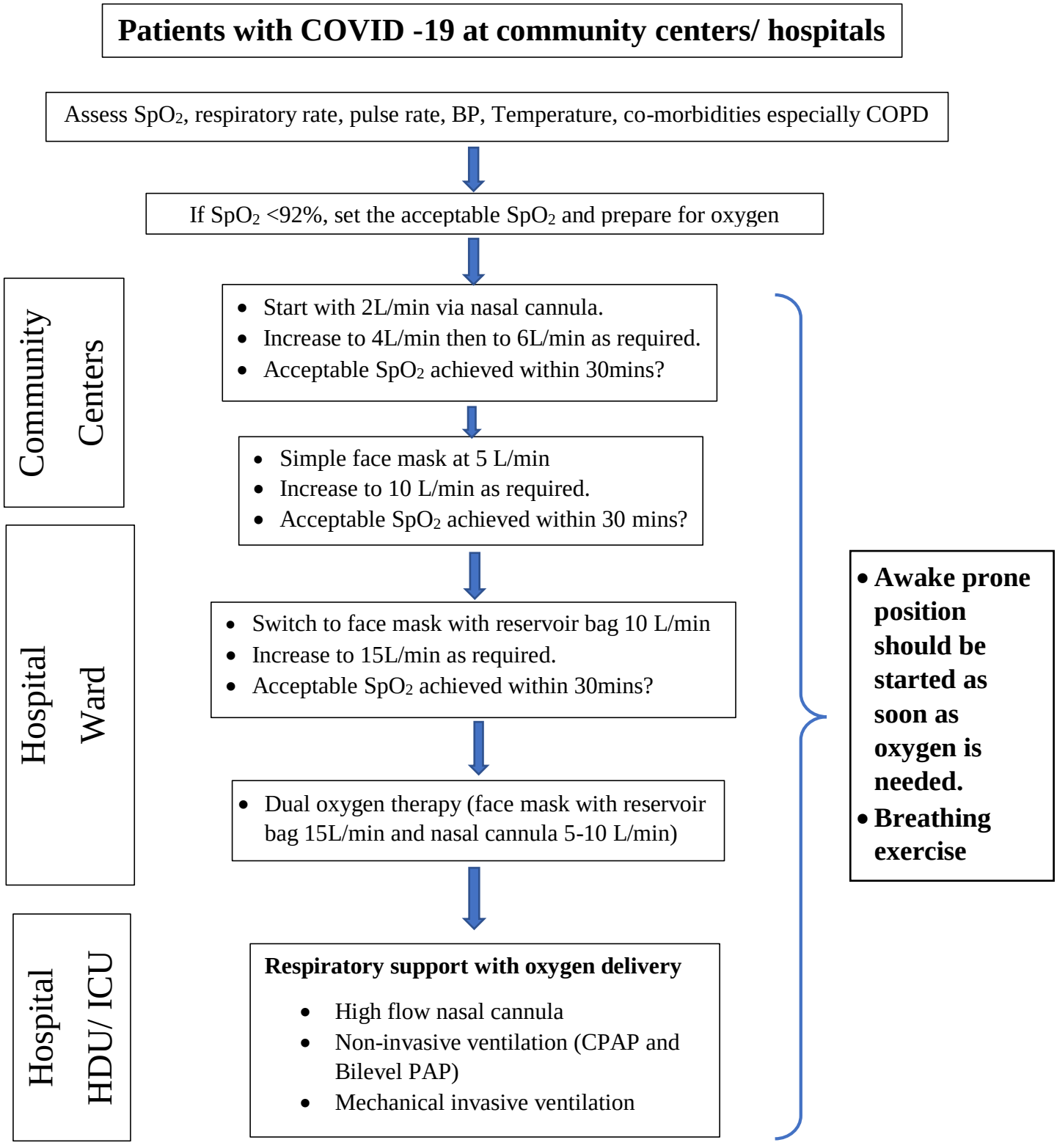
Features of carbon dioxide retention

- Drowsiness
- Flapping tremor
- Flushed face
- Headache

How to decrease the level of oxygen flow (weaning the oxygen therapy)

It is to reduce the oxygen level when the acceptable SpO_2 level is achieved in stable patients.

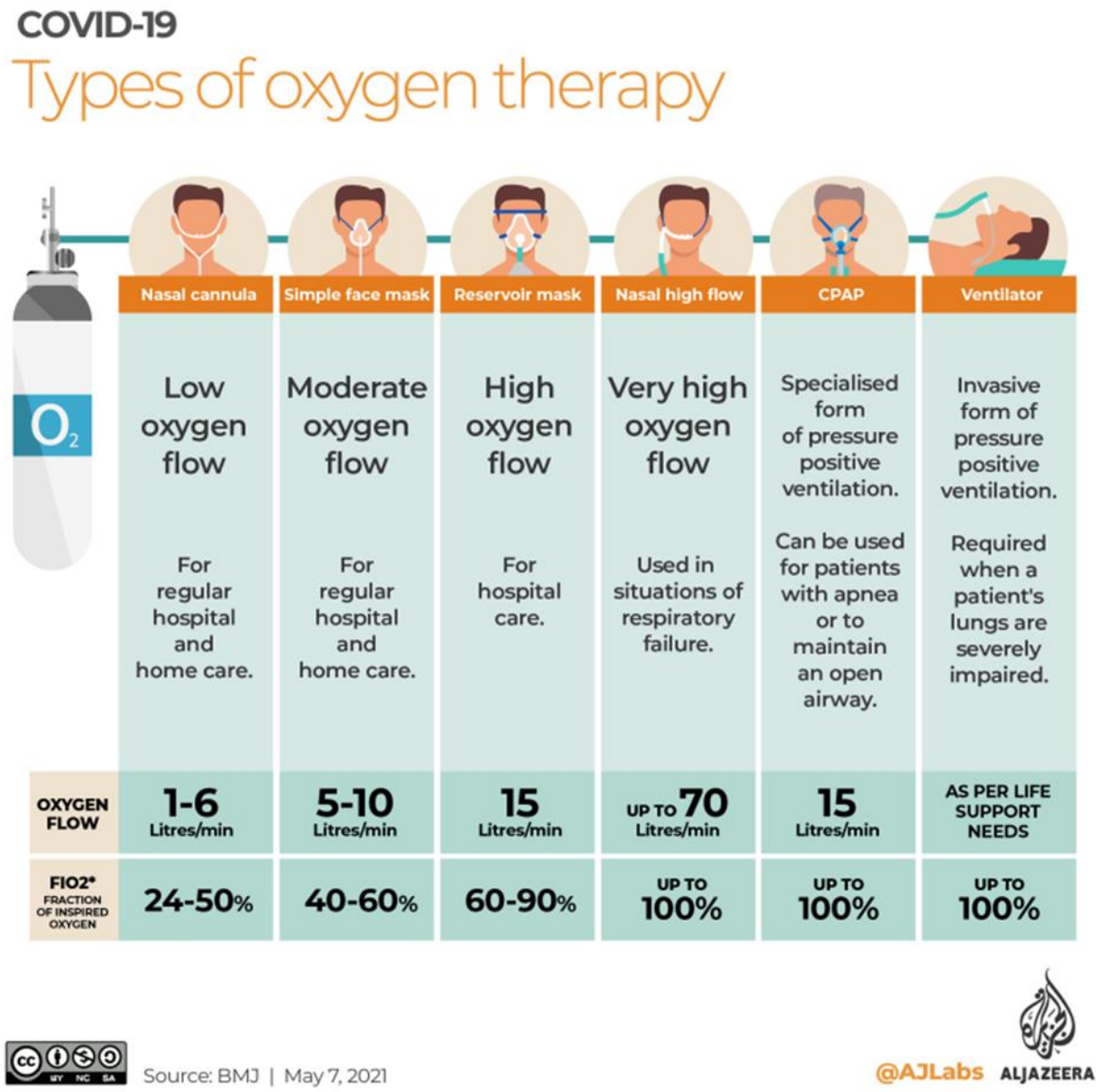
1. Slowly turn the oxygen level down by 1 L/min.
2. Check the SpO_2 after 30 minutes if just turn down the oxygen level.
3. Check the SpO_2 every 2 hours when patient is not sleeping.
4. If the SpO_2 is between 92-94% on new oxygen level, do not change the oxygen level for 12 to 24 hours.
5. Continue to bring down the liter flow by 1 L/min, repeating steps 2-4 above.
6. When the patient can tolerate 0.5 L/min, then turn off the oxygen.
7. If oxygen is off for 24 to 48 hours and the SpO_2 is between 92 to 94% with rest, with activity, and during sleep, the oxygen therapy is stopped.



*** Always use the lowest flow rate possible to achieve target SpO_2 as Oxygen likely to be in short supply in the hospital.**

*** Initial oxygen therapy step is depending on the existing SpO_2 of the patients**

*** To reduce the oxygen level when the acceptable SpO_2 level is achieved in stable patients**


COVID-19
Types of oxygen therapy
O_2
Nasal cannula
Simple face mask
Reservoir mask
Nasal high flow
CPAP
Ventilator
Low oxygen flow
For regular hospital and home care.
Moderate oxygen flow
For regular hospital and home care.
High oxygen flow
For hospital care.
Very high oxygen flow
Used in situations of respiratory failure.
Specialised form of pressure positive ventilation.
Can be used for patients with apnea or to maintain an open airway.
Invasive form of pressure positive ventilation.
Required when a patient's lungs are severely impaired.
OXYGEN FLOW
1-6 Litres/min
5-10 Litres/min
15 Litres/min
UP TO 70 Litres/min
15 Litres/min
AS PER LIFE SUPPORT NEEDS
FIO2* FRACTION OF INSPIRED OXYGEN
24-50%
40-60%
60-90%
UP TO 100%
UP TO 100%
UP TO 100%
Source: BMJ | May 7, 2021
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