O2matic

OXYGENATION MADE SAFE AND SIMPLE

Developed and made in Denmark

Region H Hvidovre Hospital

Region H Nordsjællands Hospital

Region H Gentofte Hospital

O2MATIC APS - NØRRELUNDVEJ 10, 2730 HERLEV - DENMARK
WWW.O2MATIC.COM INFO@O2MATIC.COM +45 50529810

OUR STORY

2010
The O2matic Idea is formed

2013
Public-Private collaboration with the capital region

2016
Innovation Fund Denmark funds O2matic

2017
O2matic ApS is established

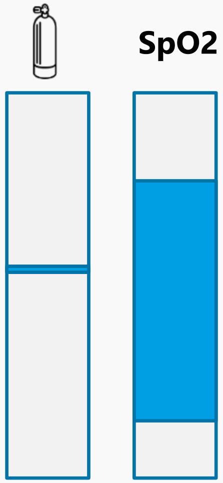
2018
First study published regarding automatic oxygen treatment

2019
O2matic certified by TüV SüD

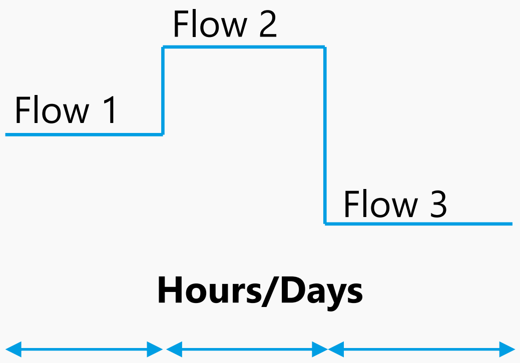
2020
Winner of the Danish government's Innovation Award

MANUAL OXYGEN TREATMENT

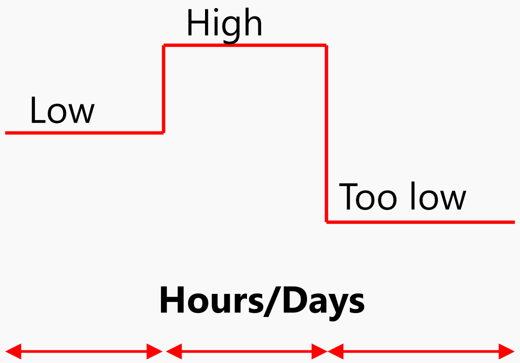
Common practice



MANUAL O2 ADJUSTMENTS

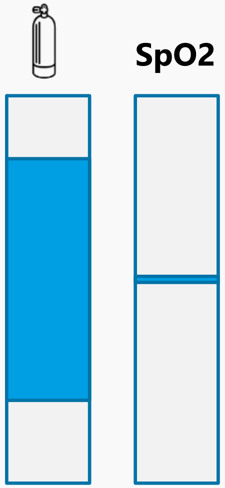


SpO_2 FLUCTUATIONS

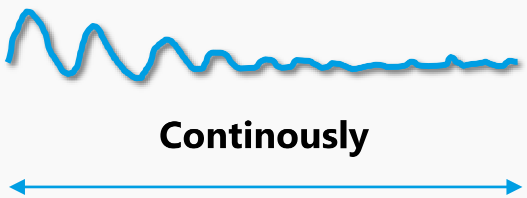


AUTOMATIC OXYGEN THERAPY

O_2matic

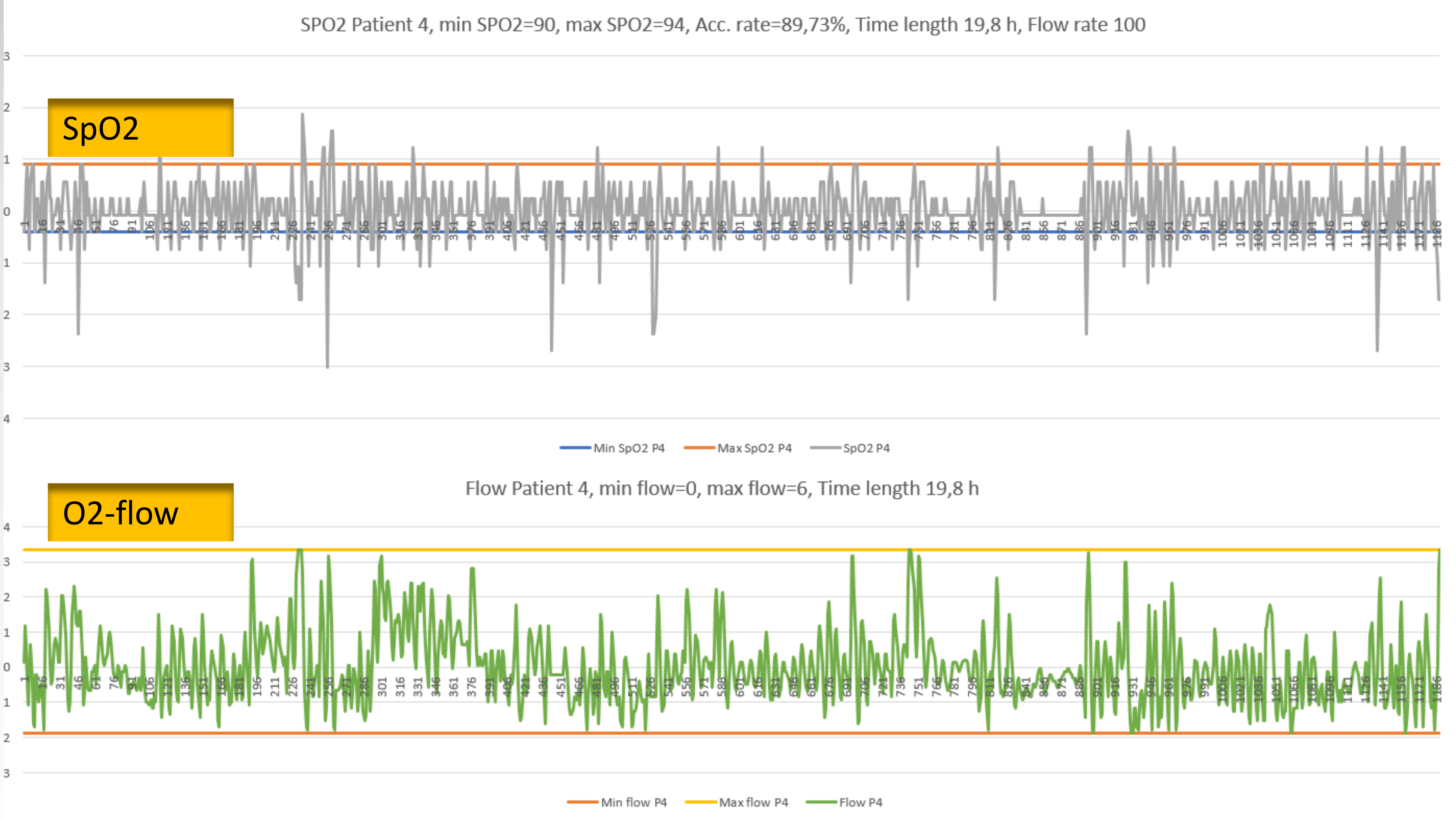


AUTOMATIC O2 ADJUSTMENTS



DESIRED SpO_2

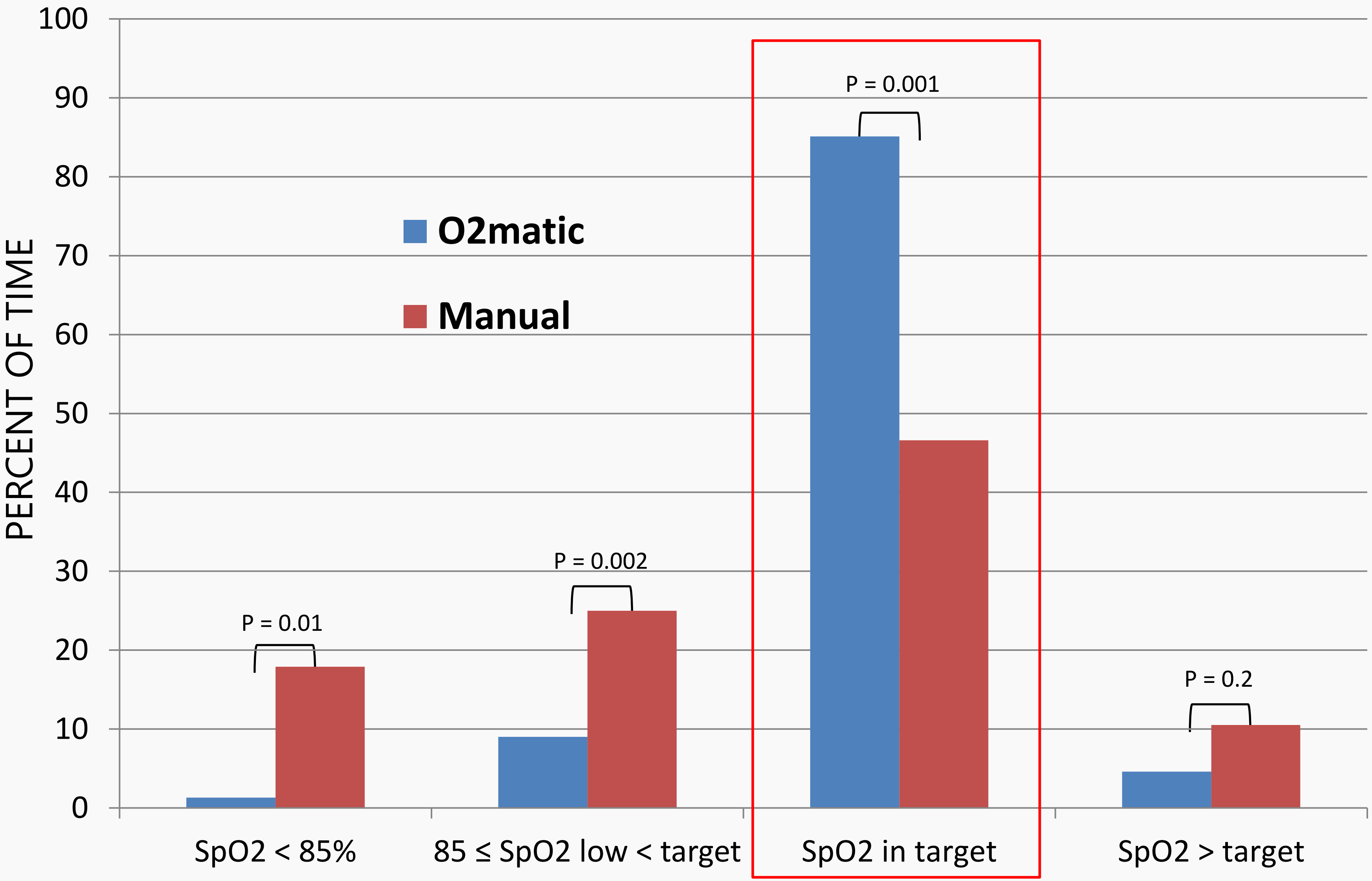
Data from 19,8 hours hospitalization



Treatment profile:

- Max. SpO2: 94
- Min. SpO2: 90
- Max O2: 6 l/min
- Min O2: 0 l/min

BENEFITS OF AUTOMATIC OXYGEN THERAPY by O2matic



Source:
www.ncbi.nlm.nih.gov/pubmed/?term=o2matic

Clinical management of severe acute respiratory infection (SARI) when COVID-19 disease is suspected

Interim guidance

13 March 2020

World Health Organization

4. Management of mild COVID-19: symptomatic treatment and monitoring

Patients with mild disease do not require hospital interventions, but isolation is necessary to contain virus transmission and will depend on national strategy and resources.

Remark: Although most patients with mild disease may not have indications for hospitalization, it is necessary to implement appropriate IPC to contain and mitigate transmission. This can be done either in hospital, if there are only sporadic cases or small clusters, or in repurposed, non-traditional settings; or at home.

5. Management of severe COVID-19: oxygen therapy and monitoring

Give supplemental oxygen therapy immediately to patients with SARI and respiratory distress, hypoxaemia or shock and target $SpO_2 > 94\%$.

Remarks for adults: Adults with emergency signs (obstructed or absent breathing, severe respiratory distress, central cyanosis, shock, coma, or convulsions) should receive airway management and oxygen therapy during resuscitation to target $SpO_2 \geq 94\%$. Initiate oxygen therapy at 5 L/min and titrate flow rates to reach target $SpO_2 \geq 93\%$ during resuscitation; or use face mask with reservoir bag (at 10–15 L/min) if patient in critical condition. Once patient is stable, the target is > 90% SpO_2 in non-pregnant adults and ≥ 92–95% in pregnant patients *(16, 25)*.

7. Management of critical COVID-19: acute respiratory distress syndrome (ARDS)

Recognize severe hypoxemic respiratory failure when a patient with respiratory distress is failing to respond to standard oxygen therapy and prepare to provide advanced oxygen/ventilatory support.

Remarks: Patients may continue to have increased work of breathing or hypoxemia even when oxygen is delivered via a face mask with reservoir bag (flow rates of 10–15 L/min, which is typically the minimum flow required to maintain bag inflation; FiO_2 0.60–0.95). Hypoxemic respiratory failure in ARDS commonly results from intrapulmonary ventilation-perfusion mismatch or shunt and usually requires mechanical ventilation *(5)*.

The following recommendations pertain to adult and paediatric patients with ARDS who are treated with non-invasive or high-flow oxygen systems.

- **High-flow nasal oxygen (HFNO) should be used only in selected patients with hypoxemic respiratory failure.**
- **Non-invasive ventilation (NIV) should be used only in selected patients with hypoxemic respiratory failure.**
- **Patients treated with either HFNO or NIV should be closely monitored for clinical deterioration.**

Remark 2: Because of uncertainty around the potential for aerosolization, HFO, NIV, including bubble CPAP, should be used with airborne precautions until further evaluation of safety can be completed.

O2matic standard profiles

COVID_LFLOW SpO2: 92-96% Flow: 0 – 8 l/min	Suitable for patients with Covid-19 who are using nasal catheter. Setup follows WHO recommendations.
COVID_HLFOW SpO2: 92-96% Flow: 0 – 15 l/min	Suitable for patients with Covid-19 who are using high flow nasal catheters. Setup follows WHO recommendations
COPD_NORM SpO2: 88-92% Flow: 0 – 6 l/min	Suitable for patients with COPD-19 who are using nasal catheter. For oxygen sensitive patients, oxygen flow should be added individually to e.g. 0 - 3 l / min Setup follows BTS guidelines.
ASTHM_PNEU SpO2: 94-98% Flow: 0 – 15 l/min	Suitable for patients with asthma or conditions with acute respiratory failure.
WALKING SpO2: 90-94% Flow: 0 – 15 l/min	Used for 6 minutes walking test and other mobility tests. In this case, O2matic should be attached to a rollator and run in battery mode.

O2matic

BENEFITS OF CONTROLLED OXYGEN

Mortality and morbidity in acutely ill adults treated with liberal versus conservative oxygen therapy (IOTA): a systematic review and meta-analysis

CrossMark

	Chu DK et al. Lancet 2018; 391: 1693-705
Design	Systematic review, meta-analysis of RCT’s
Study groups	Acutely ill patients: Liberal vs. conservative oxygen
Patients	16.037 cases with sepsis, stroke, myocardial infarction…
Endpoints	Mortality (in-hospital, 30 days, longest follow-up)

hospital-acquired pneumonia, any hospital-acquired infection, and length of hospital stay) assessed by random-effects meta-analyses. We assessed quality of evidence using the grading of recommendations assessment, development, and evaluation approach. This study is registered with PROSPERO, number CRD42017065697.

Findings 25 randomised controlled trials enrolled 16 037 patients with sepsis, critical illness, stroke, trauma, myocardial infarction, or cardiac arrest, and patients who had emergency surgery. Compared with a conservative oxygen strategy, a liberal oxygen strategy (median baseline saturation of peripheral oxygen [SpO_2] across trials, 96% [range 94–99%, IQR 96–98]) increased mortality in-hospital (relative risk [RR] 1·21, 95% CI 1·03–1·43, I^2=0%, high quality), at 30 days (RR 1·14, 95% CI 1·01–1·29, I^2=0%, high quality), and at longest follow-up (RR 1·10, 95% CI 1·00–1·20, I^2=0%, high quality). Morbidity outcomes were similar between groups. Findings were robust to trial sequential, subgroup, and sensitivity analyses.

Department of Health Research Methods, Evidence, and Impact (Prof R Jaeschke, Prof H J Schünemann, W Alhazzani), McMaster University, Hamilton, ON, Canada; Medical Research Institute of New Zealand, Wellington, New Zealand (P J Young MBChB); Intensive Care Unit, Wellington Regional Hospital, Wellington, New Zealand (P J Young); and Department of Intensive Care and Perioperative Medicine,

OUTCOME

Among 16.037 patients with stroke, myocardial infarction or critical illness a 21 % increase in mortality was observed if oxygen was delivered liberally compared to a more conservative dosing strategy.

BENEFITS OF CONTROLLED OXYGEN

Table 3 | Intention to treat analysis. Values are numbers (percentages) unless stated otherwise

	Control (high flow oxygen)	Active (titrated oxygen)	Treatment effect	P value
Mortality				
All patients	21/226 (9)	7/179 (4)	0.42 (0.20 to 0.89)*	0.02
Confirmed COPD	11/117 (9)	2/97 (2)	0.22 (0.05 to 0.91)*	0.04
Incidence of ventilation				
All patients	19/213 (9)	13/166 (8)	0.88 (0.45 to 1.72)*	0.70
Non-invasive ventilation	7	8		
Invasive ventilation				
Confirmed COPD				
Non-invasive ventilation				
Invasive ventilation	9	3		
Length of hospital stay (mean (SD) days)				
All patients	5.9 (5.6) (n=226)	5.5 (5.9) (n=179)	−0.45 (0.57)†	0.19
Confirmed COPD	6.3 (5.8) (n=117)	5.4 (4.1) (n=97)	−0.88 (0.70)†	0.37
Arterial blood gases (<30 min) (confirmed COPD patients)				
Mean (SD) pH	7.29 (0.14) (n=19)	7.35 (0.16) (n=19)	0.06 (0.05)†	0.11
Mean (SD) carbon dioxide (mm Hg)	77.8 (49.2) (n=20)	54.7 (31.1) (n=20)	−23.1 (13.0)†	0.06
Mean (SD) bicarbonate (mmol/l)	32.3 (10.1) (n=19)	26.8 (6.5) (n=19)	−5.5 (2.76)†	0.07
Mean (SD) oxygen (mm Hg) (arterial only)	98.4 (46.1) (n=14)	79.3 (24.9) (n=9)	−19.1 (16.8)†	0.34

COPD=chronic obstructive pulmonary disease.
*Relative risk (95% CI).
†Mean difference (SE).

Mortality reduced with 78% by controlled oxygen!

Source:
Austin MA et al. BMJ 2010; 341: c5462

Bodil Steen Rasmussen har som overlæge på intensivafdelingen på Aalborg Universitetshospital haft travlt med at forberede de kommende COVID-19-patienter, og fik den første respiratorpatient med COVID-19 i denne uge. Foto: Lars Horn

Opfordring til sundhedsvæsenet: Vær kritisk i forhold til, hvordan I anvender iltbehandling

For rundhåndet iltbehandling af kritisk syge patienter som COVID-19-patienter, risikerer at gøre mere skade end gavn og kan i værste fald øge dødeligheden, advarer intensivlæger, der opfordrer læger og sygeplejersker til at følge Sundhedsstyrelsens retningslinjer.

Niels-Bjørn Albinus | 19/03/2020

Liberal oxygen treatment of critically ill patients such as COVID-19 patients, may do more harm than good and can, at worst, increase mortality, warn intensive care professionals who urge doctors and nurses to follow the guidelines of the National Board of Health.

FOR MORE INFORMATION

O2matic

FARZAD SABER

CPO, Vice Chairman of the Board

CONTACT

fas@o2matic.com

www.o2matic.com

+45 28 86 92 00

ADDRESS

Nørrelundvej 10

2730 Herlev

Denmark