



SHAREABLE PDF

# Management of hospitalised adults with coronavirus disease 2019 (COVID-19): a European Respiratory Society living guideline

James D. Chalmers <sup>1,20</sup>, Megan L. Crichton<sup>1</sup>, Pieter C. Goeminne<sup>2</sup>, Bin Cao<sup>3</sup>, Marc Humbert <sup>4</sup>, Michal Shteinberg <sup>5</sup>, Katerina M. Antoniou<sup>6</sup>, Charlotte Suppli Ulrik <sup>7</sup>, Helen Parks<sup>8</sup>, Chen Wang<sup>9</sup>, Thomas Vandendriessche<sup>10</sup>, Jieming Qu<sup>11,12</sup>, Daiana Stolz<sup>13</sup>, Christopher Brightling<sup>14</sup>, Tobias Welte <sup>15</sup>, Stefano Aliberti <sup>16</sup>, Anita K. Simonds<sup>17</sup>, Thomy Tonia<sup>18</sup> and Nicolas Roche<sup>19,20</sup>

**Affiliations:** <sup>1</sup>School of Medicine, University of Dundee, Dundee, UK. <sup>2</sup>Dept of Respiratory Medicine, AZ Nikolaas, Sint-Niklaas, Belgium. <sup>3</sup>Dept of Respiratory and Critical Care Medicine, Clinical Microbiology and Infectious Disease Lab, China-Japan Friendship Hospital, National Center for Respiratory Medicine, Institute of Respiratory Medicine, Chinese Academy of Medical Science, National Clinical Research Center of Respiratory Diseases, Beijing, China. <sup>4</sup>Service de Pneumologie et Soins Intensifs, Hôpital Bicêtre, Assistance Publique-Hôpitaux de Paris (AP-HP), Université Paris-Saclay, Inserm UMR\_S 999, Le Kremlin Bicêtre, France. <sup>5</sup>Pulmonology Institute and CF Center, Carmel Medical Center and the Technion-Israel Institute of Technology, Haifa, Israel. <sup>6</sup>Laboratory of Molecular and Cellular Pneumology, Dept of Respiratory Medicine, School of Medicine, University of Crete, Heraklion, Greece. <sup>7</sup>Dept of Respiratory Medicine, Copenhagen University Hospital-Hvidovre Hospital, Hvidovre, Denmark. <sup>8</sup>European Lung Foundation, Sheffield, UK. <sup>9</sup>Dept of Pulmonary and Critical Care Medicine, Center of Respiratory Medicine, China-Japan Friendship Hospital, Chinese Academy of Medical Sciences and Peking Union Medical College, National Clinical Research Center of Respiratory Diseases, Beijing, China. <sup>10</sup>KU Leuven Libraries – 2Bergen – Learning Centre Désiré Collen, Leuven, Belgium. <sup>11</sup>Dept of Pulmonary and Critical Care Medicine, Ruijin Hospital, Shanghai, China. <sup>12</sup>Institute of Respiratory Diseases, Shanghai Jiao Tong University School of Medicine, Shanghai, China. <sup>13</sup>Clinic of Respiratory Medicine and Pulmonary Cell Research, University Hospital Basel, Basel, Switzerland. <sup>14</sup>Institute for Lung Health, Leicester NIHR BRC, University of Leicester, Leicester, UK. <sup>15</sup>Medizinische Hochschule Hannover, Direktor der Abteilung Pneumologie, Hannover, Germany. <sup>16</sup>Dept of Pathophysiology and Transplantation, Fondazione IRCCS Ca' Granda Ospedale Maggiore Policlinico, University of Milan, Milan, Italy. <sup>17</sup>Respiratory and Sleep Medicine, Royal Brompton and Harefield NHS Foundation Trust, London, UK. <sup>18</sup>Institute of Social and Preventive Medicine, University of Bern, Bern, Switzerland. <sup>19</sup>Respiratory Medicine, Cochin Hospital, APHP Centre-University of Paris, Cochin Institute (INSERM UMR1016), Paris, France. <sup>20</sup>J.D. Chalmers and N. Roche are task force co-chairs.

**Correspondence:** James D. Chalmers, Division of Molecular and Clinical Medicine, University of Dundee, Ninewells Hospital and Medical School, Dundee, DD1 9SY, UK. E-mail: jchalmers@dundee.ac.uk



@ERSpublications

The ERS guidelines for the management of COVID-19 makes recommendations in favour of corticosteroids, thromboprophylaxis, anti-IL-6 and noninvasive ventilatory support. These guidelines will be regularly updated as further evidence becomes available. <https://bit.ly/2OlpmiF>

**Cite this article as:** Chalmers JD, Crichton ML, Goeminne PC, *et al.* Management of hospitalised adults with coronavirus disease 2019 (COVID-19): a European Respiratory Society living guideline. *Eur Respir J* 2021; 57: 2100048 [<https://doi.org/10.1183/13993003.00048-2021>].

This single-page version can be shared freely online.

## ABSTRACT

**Introduction:** Hospitalised patients with coronavirus disease 2019 (COVID-19) as a result of SARS-CoV-2 infection have a high mortality rate and frequently require noninvasive respiratory support or invasive ventilation. Optimising and standardising management through evidence-based guidelines may improve

quality of care and therefore patient outcomes.

**Methods:** A task force from the European Respiratory Society and endorsed by the Chinese Thoracic Society identified priority interventions (pharmacological and non-pharmacological) for the initial version of this “living guideline” using the PICO (population, intervention, comparator, outcome) format. The GRADE approach was used for assessing the quality of evidence and strength of recommendations. Systematic literature reviews were performed, and data pooled by meta-analysis where possible. Evidence tables were presented and evidence to decision frameworks were used to formulate recommendations.

**Results:** Based on the available evidence at the time of guideline development (20 February, 2021), the panel makes a strong recommendation in favour of the use of systemic corticosteroids in patients requiring supplementary oxygen or ventilatory support, and for the use of anticoagulation in hospitalised patients. The panel makes a conditional recommendation for interleukin (IL)-6 receptor antagonist monoclonal antibody treatment and high-flow nasal oxygen or continuous positive airway pressure in patients with hypoxaemic respiratory failure. The panel make strong recommendations against the use of hydroxychloroquine and lopinavir–ritonavir. Conditional recommendations are made against the use of azithromycin, hydroxychloroquine combined with azithromycin, colchicine, and remdesivir, in the latter case specifically in patients requiring invasive mechanical ventilation. No recommendation was made for remdesivir in patients requiring supplemental oxygen. Further recommendations for research are made.

**Conclusion:** The evidence base for management of COVID-19 now supports strong recommendations in favour and against specific interventions. These guidelines will be regularly updated as further evidence becomes available.