

Clinical management of COVID-19

LIVING GUIDELINE
15 SEPTEMBER 2022



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WHO continues to monitor the situation closely for any changes that may affect this interim guidance. Should any factors change, WHO will issue a further update. Otherwise, this interim guidance document will expire 2 years after the date of publication.

Contact

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Sections

Foreword.....	5
Summary	6
Abbreviations.....	8
1. Background.....	11
Clinical characterization	11
Guideline development and implementation	13
2. Methods	14
3. Who the recommendations apply to.....	18
4. COVID-19 care pathway (see Annex 1).....	19
5. Immediate implementation of appropriate infection prevention and control measures.....	21
Mask use in health care facilities.....	22
6. Screening, triage and clinical assessment: early recognition of patients with COVID-19.....	24
7. Laboratory diagnosis	31
8. Management of mild COVID-19: symptomatic treatment	34
9. Management of moderate COVID-19: pneumonia treatment	35
10. Management of severe COVID-19: severe pneumonia treatment	39
11. Management of critical COVID-19: acute respiratory distress syndrome (ARDS)	42
Assessment and recognition	42
Advanced non-invasive respiratory support.....	42
Implementation tools	62
Invasive ventilation and ARDS management.....	62
12. Management of critical COVID-19: septic shock.....	65
13. Prevention of complications in hospitalized and critically ill patients with COVID-19	67
14. Multisystem inflammatory syndrome in children (MIS-C) with COVID-19	75
15. Therapeutics and COVID-19	84
16. Treatment of other acute and chronic infections in patients with COVID-19	85
17. Management of neurological and mental manifestations associated with COVID-19.....	87
18. Noncommunicable diseases and COVID-19	90
19. Rehabilitation for patients with COVID-19	91
20. Caring for women with COVID-19 during and after pregnancy.....	95
21. Feeding and caring for infants and young children of mothers with COVID-19	97
22. Caring for older people with COVID-19	100
23. Palliative care and COVID-19	102
24. Care of COVID-19 patients after acute illness	103
Rehabilitation of adults with post COVID-19 condition	104
Topic 1 Components and functions of rehabilitation care.....	104
Topic 2 Red flags for safe rehabilitation.....	105
Topic 3 Referral principles.....	106

Topic 4 Service delivery	108
Topic 5 Workforce.....	109
Topic 6 Post-exertional symptom exacerbation.....	110
Topic 7 Arthralgia	111
Topic 8 Breathing impairment	112
Topic 9 Cognitive impairment	113
Topic 10 Fatigue	114
Topic 11 Mental health	115
Topic 12 Olfactory impairment.....	116
Topic 13 Orthostatic intolerance.....	117
Topic 14 Swallowing impairment.....	118
Topic 15 Voice impairment	119
Topic 16 Return to everyday activities and work	120
25. Ethical principles for optimum care during the COVID-19 pandemic.....	122
26. Reporting and coding during the COVID-19 pandemic (mortality and morbidity).....	124
27. Clinical research during the COVID-19 pandemic	126
Acknowledgements	127
Annex 1: COVID-19 care pathway	133
Annex 2: Resources for supporting clinical management of COVID-19.....	134
Annex 3: Search strategy (Section 11).....	139
Annex 4: Description of included studies (Section 11).....	147
Annex 5: Case definitions of MIS-C (Section 14).....	150
Web annex: GRADE recommendations - additional information.....	151
References.....	152

Foreword

The *Strategic preparedness and response plan* outlines the World Health Organization (WHO) strategic objectives to end the COVID-19 pandemic and assists national stakeholders with developing a structured approach to their response. WHO's main objectives for COVID-19 are to:

- 1) suppress transmission;
- 2) provide optimized care for all patients, and save lives;
- 3) minimize the impact of the epidemic on health systems, social services and economic activity.

To achieve these objectives, the WHO [Operational considerations for case management of COVID-19 in health facility and community](#) (1) describes key actions that should be taken in different scenarios: no cases; sporadic cases; clusters of cases; and community transmission, in order to enable delivery of clinical and public health services in a timely fashion. This guideline is based on the above strategic priorities, and is intended for clinicians involved in the care of patients with suspected or confirmed COVID-19. It is not meant to replace clinical judgment or specialist consultation but rather to strengthen frontline clinical management and the public health response. Considerations for special and vulnerable populations, such as paediatric patients, older people and pregnant women, are highlighted throughout the text.

This guideline is a product of the contributions of several WHO team members and independent experts from all over the world. WHO is deeply grateful to each of the contributors for their time and expertise.

In this document we refer to the **COVID-19 care pathway (Annex 1)**. This describes a coordinated and multidisciplinary care pathway that a patient enters after they are **screened for COVID-19 and becomes a suspect/confirmed COVID-19 case**, and follows the continuum of their care until release from the pathway. The objective is to ensure delivery of safe and quality care while stopping onwards viral transmission. All others enter the health system in the non-COVID-19 pathway. For the most up-to-date technical guidance related to the COVID-19 response, visit WHO Country & Technical Guidance (2).

Summary

Info Box

Clinical guideline: What are the interventions to manage patients with COVID-19?

Target audience: The target audience is anyone broadly involved directly or indirectly in the care of patients with COVID-19 and post COVID-19 condition, i.e. clinicians, allied health care workers, facility managers and hospital administrators.

Current practice: The evidence base for clinical management of COVID-19 is increasing rapidly. Numerous randomized and observational trials are underway to inform practice. This version of *Clinical management of COVID-19: living guideline* includes 16 new recommendations.

New recommendations: In this update, the Guideline Development Group (GDG) makes 16 new recommendations for rehabilitation of adults with post COVID-19 condition:

- To support the delivery of rehabilitation services for post COVID-19 condition we suggest the following core components: 1. Multidisciplinary rehabilitation teams; 2. Continuity and coordination of care; and 3. People-centred care and shared decision-making. To support the operationalization of the core components, planners could implement core functions, including: 1. Standardized symptoms assessment and outcome measurement; 2. Follow-up system; and 3. Referral system. *(Conditional recommendation for)*
- In adults with post COVID-19 condition exertional desaturation and cardiac impairment following COVID-19 should be ruled out and managed before consideration of physical exercise training. While orthostatic intolerance and post-exertional symptom exacerbation (PESE) are amenable to rehabilitation, their presence will require interventions to be modified in view of these diagnoses for rehabilitation to be safe. *(Strong recommendation for)*
- An early referral of adults with post COVID-19 condition for appropriate rehabilitation services is suggested when experiencing symptoms and impairments that may be managed effectively and that have an impact on everyday functioning, when red flags for safe rehabilitation have been considered. *(Conditional recommendation for)*
- For rehabilitation service delivery for post COVID-19 condition we suggest using a hybrid approach of in-person and remote models that is integrated across all levels of health care. It is suggested that the length of a rehabilitation programme is based on patient needs, enabling re-engagement if new onset functional decline occurs. *(Conditional recommendation for)*
- A workforce for the rehabilitation of adults with post COVID-19 condition may include but is not limited to physiotherapists, occupational therapists, nurses, psychologists, speech and language therapists, physicians and social workers. Community health care workers may be required based on local needs. *(Conditional recommendation for)*
- For the clinical rehabilitation management of PESE in adults with post COVID-19 condition we suggest using education and skills training on energy conservation techniques such as pacing approaches. The provision and training in the use of assistive products and environmental modifications may be useful for people experiencing moderate to severe PESE. *(Conditional recommendation for)*
- For the clinical rehabilitation management of arthralgia in adults with post COVID-19 condition we suggest using a combination of pain education, skills training on self-management strategies, prescription of short-term anti-inflammatory drugs, and in the absence of PESE physical exercise training. *(Conditional recommendation for)*
- For the clinical rehabilitation management of breathing impairment in adults with post COVID-19 condition we suggest using a combination of education and skills training on self-management strategies such as nasal breathing and pacing approaches and, in the absence of PESE, physical exercise training. Breathing control techniques could be offered to those presenting with a suboptimal breathing pattern, and psychological support may be useful to address contributing factors such as anxiety. *(Conditional recommendation for)*
- For the clinical rehabilitation management of cognitive impairment in adults with post COVID-19 condition we suggest using a combination of education, skills training on self-management strategies and cognitive exercises. The provision and training in the use of assistive products and environmental modifications may be useful to address the cognitive dysfunctions as they apply to daily functioning. *(Conditional recommendation for)*
- For the clinical rehabilitation management of fatigue in adults with post COVID-19 condition we suggest using a combination of education, skills training on energy conservation techniques such as pacing approaches and, in the absence of PESE, a cautious return to symptom titrated physical exercise training. The provision and training in the use of assistive products and environmental modifications may be considered for people experiencing levels of fatigue that limit instrumental activities of daily living. Psychological support may be offered to support coping with the symptom. *(Conditional recommendation for)*

Info Box

- For the clinical rehabilitation management of anxiety and depression in adults with post COVID-19 condition we suggest using psychological support and, in the absence of PESE, physical exercise training. In addition, mindfulness-based approaches and peer support groups may be useful to reduce distress in some people with post COVID-19 condition when managing long-term symptoms. *(Conditional recommendation for)*
- For the clinical rehabilitation management of olfactory impairment in adults with post COVID-19 condition we suggest using education and skills training for olfactory training. *(Conditional recommendation for)*
- For the clinical rehabilitation management of orthostatic intolerance in adults with post COVID-19 condition we suggest using a combination of education and skills training on self-management strategies and, in the absence of PESE, physical exercise training. Environmental modifications may be useful to support activities of daily living for people experiencing difficulties with upright positions or standing. *(Conditional recommendation for)*
- For the clinical rehabilitation management of swallowing impairment in adults with post COVID-19 condition we suggest using a combination of education and skills training on positioning, manoeuvres and dietary modifications, and swallowing exercises. *(Conditional recommendation for)*
- For the clinical rehabilitation management of voice impairment in adults with post COVID-19 condition we suggest using education and skills training about voice rest and vocal behaviours. In addition, any combination of respiratory exercises and vocal training may be considered. *(Conditional recommendation for)*
- Interventions for rehabilitation for a return to everyday activities in post COVID-19 condition could include education and skills training on energy conservation techniques, and the provision and training in the use of assistive products to those who need further assistance with activity management and mobility. For a return to work we suggest using a return to work action plan with a prolonged and flexible phased return. Environmental modifications at work may be needed based on an individualized workplace risk assessment of personal capabilities matched to work requirements. *(Conditional recommendation for)*

Rationale for the new recommendations:

WHO clinical guidance for rehabilitation of post COVID-19 condition was requested by Member States, patient advocacy groups and clinicians. Many COVID-19 survivors experience one or more persistent or new onset symptom that impact everyday activities and functioning. Rehabilitation is a key health strategy for maintaining and optimizing functioning in people and for enhancing household, recreational, educational, and professional participation. The development of the recommendations was triggered by the need for guidance for rehabilitation programme planning and the amenability to rehabilitation in other conditions for most prevalent symptoms and impairments in post COVID-19 condition.

How this guideline was created: A GDG of content experts, clinicians, patients, and methodologists produced recommendations following standards for trustworthy guideline development using the Grading of Recommendations Assessment, Development, and Evaluation (GRADE) approach. No conflict of interest was identified for any panel member or other contributors to the guideline development process. This living guideline represents an innovation from WHO, driven by the urgent need for global collaboration to provide trustworthy and evolving COVID-19 guidance informing policy and practice worldwide.

The latest evidence: The GDG's recommendations for rehabilitation programme planning for post COVID-19 condition were informed by the results of a systematic scoping review. The GDG's recommendations for the clinical rehabilitation management of selected impairments were informed by a summary of the evidence from the Cochrane Rehabilitation rapid living systematic reviews on rehabilitation and COVID-19 (direct PICO) and a summary of the evidence in other chronic health conditions based on an overview of Cochrane Systematic Review findings (indirect PICO).

Understanding the recommendations:

16 recommendations have been developed for rehabilitation programme planning and clinical rehabilitation management. This has been based on one overarching PICO, comparing rehabilitation management with no rehabilitation management for selected impairments and functioning and health system outcomes. Eleven recommendations have been developed for the clinical rehabilitation management of impairments that have been selected by the GDG based on their prevalence in Post COVID-19 Condition and amenability to rehabilitation in other health conditions. In addition, five recommendations have been developed for model of care implementation, based on five subquestions that have been found essential for rehabilitation programme planning. When moving from evidence to recommendations, the GDG considered a combination of evidence assessing relative benefits and harms, values and preferences, equity and feasibility issues. Terminology for interventions has been aligned with the [WHO Package of Interventions for Rehabilitation](#) (currently under development). The GDG emphasized that appropriate resources such as trained staff need to be in place for implementation. The recommendations are all conditional, except one, based on the quality and certainty of evidence.

Abbreviations

ADL	activities of daily living
AGP	aerosol-generating procedure
AHRF	acute hypoxaemic respiratory failure
ARDS	acute respiratory distress syndrome
AWaRe	Access, Watch or Reserve (antibiotics)
BiPAP	bilevel positive airway pressure
BMI	body mass index
BP	blood pressure
bpm	beats per minute
CBT	cognitive behavioural therapy
COPD	chronic obstructive pulmonary disease
CPAP	continuous positive airway pressure
CRF	case record form
CT	computed tomography
DIC	disseminated intravascular coagulation
DVT	deep vein thrombosis
ECMO	extracorporeal membrane oxygenation
EOS	end of study
FiO ₂	fraction of inspired oxygen
GDG	Guideline Development Group
GRADE	Grading of Recommendations Assessment, Development and Evaluation
HFNO	high-flow nasal oxygen
HIV	human immunodeficiency virus
ICU	intensive care unit
IFRC	International Federation of Red Cross and Red Crescent Societies

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