World Health Organization

COVID-19
WHO Target Product Profiles for COVID-19 Therapeutics in Hospitalized Patients

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Geneva, Switzerland

R&D Blueprint
Powering research to prevent epidemics

Purpose of the document

Selected disease areas are identified as WHO priorities for research and product development. In the case of COVID-19, target product profile development followed the *COVID-19 Global research and innovation forum: towards a research roadmap*.

The target audience are all those working to evaluate repurposed therapeutic agents for COVID-19 or to develop new therapeutic agents for COVID-19. The document is also aimed at those developing COVID-19 therapeutic agents that have not yet reached the clinical testing phase. This document is relevant to those groups who wish to obtain WHO policy recommendations for use and WHO prequalification for their products.

All the requirements contained in WHO guidelines for WHO policy recommendation and prequalification will also apply. The criteria below lay out some of the considerations that will be relevant in WHO's case-by-case assessments of COVID-19 therapeutic agents in the future. Therefore, should a therapeutic agent's profile be sufficiently superior to the critical characteristics under one or more categories, this may outweigh failure to meet another specific critical characteristic. Therapeutic agents which fail to meet multiple critical characteristics are unlikely to achieve favourable outcomes from WHO's processes. Likewise, preferred characteristics should not be considered as the maximum desirable characteristics; therapeutic agents that exceed these characteristics may find advantages in WHO's processes.

Acknowledgement

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I. Background

As of 20 October, 2020[1], there have been over 40 million cases of COVID-19 and over 1,000,000 deaths world-wide. Experts in relevant disciplines met at the World Health Organization's Geneva headquarters first on 11-12 February 2020[2] and later, virtually, on 11-12 June 2020 to assess the current level of knowledge about the new virus, agree on critical research questions that need to be answered urgently and ways to work together to accelerate and fund priority research that can contribute to curtail this outbreak and prepare for future outbreaks.

This document describes the preferred and minimally acceptable profiles for therapeutic agents. This Target Product Profile (TPP) was developed through a consultation process with key stakeholders in human and animal health, scientific, funding and manufacturing communities. It is intended to guide and prioritize the evaluation of repurposed therapeutic agents for COVID-19 or the development of new therapeutic agents. As new scientific evidence is generated, this TPP may require further review and revision.

[1] https://covid19.who.int/
[2] https://www.who.int/publications/m/item/a-coordinated-global-research-roadmap

II. Target Product Profiles

Research priorities for Candidate therapeutics R&D: please refer to *WHO, A COORDINATED GLOBAL RESEARCH ROADMAP: 2019 NOVEL CORONAVIRUS* pg.48, available at https://www.who.int/blueprint/priority-diseases/key-action/Coronavirus_Roadmap_V9.pdf

TPP for Symptomatic Mild COVID-19 cases[1]

	Preferred	Critical or Minimal
Indication for use	For the treatment of COVID-19 in symptomatic patients as, mono or combination therapy, without evidence of viral pneumonia or hypoxia.	
Target population	Highly preferable to include pregnant women and children < 6 years	Adults including those >60 years of age, and with co-morbidities increasing the risk of poor outcomes. Children ≥6 years.
Safety/tolerability	Safety profile similar or superior to available therapeutic agents. No adverse events that require monitoring.	Safety profile shows an overall acceptable risk/benefit profile in the target population.
Efficacy	Effective at reducing progression of disease.	Effective at reducing duration of symptoms. Endpoints include days to negative PCR test.
Treatment regimen	Once per day dosing.	Twice per day dosing.
Route of administration	Oral.	Oral, inhalation, or parenteral.
Product Stability and Storage	Shelf life of at least 36 months. Room temperature shipping and storage in climatic Zone IV.	Shelf life of at least 6 months.

[1]Please refer to WHO Clinical Management Guidance for definitions of disease severity www.who.int/publications/i/item/clinical-management-of-covid-19

TPP for Symptomatic Mild COVID-19 cases[1]

	Preferred	Critical or Minimal
	Heat stability demonstrated to 40 °C short term	Storage and shipping at -20°C, 2-8°C or room temperature.
Interactions	No DDI. Consider accepting minimal to no DDI rather than no DDI	No significant DDI with products previously licensed for COVID-19 disease or commonly used in hospitalized patients.
Formulation	Tablets/capsules/powder/aerosol, paediatric suspension with acceptable taste.	Tablets/capsules, injectables.
Accessibility	Capability to rapidly scale-up production at cost/dose that allows broad use, including in LMIC.	
Registration and Prequalification	Manufacturers are recommended to interact with the WHO Prequalification of medicines team well ahead of submission to NRAs for licensure or marketing authorization. https://extranet.who.int/prequal/information/manufacturers	

[1]Please refer to WHO Clinical Management Guidance for definitions of disease severity www.who.int/publications/i/item/clinical-management-of-covid-19

	TPP for Hospitalized **Moderate to Severe COVID-19 cases**[1]		TPP for Hospitalized **Critical COVID-19 cases**[1]	
	Preferred	**Critical or Minimal**	**Preferred**	**Critical or Minimal**
Indication for use	For the treatment of COVID-19 in moderately to severely ill hospitalized symptomatic patients.		For treatment of COVID-19 in critically ill hospitalized patients .	
Target population	Highly preferable to include pregnant women and children < 6 years.	Adults including those >60 years of age, and with co-morbidities increasing the risk of poor outcomes. Children ≥6 years.	Highly preferable to include pregnant women and children <6 years.	Adults including those >60 years of age, and with co-morbidities increasing the risk of poor outcomes. Children ≥ 6 years.
Safety/tolerability	Safety profile similar or superior to available therapeutic agents. No adverse events that require monitoring.	Safety profile shows an overall acceptable risk/benefit profile in the target population.	Safety profile similar or superior to available therapeutic agents. No adverse events that require monitoring.	Safety profile shows an overall acceptable risk/benefit profile in the target population.
Efficacy	Effective at reducing mortality.	Effective at reducing progression to critical disease. Endpoints include duration of hospital stay.	Effective at reducing mortality.	Effective at reducing mortality. Endpoints include reduction in the severity of clinical disease and duration of hospital stay.
Treatment regimen	Once per day dosing.	Twice per day dosing.	Once per day dosing.	Twice per day dosing.

[1]Please refer to WHO Clinical Management Guidance for definitions of disease severity www.who.int/publications/i/item/clinical-management-of-covid-19

	TPP for Hospitalized **Moderate to Severe COVID-19 cases**[1]		TPP for Hospitalized **Critical COVID-19 cases**[1]	
	Preferred	**Critical or Minimal**	**Preferred**	**Critical or Minimal**
Route of administration	Oral.	Oral or parenteral or inhaled.	Short-course parenteral or inhaled.	Parenteral or Oral (via NG tube)
Interactions	No DDI.	No significant DDI with products previously licensed for COVID-19 disease or commonly used in hospitalized patients.	No DDI.	No significant DDI with products previously licensed for COVID-19 disease or with commonly used ICU medications.
Formulation	Tablets/capsules, paediatric suspension with acceptable taste.	Tablets/capsules, injectables, inhalation	Injectables.	Injectables or oral
Accessibility	Capability to rapidly scale-up production at cost/dose that allows broad use, including in LMIC.			
Registration and Prequalification	Manufacturers are recommended to interact with the WHO Prequalification of medicines team well ahead of submission to NRAs for licensure or marketing authorization. https://extranet.who.int/prequal/information/manufacturers			

The above prioritization decisions are preliminary and may change as further information is provided to WHO

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