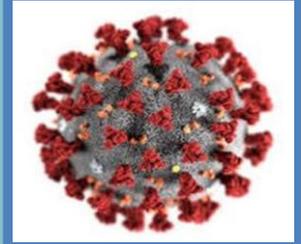




Issue Brief:

Pathophysiology and Clinical Manifestation of COVID-19



Prepared by: Knowledge Translation Directorate, EPHI (13th April 2020)

Background:

The coronavirus disease 2019 (COVID-19) outbreak that started in Wuhan, Hubei province, China in December 2019 has now extended across the globe. Even though SARS-CoV-2 belongs to the Coronavirus family, due to its new emergence, its spread and impacts on human health the research community has responded rapidly to the new virus. Accordingly, this issue has brought evidence on pathophysiology and clinical manifestation of COVID-19 together.

Key Findings:

- Studies indicate the entry receptor for COVID-19 in humans is Angiotensin-converting enzyme 2 (ACE2) and as the body gets infected a cytokine response is triggered whereby immune cells attack the virus.
- The lung appears to be the most vulnerable target organ of this virus where 83% of ACE2-expressing cells are alveolar epithelial type II cells (AECII) that can serve as a reservoir for viral invasion. ACE2 receptor is also found in many extrapulmonary tissues including heart, kidney, endothelium, and intestine.
- Various pathophysiologic changes have been documented and patients with this infection could be asymptomatic carriers, or could experience different complications including ARDS, RNAemia, acute cardiac injury, gastrointestinal infection, secondary (super) infections and multiple organ failure.
- This infection is presented with major clinical symptoms seen with an average of 2 to 14 days duration. The symptoms include fever, dry cough, myalgia, fatigue, dyspnea, diarrhea, muscle ache, confusion, headache, sore throat, rhinorrhea, chest pain, nausea and vomiting. Chest radiology findings also show changes on the lung and thorax. Bilateral, multi-lobe ground glass opacities patchy or nodular consolidations with peripheral ground glass opacities in subpleural areas of the right lower lobe consistent with ARDS are consistent findings. Immunopathology is also raised as one factor that may play a relevant role in the severity of this disease.

Priority Actions

1

Early diagnosis:

The clinical manifestations observed can be used by health professionals or the community to identify affected individuals.

2

Support in prevention:

Evidence on clinical manifestation helps to inform the public for improved and timely prevention.

3

Better management:

The current evidence on pathophysiology helps develop critical thinking and clinical reasoning leading to correct clinical judgments in practice.

4

Further evidence:

Further studies should focus on finding out yet unknown pathophysiological mechanisms and viral interaction with the host.

References use in this issue brief are found the rapid evidence synthesis on: "Rapid Evidence Synthesis on COVID-19 Pandemic to inform the Ethiopian Ministry of Health"

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