 <p>PHILIPPINE HEART CENTER INCIDENT COMMAND POST</p>	Document Type	Document Code: GL-ICP-012
	GUIDELINES	Effective Date: March 2020
	Document Title	Revision Number: 0
	CLINICAL DIAGNOSIS AND MANAGEMENT OF MYOCARDITIS AMONG PATIENTS WITH SUSPECTED OR CONFIRMED COVID-19 INFECTION	Page: 2 of 3

I. STATEMENT OF THE POLICY

Interim guidelines in the diagnosis and management of Myocarditis among patients with suspected or confirmed COVID-19 infection.

II. POLICY GUIDELINES

1. Typical Clinical Picture:²

1.1. Acute onset of symptoms of cardiac dysfunction such as dyspnea, palpitations, chest pain, and/or syncope with precursory symptoms of viral infection

1.1.1. Young patient with no prior diagnosis of cardiovascular disease

1.1.2. Older patient who may have prior cardiovascular disease with acute deterioration into heart failure

1.2. Hypotension:

1.2.1. Fulminant myocarditis – cardiogenic shock (SBP \leq 90 mm Hg or MAP $<$ 65 mm Hg or SBP decrease $>$ 40 mm Hg)

1.2.2. Signs of Hypoperfusion (cyanosis, cold extremities, oliguria, and/or changes in mental status)

2. Diagnostic Work-up:

2.1. Chest X-ray: cardiomegaly, pulmonary congestion, pleural effusion

2.2. ECG: ST-T wave changes, arrhythmia

2.3. Biomarkers: Troponin I, CK-MB, NT-proBNP

2.4. Focus Echocardiography: chamber enlargement with diffuse reduction in LV movement and decreased LV EF ($<$ 45%)

3. Therapy:²

3.1. Life-support based comprehensive treatment regimen (LSBCTR)

3.1.1. Traditional therapy: patients treated with a stepped-care regimen of conventional heart failure and shock medicines.


- Supportive Therapy: CBG Monitoring, Fluid Resuscitation, O₂ support
- Vasopressors (Norepinephrine) or inotropes (Dobutamine)

3.1.2. Mechanical life support:

- Early intubation with positive pressure expiration, ECMO, CRRT (For organ failure).

3.1.3. Hemoperfusion:

- Methylprednisolone to suppress inflammation (200 mg/day x 4 days); for patients with severe ARDS with hemodynamic instability

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3.2. Others:

- 3.2.1. Antimicrobials for superimposed bacterial infection
- 3.2.2. Tocilizumab for Critical ARDS or “cytokine storm syndrome”⁴

- * Milrinone is used to increase myocardial contractility used in one case report¹, however in COVID-19, there is general vasodilation. Milrinone also vasodilates, and if used, might aggravate further vasodilatation.
- * No evidence of IABP use for Mechanical Life Support
- * No evidence of Immunoglobulin used for Hemoperfusion
- * No evidence of Neuraminidase inhibitors used for LSBCTR

References:

1. **PSMID Interim Guidelines on the Clinical Management of Adult Patients with Suspected or Confirmed COVID-2019 Infection.** Version 2.0
26 March 2020.
2. **First Case of COVID-19 Infection with Fulminant Myocarditis Complication: Case Report and Insights** (life sciences/virology)
10.20944/preprints202003.0180.v1
3. **Surviving Sepsis Campaign: Guidelines on the Management of Critically Ill Adults with Coronavirus Disease 2019 (COVID- 19)** Waleed Alhazzani ccmjournal.org
4. **UW Medicine Interim Treatment Guidelines for SARS-CoV-2 infection/COVID-19** Guidance: COVID-19 Management **UW Medicine ID Division**
5. **Recognition and Initial Management of Fulminant Myocarditis** A Scientific Statement From the American Heart Association