

Appendix: CARDIAC Data Collection Form

CASE RECORD FORM

SECTION 1: COMPLETED (ONCE) ONLY UPON SUB-STUDY ENROLMENT

1.1 COVID-19 CRITICAL CARE CONSORTIUM OBSERVATIONAL STUDY PATIENT IDENTIFICATION NUMBER: _____

1.2 PREVIOUS DIAGNOSIS OF CHRONIC CARDIAC DISORDERS:

1.2.A. Ischemic Heart Disease (IHD)

- YES
- NO
- N/A

If yes, select all that apply:

- PCI (Percutaneous Coronary Intervention)
- CABG (Coronary Artery Bypass Grafts)
- Medical Management only

1.2.B. Known Angina

- YES
- NO
- N/A

If yes - grade as per Canadian Cardiac Society (CCS) staging criteria:

- CCS I
- CCS II
- CCS III
- CCS III

1.2.C. Known CHF (Congestive Heart Failure)

- YES
- NO
- N/A

If yes - grade as per New York Heart Association (NYHA) class system:

- NYHA I
- NYHA II
- NYHA III
- NYHA IV

1.2.D. Known arrhythmia

- YES
- NO
- N/A

If yes (select all that apply):

- Atrial fibrillation (AF)
- Atrial flutter (AFL)
- Supra-ventricular tachycardia (SVT)
- Sick sinus syndrome (SSS)
- Second-degree Mobitz II AV block or Third-degree AV block
- Sustained VT (>10 beats)
- Ventricular fibrillation (VF)
- Torsades de Pointe

1.2.E. Previously Implanted Cardiac Device:

- YES
- NO
- N/A

If yes (select all that apply):

- Permanent Pacemaker (PPM)
- Implanted Cardiac Defibrillator (ICD)
- Cardiac resynchronisation therapy (CRT)

1.2.F. Previous Cardiac transplant

- YES
- NO
- N/A

1.2.G. Mechanical circulatory support device in situ at time of being hospitalised
(ie. Left ventricular assist device (LVAD))

- YES
- NO
- N/A

1.2.H. Congenital heart disease

- YES
- NO
- N/A

1.2.I. Pre-existing Cardiomyopathy:

- YES
- NO
- N/A

If YES, specify from list provided (select all that apply)

- Dilated Cardiomyopathy (DCM): Familial
- Dilated Cardiomyopathy (DCM): Idiopathic
- Hypertrophic Cardiomyopathy (HCM)
- Ischemic Cardiomyopathy (ICM)
- Peripartum Cardiomyopathy (PPCM)

- Infiltrative Cardiomyopathy (Hemochromatosis, Sarcoidosis, Amyloidosis)
- Arrhythmogenic right ventricular Cardiomyopathy (ARVC)
- Metabolic Cardiomyopathy (Fabry's)
- Post-infectious cardiomyopathy (Chagas)
- Others

1.2.J. Presence of Prosthetic valve

- YES
- NO
- N/A

a) If YES, specify the location of prosthetic valve (Tick all that apply)

- Aorta
- Tricuspid
- Mitral
- Pulmonary

b) If YES, specify the type of Prosthetic valve

- Mechanical
- Bioprosthetic

1.3 HAS THE PATIENT BEEN DIAGNOSED WITH AN ACUTE CORONARY SYNDROME IN THE LAST 6 MONTHS?

- YES
- NO
- N/A

SECTION 2: COMPLETED (ONCE) AT END OF ICU ADMISSION

2. CARDIAC COMPLICATIONS DURING THIS ILLNESS EPISODE

2.1a Acute Myocardial Infarction Occurring during admission for COVID-19

- YES
- NO
- N/A

If YES (specify): select 1 from the following

- ST-elevated myocardial infarction (STEMI)
- Non-ST-elevated myocardial infarction(NSTEMI)

If YES selected:

Diagnosis supported with angiography?

- YES
- NO
- N/A

specify (select all that apply)

- Transcatheter angiography
- CT coronary angiogram (CTCA)

2.1b DATE OF DIAGNOSIS OF Acute Myocardial Infarction:

Date: __/__/____ (D/M/Y)

2.1c Intervention for Acute myocardial infarction

- YES
- NO
- N/A

If YES:(Select all that apply)

- Percutaneous coronary intervention (PCI)
- CABG (surgical coronary artery grafting)
- Thrombolytic
- Antiplatelet Therapy
- Heparin infusion

2.2a DIAGNOSIS OF CLINICALLY SUSPECTED MYOCARDITIS

- YES
- NO
- N/A

Details

If Yes --> Echocardiographic diagnosis

- YES
- NO
- N/A

(If YES, PLEASE COMPLETE ECHO DATA IN SECTION 4.1)

If no-->Alternative imaging used to aid in diagnosis

- YES
- NO
- N/A

If YES, (Select all that apply)

- Cardiac MRI
- Myocardial perfusion scintigraphy
- CT coronary angiogram (CTCA)

Biopsy performed

- YES
- NO
- N/A

If YES, SARS-CoV2 detected on Biopsy sample?

- YES
- NO
- N/A

Biomarkers - Please complete in Section 5

YES NO N/A

If YES, please choose the parameter above the normal range.

- Troponin I
- Troponin T
- High sensitivity troponin I (Hs-TnI)
- High sensitivity troponin T (Hs-TnT)

2.2b DATE OF DIAGNOSIS OF MYOCARDITIS (only if 'yes' to 2.2):

Date: __/__/__

2.2c DIAGNOSIS OF TAKOTSUBO CARDIOMYOPATHY:

- YES
- NO
- N/A

(IF ECHO PERFORMED PLEASE COMPLETE ECHO DATA IN SECTION 4.1)

2.2d DATE OF DIAGNOSIS OF TAKOTSUBO CARDIOMYOPATHY (only if 'yes' to 2.2c):

Date: __/__/____

2.3a NEW ONSET OF CARDIAC ARRHYTHMIA REQUIRING TREATMENT

- YES
- NO
- N/A

If YES, (Select all that apply)

1. • Atrial fibrillation (AF)
2. • Atrial flutter (AFL)
3. • Supra-ventricular tachycardia (SVT)
4. • Sick sinus syndrome (SSS)
5. • Second-degree Mobitz II AV block or Third-degree AV block
6. • Sustained VT (>10 beats)
7. • Ventricular fibrillation (VF)
8. • Torsades de Pointe

2.3b DATE OF ONSET NEW CARDIAC ARRHYTHMIA (only if 'yes' to 2.3):

Date: __/__/____ (D/M/Y)

2.3c MANAGEMENT OF ARRHYTHMIA (circle all that apply)

- Pharmacological
- Direct current (DC) cardioversion
- Pacemaker insertion : temporary
- Pacemaker insertion : permanent
- Implantable cardioverter-defibrillator (ICD)
- Mechanical circulatory support (MCS) (if yes, complete details in section 3.1b)
- None
- Not Available

2.4a CARDIAC ARREST(S) DURING THIS EPISODE OF ILLNESS:

- YES
- NO
- N/A

2.4b NUMBER OF CARDIAC ARRESTS DURING THIS EPISODE OF ILLNESS:

2.4c DATE OF FIRST CARDIAC ARREST (only if 'yes' to 2.4):

Date: __/__/____ (MM/DD/YY)

2.4d LOCATION OF CARDIAC ARREST(S) DURING THIS EPISODE OF ILLNESS (only if 'yes' to 2.4a): multiple selections

- Out of Hospital Cardiac Arrest (OHCA)
- Emergency Department (ED)
- Intensive Care Unit (ICU)
- General Ward or other medical area

2.5a Sustained Return of Spontaneous Circulation (ROSC) of at least 20 minutes (only if 'yes' to 2.4a):

- YES
- NO
- N/A

If Yes, longest duration of resuscitation to achieve sustained ROSC: _____
(minutes)

2.5b POST-ROSC MANAGEMENT (only if 'yes' to 2.5a):

Post-arrest hypothermia

- YES
- NO
- N/A

Mechanical Circulatory Support including VA-ECMO (commenced post-ROSC)

- YES
- NO
- N/A

2.5c NEUROIMAGING PERFORMED POST ROSC?

- YES
- NO
- N/A

Major CNS abnormality reported by radiologist:

- YES
- NO
- N/A

2.5d Post-Arrest Neurologic Score (At time of hospital discharge)

Cerebral performance category (CPC) score

- CPC 1
- CPC 2
- CPC 3
- CPC 4
- CPC 5

- N/A

2.6 DIAGNOSIS OF OTHER CARDIAC COMPLICATIONS: select from the list

- Pericardial Tamponade
- Intracardiac thrombus
- Ischemic complication (i.e. Ischemic Ventricular septal defect/perforation, Papillary Muscle Rupture, LV aneurysm, LV Pseudoaneurysm, LV/RV free wall rupture)

2.7 DIAGNOSIS OF CARADIOGENIC SHOCK DURING ICU STAY:

- YES
- NO
- N/A

2.8 MECHANICAL CIRCULATORY SUPPORT DURING ICU STAY: (refer to main CRF to enter ECMO data)

Use of Intra-Aortic Balloon Pump (IABP):

- YES
- NO
- N/A

If YES,

Date of device insertion: _____ (MM/DD/YYYY)

Date of device explant: _____ (MM/DD/YYYY) or N/A

Use of Impella:

- YES
- NO
- N/A

Date of device insertion: _____ (MM/DD/YYYY)

Date of device explant: _____ (MM/DD/YYYY) or N/A

SECTION 3: PRE-ICU ADMISSION ECHOCARDIOGRAPHY

3.1 Echocardiogram available within 1 year before ICU admission:

- YES
- NO
- N/A

If YES

Date of this echo was performed: _____ (MM/DD/YYYY) or N/A

Please fill in the below values where known

a) Left ventricular measures:

- i) Interventricular septal width
_____ cm
- ii) Left ventricular end diastolic diameter
_____ cm
- iii) Posterior wall width
_____ cm
- iv) Left ventricular end systolic diameter
_____ cm
- v) Left ventricular end diastolic volume (Biplane)
_____ mL
- vi) Left ventricular end systolic volume (Biplane)
_____ mL
- vii) Left ventricular ejection fraction (%) (Simpson's Biplane)

- viii) Left ventricular global longitudinal strain (LVGLS) (%)

- ix) Regional wall motion abnormalities
 - YES
 - NO
 - N/A

If YES, (Select all that apply)

- Hypokinesis
- Akinesis
- Dyskinesis
- Not available

b) Right ventricular measures (RV focused view):

- i) Right ventricular basal diameter (cm)

- ii) Right ventricular mid diameter (cm) _____

- iii) Right ventricular fractional area change (RVFAC) (%)

- iv) Right ventricular free wall strain (RVLS) (%)

- c) Presence of moderate to severe valvular abnormalities
- YES
 - NO
 - N/A

If YES, specify the type of valve dysfunction:

- Aortic Stenosis
- Aortic Regurgitation
- Tricuspid Stenosis
- Tricuspid Regurgitation
- Mitral Stenosis
- Mitral Regurgitation
- Pulmonary Regurgitation

**SECTION 4: ECHOCARDIOGRAPHY STUDIES PERFORMED DURING THIS ADMISSION
(THIS IS A REPETITIVE ITEM, NEW INSTANCES CAN BE ADDED)**

4.1 Echocardiogram available at any time during admission:

- YES
- NO

If YES

Date of echo: _____ (MM/DD/YYYY) or N/A

Please fill in the below values where known

- a) Left ventricular measures (cm):
- i) Interventricular septal width

 - ii) Left ventricular end diastolic diameter

 - iii) Posterior wall width

 - iv) Left ventricular end systolic diameter

 - v) Left ventricular end diastolic volume (Biplane)

 - vi) Left ventricular end systolic volume (Biplane)

 - vii) Left ventricular ejection fraction (%) (Simpson's Biplane)

 - viii) Left ventricular global longitudinal strain (LVGLS) (%)

- i) Regional wall motion abnormalities
- YES
 - NO
 - N/A
- If YES, (Select all that apply)
- Hypokinesis
 - Akinesis
 - Dyskinesis
 - Not available

- b) Right ventricular measures (RV focused view):

- i) Right ventricular basal diameter (cm) _____
 - ii) Right ventricular mid diameter (cm) _____
 - iii) Right ventricular fractional area change (RVFAC) (%) _____
 - iv) Tricuspid regurgitant jet peak velocity (TR V-Max) _____
 - v) Inferior Vena Cava
 - 1. Size (cm) _____
 - 2. Collapsibility on inspiration of >50%
 - YES _____
 - NO _____
 - N/A _____
 - vi) Right ventricular free wall strain (RVLS) (%) _____
- c) Presence of moderate to severe valvular abnormalities
- YES
 - NO
 - N/A

If YES, specify the type of valve dysfunction:

- i) Aortic
 - Stenosis
 - Regurgitation
 - ii) Tricuspid
 - Stenosis
 - Regurgitation
 - iii) Mitral
 - Stenosis
 - Regurgitation
 - iv) Pulmonary
 - Regurgitation
- d) Presence of pericardial effusion
- YES
 - NO
 - N/A
- If yes (specify):
- Mild
 - Moderate
 - Cardiac Tamponade
- e) Presence of mechanical circulatory device
- YES
 - NO
 - N/A

If yes (specify):

- Venovenous (V-V) ECMO
- Venovenous (V-A) ECMO
- Intra-aortic balloon pumping (IABP)
- Impella
- Left ventricular assist device (LVAD)
- Right ventricular assist device (RVAD)
- Others

4.2 Point of care ultrasound available at any time during admission:

- YES
- NO

If YES

Date of point of care ultrasound: _____ (MM/DD/YYYY) or N/A

Please fill in the below values where known

a) Left ventricle

i) Size

- Normal
- Dilated
- Severely dilated

ii) Wall thickness

- Normal
- Increased

iii) Function

- Normal
- Mild
- Moderate
- Severe

iv) Regional wall motion abnormalities

- Absent
- Present

b) Right ventricle

i) Size

- Normal
- Dilated
- N/A

ii) Function

- Normal
- Mild
- Severe
- N/A

c) Pericardial effusion

- Absent
- Small
- Large
- N/A

d) Presence of moderate to severe valvular abnormalities

- YES
- NO
- N/A

If YES, specify the type of valve dysfunction:

- Aortic Stenosis
- Aortic Regurgitation
- Tricuspid Stenosis
- Tricuspid Regurgitation
- Mitral Stenosis
- Mitral Regurgitation
- Pulmonary Regurgitation

SECTION 5: ADDITIONAL BIOMARKERS OBTAINED DURING THIS ADMISSION (THIS IS A REPETITIVE ITEM, NEW INSTANCES CAN BE ADDED). Please only record the worst value within the 24-h period of assessment

5.0 NT-pro-BNP

Date of assessment

Date __/__/__ (format MM/DD/YY)

(i) NT-proBNP(pg/mL)_____ (acceptable value 50-18,000)