QUALITY WORK INSTRUCTIONAL MANUAL	**HALCYON MARINE** HEALTHCARE SYSTEMS	DOCUMENT NO. **QWI 11.0**	EFFECTIVITY DATE: **July 26, 2019**
			VERSION NO.: 1 REVISION NO.: 3
		PREPARED BY: **Marilar F. De Guzman, MD** QAM	APPROVED BY: **Glennda E. Canlas, MD** **Medical Director**

SUBJECT: WORK INSTRUCTIONAL MANUAL FOR ECG UNIT

1.0   PURPOSE

This QWI documents the procedure for electrocardiogram testing to establish a consistent method using proper assessment applicable to HMHS systems.

2.0   DEFINITIONS AND ACRONYMS

1.   **ECG -** Electrocardiogram
2.   **NSR -** Normal Sinus Rhythm
3.   **CRBBB -** Complete Right Bundle Branch Block
4.   **ERP -** Early Repolarization Pattern
5.   **IRBBB -** Incomplete Right Bundle Branch Block
6.   **IVCD -** Intraventricular Conduction Delay
7.   **Isolated PVC'S -** Isolated Premature Ventricular Contractions
8.   **JR -** Junctional Rhythm
9.   **LVH BY VOLTAGE -** Left Ventricular Hypertrophy by Voltage
10.   **LAD -** Left Axis Deviation
11.   **LAH -** Left Anterior Hemiblock
12.   **LAC -** Low Atrial Complexes
13.   **LPH -** Left Posterior Hemiblock
14.   **NA -** Normal Axis
15.   **NS-IVCD -** Non-Specific Intraventricular Conduction Delay
16.   **NSSTTWC -** Non-Specific ST-T Wave Changes
17.   **PROBABLE LAE -** Probable Left Atrial Enlargement
18.   **PPBF -** Prominent Postero Basal Forces
19.   **PRWP -** Poor R Wave Progression
20.   **PVC -** Premature Ventricular Contraction
21.   **PAC -** Premature Atrial Contractions

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1

		DOCUMENT NO. **QWI 11.0**	EFFECTIVITY DATE: **July 26, 2019**
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22. **RAD -** Right Axis Deviation
23. **SR -** Sinus Rhythm
24. **SA -** Sinus Arrhythmia
25. **ST -** Sinus Tachycardia
26. **SB -** Sinus Bradycardia
27. **WNL -** Within Normal limits
28. **AV Block -** 1st Degree Atrioventricular Block
29. **Online Portal -** It is the online portal used by clients to access and view their PEME information
30. **iNEt -** It refers to halcyon web service used to input, process and output PEME and patient's data

3.0   TOOLS / EQUIPMENT AND MATERIALS NEEDED

1. ECG Machine
2. ECG Bulbs
3. ECG Leads
4. Cotton Balls
5. Alcohol
6. Kenz ECG Cream
7. Logbook

4.0   RECORDING OF PATIENT INFORMATION IN THE LOGBOOK

1. Receive the patient and obtain his PEME ticket.
2. Verify the patient's identity by checking his valid ID.
3. Write the date of examination, PEME ID, name of patient, sex, age, position, company, and the ECG result into the patient's logbook.

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NOTE: In case of system downtime, verify the patient's identity by checking his valid ID.

5.0 PROCEDURE FOR ECG TESTING

1. Instruct the patient to remove any metals such as coins, mobile phones, and jewelry from his body and place it in the security box provided by the unit's tester.
2. Instruct the patient to remove his shoes, fold down his socks, fold his pants up to the level below the knee and remove his upper clothing.

   NOTE: If the patient is female, advise to remove the brassiere only.

3. Instruct the patient to lie down on his back with both arms at sides.
4. Wipe with a cotton soaked with alcohol on areas where ECG leads will be placed.
5. Shave or put a gel on the patient's chest if the area is hairy.
6. Place the ECG leads as directed below:
   6.1. V1 (red)   = 4th ICS, right sternal border
   6.2. V2 (yellow) = 4th ICS, left sternal border
   6.3. V3 (green)   = Midway between locations V2 and V4
   6.4. V4 (brown)   = 5th ICS midclavicular line, left
   6.5. V5 (black)   = On the left, the anterior axillary line at the same horizontal level as V4
   6.6. V6 (violet) = On the left, the mid-axillary line at the same horizontal level as V4 and V5
   6.7. Red lead   = right arm
   6.8. Black lead   = right ankle

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6.9.   Yellow lead   = left arm
6.10.   Green lead   = left ankle

7. Instruct the patient to lie still, relax and not to talk and to breathe normally.
8. Perform the ECG examination.
9. Inform the patient when the procedure has ended.
10. Instruct the patient to put his clothes on and to retrieve his valuables from the security box.
11. Testing Nurse will affix signature on his/her ticket and advise to proceed to other testing units.
12. Save the ECG tracing on the Testing folder in Google Drive.
13. Update the patient's database on the test performed.

6.0   ECG TEST USING THE PROGRAM CARDICO 601

1. Turn on the Cardico 601 ECG machine.
2. Click "Start".
3. Click "CVS_com" then "CVS_List".
4. Enter the username and password.
5. Press "Start" on Cardico 601 machine once heart rate and tracings are stable.
6. Wait until the transmission is completed and finished.
7. Click "Search Again" on the upper left portion or right click the mouse, then click "search again".
8. Click "Edit information" to encode the patient's information such as PEME #, name, age and sex (this information can be encoded before procedure #5), then press Enter.
9. Click "Print" or right click, then press "Print ECG"
10. Encode the patient's name on the Document Title, press "Print" then save the file.

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11. Include the PDF file on the PDF binder per batch for printing of the BPM nurse via Skype.
12. All rush, screening and repeat ECG must be forwarded immediately to the BP monitoring nurse via Skype for printing and reading of the specialist in the Treadmill unit.

7.0   PROCEDURE FOR ENCODING TEST RESULT IN THE ONLINE PORTAL

1. Open the browser, log in on the HMHS online portal.
2. Enter the username and password.
3. Click "Diagnostics" in the upper part, then click "ECG".
4. Enter the patient's PEME number. Click the "time", then click "Serve".
5. Click "Enter Result".
6. Choose the name of the doctor and the tester from the drop down list.
7. Choose "awaiting" from the drop down list for the test status.
8. Click the "browse" button, and then select the file of the patient.
9. Click the Save button, then click done.

8.0   BACK UP PROCEDURE FOR ECG

1. Instruct the patient to remove all metals such as coins, jewelry and mobile phones.
2. Instruct patient to temporarily place all metal objects inside his bag or security box provided by the testing nurse.
3. Instruct the patient to remove his shoes, fold down his socks, fold his pants up to the level below the knee and remove his upper clothing.
4. Instruct the patient to lie down on his back, both arms at sides.
5. Wipe with alcohol areas where ECG leads will be placed.
6. Shave and put a gel on the patient's chest if the area is hairy.

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7. Perform the examination
8. Turn on the Kenz ECG machine.
9. Ensure that the thermal paper is available and placed inside the ECG machine correctly.
10. Enter the patient's data by pressing the "patient's data" on the touch screen.
11. Wait until the tracing is stabilized.
12. Press the "Green" button to record the tracing.
13. Once completed, press the menu on the machine. Click on the data management, then select the patient who was just tested. An option will appear. Choose "PRN" a.k.a.
14. Print the tracing and wait until it is completed.

9.0 PROCEDURE FOR ATTACHING/SCANNING OF ECG TRACING

1. Cut the tracing per group (follow the dotted lines)
2. Paste the tracing in the ECG form or arrange the ECG tracing on the flatbed scanner according to the standard format for interpretation.
3. Scan the ECG tracing.
4. Have the specialist on duty interpret the ECG results.
5. Email, scan the ECG tracing or fax printed ECG result to the specialist for interpretation in the event that the specialist is unavailable.
6. Upload the tracing into the Google drive folder under Bravo, by searching the PEME number of the patient.

10.0 PROCEDURE FOR PATIENTS WITH LETTER OF AUTHORIZATION (LOA)

1. The testing nurse receives the LOA from the office of GMO via email and/or group chat, the ECG testing nurse shall take note the date of testing of the SSMA patient.

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2. The patient submits LOA and a valid ID to the ECG Nurse for identity verification and confirmation of test indicated in the letter. In case the patient had no previous PEME record, a ticket will be included in the verification process.
3. Once confirmed, explain the ECG procedure to the patient.
4. Start the ECG procedure. Record and save the generated ECG tracing.
5. Send the soft copy of the ECG tracing to the BPM Nurse for printing.
6. The BPM Nurse prints the ECG tracing and forwards to the attending Specialist for interpretation. Note that the ECG result is considered as rush, it should be interpreted by the specialist immediately.
7. The BPM Nurse scans the ECG result with the specialist's note and send it to the SSMA email, copy furnished the General Manager for Operations.

11.0 PROCEDURE FOR QUALITY CONTROL OF TEST RESULTS

1. Scan ECG tracing with the Doctor's reading/writing.
2. Rename the scanned tracing.
3. Write the results to the logbook.
4. Check if all the facilitated patients has results in the inet.

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