



Rancho Los Amigos National Rehabilitation Center

OUTPATIENT SERVICES: MOBILE CLINIC

POLICY AND PROCEDURE

**SUBJECT: Cardiology: EKG Procedure Using
Phillips TC70**

**Policy No.: 403
Supersedes: New
Revision Date: February 9, 2022
Page: 1 of 6**

1. PURPOSE:

- 1.1 To provide guidance and describe the workflow process in performing EKG procedure using Phillips TC70 or DHS approved electrocardiogram machine while out in the field for the mobile clinic.

2. POLICY:

- 2.1 Medical Provider will order the performance of EKG for the patient.
 - a) Mobile medical provider will be notified immediately of critical values including but not limited to:
 - St depression of 2mm or more
 - St Elevation of more than 1 mm
 - Tachycardia higher than 130 BPM, 3rd degree heart block, Heart rate less than 40
 - b) If clinical status warrants emergency intervention, 911 will be contacted
- 2.2 Provide instructions and answers all patients' questions before the procedure is perform.
- 2.3 RN, LVN & CMA can perform the EKG procedure after completing the Phillips TC70 EKG training certification provided by the Rancho Los Amigos Nursing Education and Cardiology Department in-service.
- 2.3 Provide patient privacy while EKG is performed.

3. DEFINITION:

- 3.1 EKG is a non-invasive, painless and simple procedure that measures the heartbeat electrical activity & rhythm. It uses 12 -15 electrodes attached to various parts of your body like the (chest, arms, legs) to help the medical provider to diagnose any cardiac abnormality.

4. INDICATION:

- 4.1 The cardiograph is to be used where the clinician decides to evaluate the electrocardiogram of adult and pediatric patients as part of decisions regarding possible diagnosis, potential treatment, effectiveness of treatment, or to rule out causes for symptoms.
- 4.2 To identify conduction abnormalities, cardiac arrhythmias, and myocardial ischemia or myocardial infarction (MI)
- 4.3 To document pacemaker performance

5. CONTRAINDICATION:

EFFECTIVE DATE:

3/1/22

APPROVED BY:

Ben Davis

5.1 There is an absolutely no contraindication for EKG unless patient refusal of the procedure.

6. **EQUIPMENT**

- 6.1 Phillips TC70 or any DHS approved ECG machine with recording paper
- 6.2 Inspect all equipment and supplies before use.
- 6.3 Plug the cord or ensure proper functioning if the machine is battery-operated).
- 6.4 Disposable pre-gelled electrodes.
- 6.5 4" x 4" (10-cm x 10 cm) gauze pads.
- 6.6 Blanket, sheet, or disposable drape to cover and provide privacy for the patient.
- 6.7 Facility approved disinfectant.
- 6.8 Optional: clippers, scissors, indelible marker, gloves, alcohol pad, soap and water, washcloth.

7. **IMPLEMENTATION**

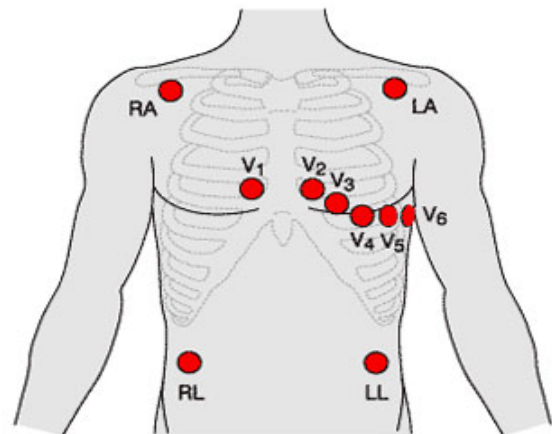
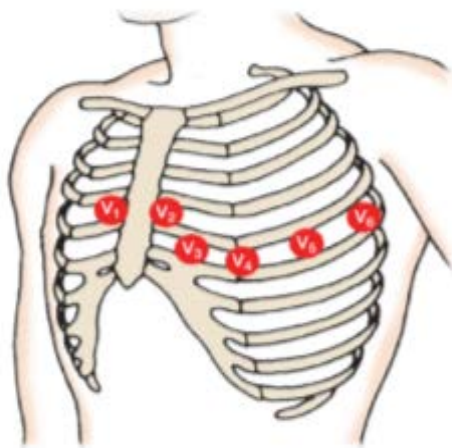
- 7.1 Verify order.
- 7.2 Gather and prepare the necessary equipment and supplies.
- 7.3 Perform hand hygiene.
- 7.4 Confirm the patient's identity using at least two patient identifiers.
- 7.5 Provide privacy & explain the procedure.
- 7.6 Raise the examination table or stretcher to waist level to prevent caregiver back **strain**.
- 7.7 Have the patient lie supine in the center of the examination table or stretcher with arms at the sides.
- 7.8 Raise the head of the table or stretcher if the patient desires to promote comfort. Ensure that the patient's arms and legs remain relaxed to minimize muscle trembling, which can cause electrical interference.
- 7.9 Cover the patient with a blanket, sheet, or disposable drape, leaving the arms, legs, and chest exposed.
- 7.10 Perform hand hygiene.
- 7.11 Put on gloves, as needed, to comply with standard precautions.
- 7.12 Select the electrode sites. Select flat, fleshy areas for the limb lead electrodes; avoid muscular and bony areas. If the patient has an amputated limb, choose a site on the stump.
- 7.13 If an area is excessively hairy, clip the hair using hair clippers or scissors.
- 7.14 If necessary, wash the electrode sites with soap and water and a washcloth and wipe them with a dry washcloth or gauze pad to roughen the skin, which helps remove the skin's outer layer, facilitating electrical signal transmission. If necessary, clean oily skin with an alcohol pad and allow it to dry.
- 7.15 Apply disposable pre-gelled electrodes to the patient's limbs following the manufacturer's instructions. When possible, apply the pre-gelled electrodes directly to the prepared sites as recommended by the manufacturer. To guarantee the best connection to the lead wire, position disposable electrodes on the patient's legs with the lead connections pointing superiorly.
- 7.16 Apply a pre-gelled electrode at each electrode position on the patient's chest. (See Positioning chest electrodes below) For a female patient, place the chest electrodes under the breast tissue.

Clinical alert: *Ensure correct electrode placement for accurate ECG results because an incorrectly placed electrode can produce a change in QRS morphology, contributing to misdiagnosis*

8. **POSITIONING CHEST ELECTRODES**

- 8.1 To ensure proper placement of chest electrodes, use palpation to locate the correct intercostal space. Then palpate down to identify the sternal angle, which is the bony prominence where the second rib attaches to the sternum. The space below the second rib is the second intercostal space. Continue to palpate down the sternum, counting the ribs and intercostal spaces to find the appropriate location for the chest electrodes.
- 8.2 To ensure accurate test results, position chest electrodes as follows:

- V1: Fourth intercostal space at the right border of the sternum
- V2: Fourth intercostal space at the left border of the sternum
- V3: Halfway between V2 and V4
- V4: Fifth intercostal space at the left midclavicular line
- V5: In the horizontal plane of V4 at the left anterior axillary line
(or halfway between V4 and V6 if the anterior axillary line is ambiguous)
- V6: In the horizontal plane of V4 at the left midaxillary line

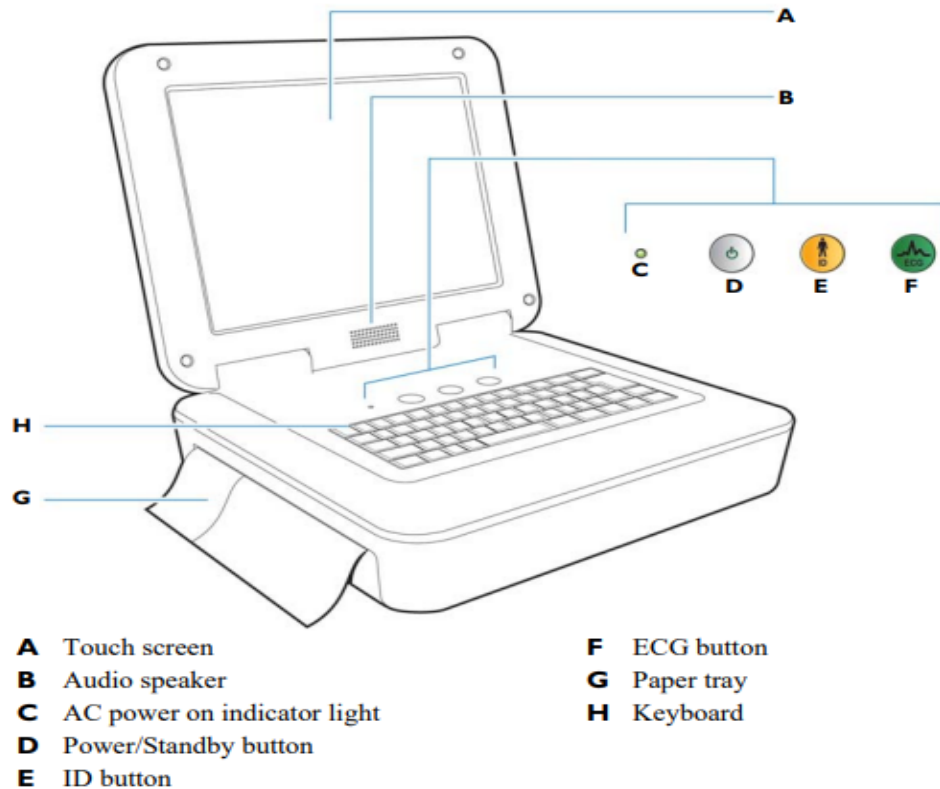


9.1 **PHILLIPS TC70 OPERATION MANUAL**

- 9.1 Connect the lead wires to the electrodes. Note that the tip of each lead wire is lettered and color-coded for easy identification. The white or RA lead wire goes to the right arm; the green or RL lead wire, to the right leg; the red or LL lead wire, to the left leg; the black or LA lead wire, to the left arm; and the brown or V1 to V6 lead wires, to the chest electrodes.
- 9.2 Ensure that the paper speed selector is set to the standard 25 mm/second and that the machine is set to full voltage. The machine will record a normal standardization mark—a square that's the height of two large squares or 10 small squares—on the recording paper.
- 9.3 If any part of the waveform height extends beyond the paper when you record the ECG, adjust the normal standardization to half-standardization. Note this adjustment on the ECG strip because it will need to be a consideration in interpreting the results.
- 9.4 Tell the patient to relax and breathe normally. Have the patient lie still and not talk when you record the ECG to minimize artifact.
- 9.5 Press the AUTO or START button, as shown below. Observe the tracing quality. The machin

will record all 12 leads automatically, recording 3 consecutive leads simultaneously. Some machines have a display screen that allows you to preview waveforms before the machine records them on paper.

Figure 1-2 PageWriter TC70 Cardiograph (left front view)



- 9.6 When the machine finishes recording the 12-lead ECG, remove the electrodes and clean the patient's skin, as needed. After disconnecting the lead wires from the electrodes, dispose of the electrodes, as indicated.
- 9.7 Return the examination table or stretcher to the lowest position to prevent falls and maintain patient safety.
- 9.8 Remove and discard your gloves, if worn.
- 9.9 Perform hand hygiene.
- 9.10 Put on gloves, as needed.
- 9.11 Clean and disinfect reusable equipment according to the manufacturer's instructions to prevent the spread of infection.
- 9.12 Remove and discard your gloves, if worn.
- 9.13 Perform hand hygiene.
- 9.14 Provide the ECG recording to the ordering medical provider to review.
- 9.15 Document the procedure.

10. DOCUMENTATION

- 10.1 Document in the patient's medical record the date and time that you obtained the ECG, the provider who reviewed it, and any significant responses by the patient? Verify the date, time, patient's name and assigned identification number on the ECG itself. Note any appropriate clinical information on the ECG and place it in the patient's medical record. Document the teaching you provided to the patient and family (if applicable), their understanding of that teaching, and any need for follow-up teaching.

11. SPECIAL CONSIDERATIONS

- 11.1 If the patient's respirations distort the recording, have the patient take a deep breath and hold it briefly to reduce baseline wander in the tracing.
- 11.2 If the patient has a pacemaker, you can perform an ECG with or without a magnet according to the provider's orders. Note the presence of a pacemaker and the use of the magnet on the ECG recording.
- 11.3 Record the ECG with the patient in the same position each time because different positions may cause differences in the tracings. If the patient's condition requires another position, document that position on the tracing and in the patient's medical record.

Precautions: *Make sure, that all recording and other nearby electrical equipment are properly grounded. Make sure, that the electrodes are firmly attached.*

Complications: *Skin sensitivity to the electrodes.*

REFERENCES:

1. Lippincott. *12-lead electrocardiogram (ECG), Ambulatory Care*. Retrieved on November 29, 2021 from <https://procedures.lww.com/lmp/view.do?pId=6762309&hits=ecg,electrocardiogram,ecgs&a=false&ad=false&q=ekg>.
2. Page Writer Phillips TC70/TC50 *Electrocardiograph Instruction for Use* (2006, June 9). Retrieved on November 29, 2021 from http://www.frankshospitalworkshop.com/equipment/documents/ecg/user_manuals/Philips%20PageWriter%20TC70,TC50%20Cardiograph%20-%20User%20manual.pdf



MOBILE CLINIC SKILLS VALIDATION CHECKLIST

12-Lead EKG	Met ✓	Not Met ✓	Comments
1. Verify the practitioner's order.			
2. Gather and prepare the necessary equipment and supplies.			
3. Perform hand hygiene and put on gloves.			
4. Confirm the patient's identity using at least two patient identifiers.			
5. Explain the procedure to the patient and family (if appropriate) according to their individual communication and learning needs.			
6. Assist the patient to a supine position in the center of the bed with the patient's arms at the sides and expose patient's chest, arms and legs while maintaining patient privacy.			
7. Apply electrodes to chest, inside forearms and medical aspects of ankles or calves (ensure electrode is securely adhered to skin)			
8. Connect the lead wires to the electrodes.			
9. Instruct the patient to relax and breathe normally.			
10. Press the AUTO or START button. Record the ECG, observing the tracing quality.			
11. Remove the electrodes and clean the patient's skin.			
12. Remove gloves and perform hand hygiene.			
13. Document the procedure.			

____ Employee has met the requirements for competency. Date: _____

Evaluator Initials

Employee Name: _____ Employee #: _____ Employee Signature: _____
Print Name

Evaluator Name: _____ Evaluator#: _____ Evaluator Signature: _____
Print Name

____ Employee has NOT met the requirements for competency. Date: _____

Evaluator Initials

Remediation Provided: Date: _____ Instructor: _____