Experiment HH-10: 12-Lead Electrocardiograms (ECGs)

Equipment Required

PC or Mac Computer

IXTA, USB cable, IXTA power supply

iWire-B3G ECG cable

Electrode lead wires

C-WT-100 Wilson Terminal

Alcohol swabs

Disposable ECG electrodes (12)

Note: It is suggested that students dress appropriately for these exercises. A button-down shirt will make it easier to move the chest lead into correct position.

Electrode Placement

1. The subject should remove all jewelry from his or her neck, wrists, and ankles. Cell phones should be removed from pockets.
2. Use an alcohol swab to clean and scrub regions on each wrist and ankle, under the lateral end of each clavicle and, on the chest. Let the areas dry.
3. Obtain 12 disposable electrodes. Remove each electrode from its protective plastic sheet and apply it to one of the following scrubbed areas on the subject's body:
    - under the lateral ends of each clavicle; for use as the positive and negative electrodes of Lead I.
    - on each wrist and each ankle; for use as the ground and the three electrodes that form the indifferent point for the chest leads.
    - over the right border of the sternum at the 4th intercostal space; for use as the V1 chest lead.
    - over the left border of the sternum at the 4th intercostal space; for use as the V2 chest lead.
    - on the left mid-clavicular line at the 5th intercostal space; for use as the V4 chest lead.
    - halfway between V2 and V4; for use as the V3 chest lead.
    - on the anterior axillary line at the same horizontal level as V4; for use as the V5 chest lead.
    - on the mid-axillary line at the 5th intercostal space; for use as the V6 chest lead.

ECG Cable Setup

1. Locate the iWire-B3G ECG cable and the C-WT-100 Wilson Terminal.
2. Insert the connector on the end of the iWire-B3G cable into the iWire 1 input of the IXTA.

Note: Connect the iWire-B3G prior to turning on the IXTA.

3. Attach the five color-coded wires from the Wilson Terminal into the sockets of the iWire-B3G.
4. Attach four color-coded (red, black, green, brown) single electrode lead wires to the sockets on the Wilson Terminal. Snap the other ends of the lead cables to the electrodes on the subject, so that:
    - the red snap lead wire is connected to the electrode below the left clavicle,
    - the black snap lead wire is connected to the electrode below the right clavicle,
    - the green snap lead wire is connected to the electrode on the right ankle,
    - the brown snap lead wire is connected to the electrode on the left leg.
5. Attach the brown lead wire from the Wilson Terminal into the NEG(-) yellow socket on the iWire-B3G.
    - the green wire from the Wilson Terminal will remain disconnected.
6. Attach the blue electrode snap lead to the POS(+) blue input of the iWire-B3G. Snap the other end of this cable to the first chest lead (V1). This will be the lead that is moved to the other chest electrodes during this lab in order to record all of the 6 chest leads.

Figure HH-10-S1: iWire-B3G cable with the Wilson Terminal and the electrode cables attached to an IXTA for recording limb and chest lead ECG.

Figure HH-10-S2: iWire B3G connected to the Wilson Terminal.

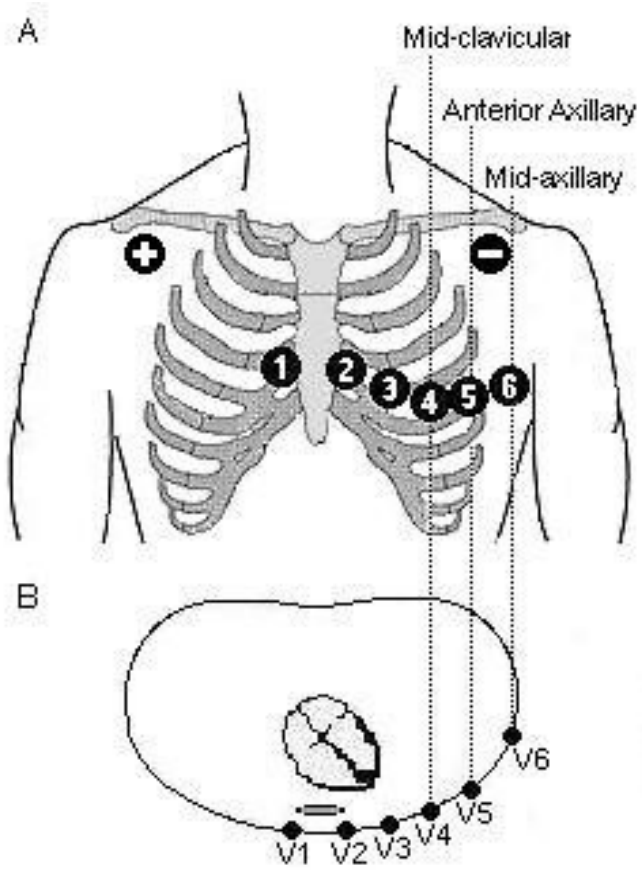

Figure HH-10-S3: A: Frontal view of the electrode positions for Lead I and the six chest leads. B: Top view of the electrode positions for the chest leads.