Using The HESS Sphygmomanometer App

Healthcare Education Simulation Station

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PLEASE READ

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DISCLAIMER

The information in the HESS is not intended or implied to be a substitute for professional medical expertise, advice, diagnosis or treatment.

There is no representation and no responsibility for the accuracy of information contained within the HESS.

The HESS is only intended to be used as an instructional aide by qualified medical educational professionals.

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About The HESS Sphygmomanometer App

The HESS Sphygmomanometer App was created to let healthcare professionals conduct learning exercises that involve a simulated Sphygmomanometer device in a safe and "low stakes" environment.

The Sphygmomanometer App can be used to simulate Blood Pressure vitals on both Manikins and Standardized Patients (actors) where a real Sphygmomanometer would either display the healthy vitals of the Standardized Patient or read no vitals from an artificial Manikin limb.
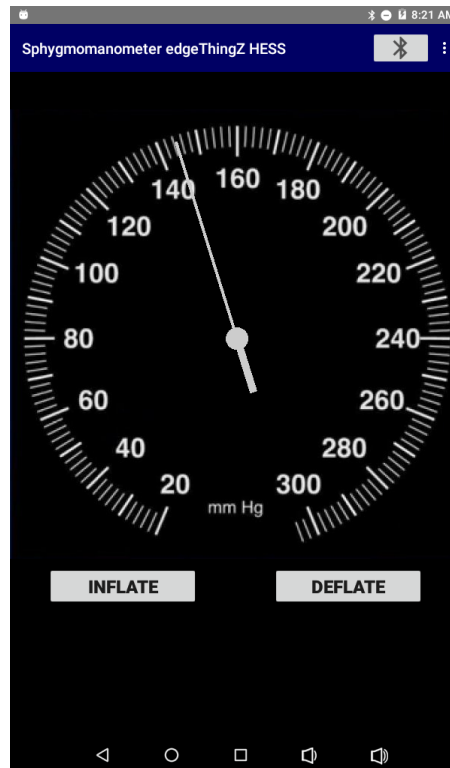
Tablets Suitable To Run The HESS Sphygmomanometer App

The HESS Sphygmomanometer App can run on Android tablets with Version 8 or above of the Android operating system and with a screen size of at least 7 inches.

Android tablets with screen sizes smaller than 7 inches may not display the Sphygmomanometer App screen elements correctly.

The Sphygmomanometer App can be run on larger screen sizes if the educational exercise dictates using a larger tablet – such as displaying the Sphygmomanometer App screen on a monitor or projector.

HESS Vitals Accepted By The HESS Sphygmomanometer App

The HESS Sphygmomanometer App will recognize and use the following vitals transmitted from the HESS Instructor tablet.

1. Blood Pressure Vitals

The Blood Pressure Vitals that the Sphygmomanometer App recognizes and uses are the BP Systolic Pressure (mmHG), BP Diastolic Pressure (mmHG) and the BP Pulse Rate (BPM).

Using The HESS Sphygmomanometer App

1. Starting the Sphygmomanometer App

The HESS Sphygmomanometer App can be started by touching the HESS Sphygmomanometer App icon on the Android tablet.

2. Inflating/Deflating and Listening to the Korotkov Sounds

AFTER the Blood Pressure Vitals have been transmitted successfully from the HESS Instructor App, the "Inflate" and "Deflate" buttons can be used to simulate the inflation and deflation of a BP Cuff to then listen for the Korotkov sounds and assess the patient Blood Pressure.

NOTE: Most tablets do not have speakers of sufficient quality to produce listenable Korotkov sounds. Earbuds or headphones should be plugged into the tablet's audio jack to hear the sounds during a learning exercise. The tablet volume level may also need to be adjusted.

The Inflate button simulates a "squeeze" of the inflation bulb of a manual BP Cuff. A single press of the Inflate button will increase the simulated BP Cuff pressure by approximately 20 mmHG.

Multiple presses of the Inflate button can increase the BP Cuff pressure to the desired level before slowly deflating and listening for the Korotkov sounds.

AFTER using the Inflate button to increase the pressure of the simulated BP Cuff, a SINGLE press of the Deflate button will cause a slow release of the pressure to enable listening for the Korotkov sounds.

A SECOND press of the Deflate button while the pressure is already slowly releasing will cause a fast release of the pressure back to zero.

HESS Sphygmomanometer App Settings

The HESS Sphygmomanometer App has the following Settings available via the Android "3 dots menu" in the upper right corner of the Sphygmomanometer App screen:

1. Display Diagnostic Information

Displays current Blood Pressure and BP Pulse Rate values – to enable analysis of the behavior of the Sphygmomanometer App.

2. Flip Display

Flips the Sphygmomanometer App screen to enable easier access to tablet ports – such as the charging port or the audio jack – during use.

3. Device Address

The Sphygmomanometer App receiving address for the Vitals – which must match the transmission address for the Vitals in the HESS Instructor App. Device Addresses are 4 characters made up of the characters 0-9 and A-F. **DO NOT USE** "0000" or "FFFF" as Device Addresses. "0000" and "FFFF" have special uses within the HESS. Using these special Device Addresses can cause unpredictable results.

HESS Sphygmomanometer App Usage Notes

1. Bluetooth Reset Button

If, after numerous attempts, the Sphygmomanometer App is still not receiving Vitals transmissions – even though the Instructor transmission and the Device receiving addresses match – the "Bluetooth Reset" button in the upper right corner of the screen can be used to reset the Android tablet's Bluetooth functions. This often will resolve Bluetooth oriented issues without having to stop or disrupt the app.

2. Issues When Using Very Low Heart Rates

The Sphygmomanometer App is "driven" by a simulated cardiac cycle. The Sphygmomanometer App will finish any currently established cardiac cycle before moving to new Vitals values even if the new Vitals transmissions have been successfully received. In cases of very low heart rates – such as 10 BPM or lower – it can take some time before changes appear. As an example, in an extreme case of a heart rate set to 1 BPM, the cardiac cycle would be 60 seconds in duration and it could take 1-2 minutes for changes transmitted to take effect. This can make the app appear unresponsive even though it is working properly.

3. When Done, "Power Off" Tablets – Don't Just "Suspend" Them

The Android tablets should be completely "powered off" when stored or the battery will drain to 0% charge. Completely drained batteries can then take 20-30 minutes of charging just to get the tablet to power up for usage. Even if the tablet screen is dark it can be misleading because the tablet may only be "suspended". Pressing the power button for ½ second will indicate if the tablet is completely powered off – by either "unsuspending" the tablet screen if the tablet is only "suspended" – or remaining dark if the tablet is completely powered off.