

The ABI with Toe Examination with simpleABI Cuff-Link™ Systems

Please Read the User Manual first: This is a quick reference guide

Contraindications: Do not perform the exam on someone suspected of having acute deep venous thrombosis, and do not take an arm pressure in an arm with a shunt or dialysis graft.

Background: The ABI with Toe exam is typically performed after an ABI has been done, especially if the larger ankle arteries appear to be incompressible (pressure over 200mmHg) or anytime more information is needed about small vessel disease. The ABI with Toe is done using the PPG probe. The patient is supine and rested in a warm room.

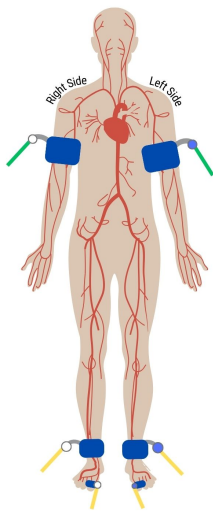
The ABI with Toe Procedure

Setting up

Opening the exam On the computer desktop, double click the simpleABI icon. When the program opens select *File* → *New* → *New ABI with Toe Report*. The report will open and you can enter patient information, risk factors, symptoms, ICD codes, etc.

Attaching cuffs Wrap appropriate cuffs at each site. Attach the hoses from the Cuff-Link control unit to cuffs as shown below. The green connectors go to the arm cuffs and yellow to the ankles or toes. White hoses go to the patient's right side, blue to the left.

Opening a previous exam If you have performed a previous ABI Exam, you may load the results into this exam by selecting *File* → *Load* → *ABI with Toe Report* and selecting **the ABI Exam you previously performed**.



Brachial Pressure

1. Begin with the right brachial. Place the Doppler probe at a 45 degree angle to the skin over the radial or brachial artery. Use plenty of gel and slowly move the probe laterally until the best signal is obtained. (You may also use the PPG sensor to listen for the pulse. If using the PPG, place the sensor on the fleshy part of the finger opposite the fingernail. Wait for consistent beeps from the system.)
2. Press and hold **Inflate** on the Cuff-Link Remote (shown above) and inflate the cuff until you no longer hear the signal - continue for an additional 10-20 mmHg.
3. Release **Inflate** and the cuff will automatically deflate at the suggested rate of 2mmHg/second.
4. When you hear the Doppler signal return, pressing **Pressure** will be store the pressure value in the exam.

Ankle Pressures

1. Press **Next** on the remote and the system will move to the Dorsalis Pedis (DP) site. Find the arterial signal using the Doppler probe on the dorsalis pedis artery on top of the foot. Obtain the arterial pressure in the same manner you did on the arm. (Hold **Inflate** until occlusion, release **Inflate**, press **Pressure** on Doppler signal return)
2. Press **Next** and the system will move to the posterior tibial (PT) site. Find the Doppler signal on the posterior tibial artery. Obtain the arterial pressure. (Hold **Inflate** until occlusion, release **Inflate**, press **Pressure** on Doppler signal return)

Ankle Waveform

1. Press **Next** and the system will move to the waveform site. Press and release the button with the **Waveform** image on the top right of the remote. The cuff will inflate to roughly 85mmHg and deflate to the proper pressure (65mmHg) and hold that while the waveform is obtained. The waveform will start to appear when the cuff has reached 65mmHg. The patient should remain as still as possible during the measurement.

Continued on next side...

The ABI with Toe Procedure (continued)

Toe Pressure

1. Press Next on the remote and the system will move to the Toe pressure field. Place the PPG sensor on the fleshy part of the toe opposite the toenail. Use cohesive tape or double sided tape to attach PPG sensor to the toe. Wait for consistent pulsatile waveform to appear. A warm towel aids blood flow in the toes. Obtain the toe pressure by inflating the cuff until the PPG waveform 'flatlines' and release Inflate. When pulsatile waveform reappears, press Pressure to store the pressure value in the exam. *Note* The toe cuff inflates rapidly – light taps of the Inflate button are best.

Toe Waveform

1. Press Next and the system will move to the waveform site. Press and release the button with the Waveform button on the top right of the remote. The PPG waveform will begin to scroll in the waveform field. When you are satisfied with the waveform press either the Next or the Waveform button to store the PPG waveform. Patient should remain as still as possible during the measurement.

Left Side

1. Repeat the above pressures and waveform sequence for the left side of the patient.

When finished, save or print the exam.

Helpful Hints

Cuff techniques:

- Wrap the cuff snugly.
- Cuffs may be placed over thin clothing or stockings.
- Don't let the patient try to help by lifting their leg - as they relax their muscles the cuff will become loose.
- Placing a pillow under the patients heels may aid the examination.
- Have the patient remain as still and quiet as possible while taking the waveforms.
- If the patient has tremors that interfere with the waveform, having them perform a few dorsiflexions with their toes before taking the waveform may help.

Doppler techniques:

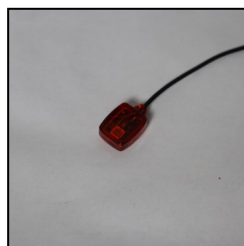
- Hold the probe like you would a pencil, close to the end.
- Move the probe back and forth laterally over the artery to obtain the best signal.
- Support the probe with your hand resting on the patient so that the probe does not move as the cuff is inflated and deflated.
 - One of the keys to a successful exam is being able to keep the probe in place as you inflate and deflate the cuffs.
 - If the probe moves, you may not be able to hear the Doppler sounds return and may have to repeat the inflation.

Exam hints:

- A warm toe is a big help. Keep the toe covered if you can with a towel, even a warm towel if available. Let the patient rest and relax before inflating the cuffs. Anchor the cord from the PPG sensor to the foot with some adhesive tape.
- Toe pressures are difficult to obtain in patients with small vessel disease. Pressures can be obtained with the Doppler probe as well but it is more difficult as the digit arterial signal is hard to locate.



Cuff-Link Control Unit
with tubing properly attached



PPG



PPG & cuff on Toe