

LETTER TO THE EDITOR



## Best Practice in Ankle Brachial Index Measurement

### ■ To the Editor:

I read with interest the article by Phyllis Bonham regarding accurate measurement and calculation of the ankle brachial index (ABI) in clinical practice.<sup>1</sup> Many readers will certainly find the most up-to-date definition of the procedure in this concise text. To make some contribution, I would like to acknowledge some of our experience and easy applications that we integrated to ABI measurement.

As most performers of the ABI test can realize after multiple measurements, there are a couple of problems with the procedure that can potentially affect obtaining the optimal results. The first is the risk or possibility of external pressure to the cuffs in both upper and lower extremities during pulse readings. This may occur when the patient is supine and the extremities freely lie over the couch with full contact to the mattress. The cuff is also in direct contact with the couch after it is wrapped. Inflation of the cuff causes it to be pressed between the extremity and the mattress, possibly leading to inconsistent pulse readings and inaccurate measurements. To make a comparison, this is also something we strongly avoid during a regular blood pressure measurement in the arms. In addition, the patient most often must place his or her upper extremities closed to the trunk while lying on the couch. This neutral position not only causes difficulty in cuff wrapping and risk of outside pressure but also results in placement of the arms below the level of the heart. In this case, blood flow to the arms increases, which may decrease the reliability of the measurement.

To overcome these concerns, we developed 2 simple modifications for the ABI test. First, to ensure the comfort of the arms, we place 2 inflexible metal armrests of 20-cm

width on the head of the couch (under the mattress) with an angle of 30°. Second, while the patient is supine, we support the ankles upward by placing foam rubbers of 5 cm height under the heels. At the same time, arms are supported by placing 10 cm foam rubbers onto the armrests and under the elbows, serving also as a guide and allowing the arms to be separated slightly from the body. By doing these things, (1) the patient feels more comfortable during the procedure, (2) arms can be elevated up to the level of the heart, (3) readings are taken easier by the observer, and (4) the risk of any external pressure to the cuffs can successfully be eliminated. In addition, my team wraps 4 identical Velcro cuffs at the same time for easier readings and to save time. We also frequently use earphones for the lower extremity readings whenever we meet a weak sound.

In conclusion, to my knowledge there is no previous guideline recommendations on the issues listed earlier. I have the idea that such applications may help the performers of the test and are also essential for an optimal and standardized ABI measurement.

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### ■ Reference

1. Bonham P. WOC consult: misconceptions about the ankle brachial index. *J Wound Ostomy Continence Nurs.* 2012;39:1-2.

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