



THE SOCIETY FOR  
VASCULAR TECHNOLOGY OF  
GREAT BRITAIN AND IRELAND

This is to certify that

**Suzanne Hargreaves**

has completed **Winter 2018 CPD Questions**  
with a score of 83.33%  
and is awarded

**2 CPD Points**

Date: 13/04/2018

Signed

Alison Dumphy- Smith  
Member of the Education Committee



## Reflective Practice on toe-brachial index in the diagnosis of peripheral arterial disease

The current CPD questions involved reading two research papers one of which involved the use of toe-brachial pressure index to assess for peripheral vascular disease. Toe brachial pressure index is regularly undertaken within our department and used in conjunction or instead of the ankle brachial pressure index, particularly in diabetics. This is a subject which interested me as there is frequently debated here with some medical colleagues on what the cut of figure between normal and abnormal is.

The newsletter reviewed and compared various studies which looked at guideline recommendations in the normal population, correlations to angiographic findings and prognosis. There were a couple of comments in the article which surprised me.

Across all the different areas 15 studies were examined. I found it particularly surprising that studies which looked at the value in the normal population obtained a very wide ranging figure between 0.49 and 0.74 however only one of the studies undertook further imaging to exclude the possibility of undiagnosed peripheral vascular disease. As many people could have peripheral vascular disease which is not diagnosed, the measurement obtained and regarded as a normal value may in actual fact be wrong. This was recognised in the paper. Personally I would have expected the papers which are trying to establish a normal range for toe-brachial pressure index to obtain confirmatory imaging of the patient to ensure the vasculature was indeed normal with no undiagnosed abnormality before making the statement they did.

Some studies undertook pre-test limb heating prior to obtaining the toe-brachial pressure and mentioned that not undertaking limb heating can result in falsely low TBPI. This is not something I had considered before reading the article as we do not heat the limb prior to obtaining the TBPI. In our laboratory the toe-brachial pressure index is usually performed at the beginning or end of the duplex ultrasound scan and I had not considered how deliberate heating may influence the value obtained. No information was given regarding what the procedure involved to pre heat the limb and what temperature the limb or surrounding environment should be so I am uncertain as to how the value obtained in our vascular lab would differ from a heated limb. Usually the room is at a stable temperature and would therefore represent the patients' normal environmental conditions.

Ultimately examination of all the different research papers did not find any common link with the diagnostic criteria remaining ambiguous. Some studies recommended  $<0.7$  as a cut off that could be used in clinical practice but this was not evidence based. The paper ultimately concluded larger trials were needed to establish the risk of morbidity and mortality for the various diagnostic limits of the TBPI. From these trials diagnostic criteria could be obtained that could then be used in clinical practice.

In our laboratory we use  $<0.6$  as the cut off but recognise there is a grey area in the 0.6-0.7 range and if warranted the patient would have some imaging performed, usually in the form of a duplex ultrasound imaging to exclude underlying peripheral disease.

As I had not personally considered pre-test limb heating I know little about it and I plan to look into this area more and discover how this takes place and how it can influence measurements taken. From this it may then be appropriate to speak to the laboratory manager about the article, and the research I will have undertaken, and see if the laboratory needs to alter its practice regarding the way in which we undertake the toe-brachial pressure index. If the findings support an alteration I the laboratory practice then it would be discussed with the necessary vascular surgeons to ensure they support the change before it was implemented.

*Suzanne Hargreaves*

Suzanne Hargreaves

26/4/18