smith&nephew

For patients.
For budgets.
For today.◇

The number of weeks it SHOULD take to heal a venous leg ulcer.[1]

ABPI: Essential diagnostic prior to compression

Leg ulcer management relies on an accurate diagnosis. An ABPI (Ankle Brachial Pressure Index) is essential to establish arterial perfusion of the lower limb before compression therapy can commence. The results of these investigations combined with the clinical assessment of the patient and the limb will help confirm a diagnosis. A normal ABPI alone does not confirm venous disease.

Other ways to access Doppler assessment in the Community:

- Diagnostic services (check local service for availability)
- Community Health Service based Podiatrists
- District Nursing Services
- Private Nurse Consultants
- Wound Clinics
- Vascular Surgeon
- Referral to hospital

Contraindications for APBI

- Excruciating pain in lower legs/feet
- Deep vein thrombosis, which could lead to dislodgement of the thrombosis, where referral would be indicated for a duplex ultrasound test
- Severe pain associated with lower extremity wound(s)

Medicare Item 11610 associated[1]

A Medicare rebate is available using a hand held Doppler with a waveform print out. The associated Medicare item number is 11610.

MEASUREMENT OF ANKLE: brachial indices and arterial waveform analysis, measurement of posterior tibial and dorsalis pedis (or toe) and brachial arterial pressures bilaterally using Doppler or plethysmographic techniques, the calculation of ankle (or toe) brachial systolic pressure indices and assessment of arterial waveforms for the evaluation of lower extremity arterial disease, examination, hard copy trace and report[1].

A requirement of item number 11610 is the use of a Doppler waveform print out showing arterial wave form. Please refer to reverse of this guide for instructions on how to conduct an ABPI.

ABPI procedure model using Doppler method[2]

Explain the procedure and reassure the patient and ensure that he/she is lying flat and is comfortable, relaxed and rested with no pressure on the proximal vessels.

Step 1. Measure the brachial systolic blood pressure:

a. Place an appropriately sized cuff around the upper arm
b. Locate the brachial pulse and apply ultrasound contact gel
c. Angle the Doppler probe at 45 degrees and move the probe to obtain the best signal
d. Inflate the cuff until the signal is abolished then deflate the cuff slowly and record the pressure at which the signal returns being careful not to move the probe from the line of the artery
e. Repeat the procedure for the other arm
f. Use the highest of the two values to calculate the ABPI

Step 2. Measure the ankle systolic pressure:

a. Place an appropriately sized cuff around the ankle immediately above the malleoli having first protected any ulcer that may be present
b. Examine the foot, locating the dorsalis pedis or anterior tibial pulse and apply contact gel

Fig1
Measuring ankle pressure in the dorsalis pedis artery. Note that the cuff is placed at the ankle. The ulcer is protected by dressings and cling film

- Continue as for the brachial pressure, recording this pressure in the same way
- Repeat this for the posterior tibial (Fig2) and if required the peroneal arteries

Fig2
The posterior tibial artery lies just behind the medial malleolus. Reflux can frequently be heard in the adjacent veins and this can help to locate the artery

- Use the highest reading obtained to calculate the ABPI for that leg
- Repeat for the other leg
- Calculate the ABPI for each leg using the reference chart below. This is also presented as an equation - see equation 1 below.

Calculating ABPI

$$ABPI_l = \frac{P_l}{P_a}$$

$ABPI_l$ = ABPI for a leg
P_l = Highest pressure obtained from the ankle vessels for that leg
P_a = Highest brachial pressure of the two arms

Highest pressure recorded at the ankle

Arm systolic pressure	220	215	210	205	200	195	190	185	180	175	170	165	160	155	150	145	140	135	130	125	120	115	110	105	100	95	90	85	80	75	70	65	60	55	50	45	40	35	30
250	0.88	0.86	0.84	0.82	0.8	0.78	0.76	0.74	0.72	0.7	0.68	0.66	0.64	0.62	0.6	0.58	0.56	0.54	0.52	0.5	0.48	0.46	0.44	0.42	0.4	0.38	0.36	0.34	0.32	0.3	0.28	0.26	0.24	0.22	0.2	0.18	0.16	0.14	0.12
245	0.9	0.88	0.86	0.84	0.82	0.8	0.78	0.76	0.73	0.71	0.69	0.67	0.65	0.63	0.61	0.59	0.57	0.55	0.53	0.51	0.49	0.47	0.45	0.43	0.41	0.39	0.37	0.35	0.33	0.31	0.29	0.27	0.24	0.22	0.2	0.18	0.16	0.14	0.12
240	0.92	0.9	0.88	0.85	0.83	0.81	0.79	0.77	0.75	0.73	0.71	0.69	0.67	0.65	0.63	0.6	0.58	0.56	0.54	0.52	0.5	0.48	0.46	0.44	0.42	0.4	0.38	0.35	0.33	0.31	0.29	0.27	0.25	0.23	0.21	0.19	0.17	0.15	0.13
235	0.94	0.91	0.89	0.87	0.85	0.83	0.81	0.79	0.77	0.74	0.72	0.7	0.68	0.66	0.64	0.62	0.6	0.57	0.55	0.53	0.51	0.49	0.47	0.45	0.43	0.4	0.38	0.36	0.34	0.32	0.3	0.28	0.26	0.24	0.21	0.19	0.17	0.15	0.13
230	0.96	0.93	0.91	0.89	0.87	0.85	0.83	0.8	0.78	0.76	0.74	0.72	0.7	0.67	0.65	0.63	0.61	0.59	0.57	0.54	0.52	0.5	0.48	0.46	0.43	0.41	0.39	0.37	0.35	0.33	0.3	0.28	0.26	0.24	0.22	0.2	0.17	0.15	0.13
225	0.98	0.96	0.93	0.91	0.89	0.87	0.84	0.82	0.8	0.78	0.76	0.73	0.71	0.69	0.67	0.64	0.62	0.6	0.58	0.56	0.53	0.51	0.49	0.47	0.45	0.43	0.4	0.38	0.36	0.33	0.31	0.29	0.27	0.24	0.22	0.2	0.18	0.16	0.13
220	1	0.98	0.95	0.93	0.91	0.89	0.86	0.84	0.82	0.8	0.77	0.75	0.73	0.7	0.68	0.66	0.64	0.61	0.59	0.57	0.55	0.52	0.5	0.48	0.45	0.43	0.41	0.39	0.36	0.34	0.32	0.3	0.27	0.25	0.23	0.2	0.18	0.16	0.14
215	1.02	1	0.98	0.95	0.93	0.91	0.88	0.86	0.84	0.81	0.79	0.77	0.74	0.72	0.7	0.67	0.65	0.63	0.6	0.58	0.56	0.53	0.51	0.49	0.47	0.44	0.42	0.4	0.37	0.35	0.33	0.3	0.28	0.26	0.23	0.21	0.19	0.16	0.14
210	1.05	1.02	1	0.98	0.95	0.93	0.9	0.88	0.86	0.83	0.81	0.79	0.76	0.74	0.71	0.69	0.67	0.64	0.62	0.6	0.57	0.55	0.52	0.5	0.48	0.45	0.43	0.4	0.38	0.36	0.33	0.31	0.29	0.26	0.24	0.21	0.19	0.17	0.14
205	1.07	1.05	1.02	1	0.98	0.95	0.93	0.9	0.88	0.85	0.83	0.8	0.78	0.76	0.73	0.71	0.68	0.66	0.63	0.61	0.59	0.56	0.54	0.51	0.49	0.46	0.44	0.41	0.39	0.37	0.34	0.32	0.29	0.27	0.24	0.22	0.2	0.17	0.15
200	1.1	1.08	1.05	1.03	1	0.98	0.95	0.93	0.9	0.88	0.85	0.83	0.8	0.78	0.75	0.73	0.7	0.68	0.65	0.63	0.6	0.58	0.55	0.53	0.5	0.48	0.45	0.43	0.4	0.38	0.35	0.33	0.3	0.28	0.25	0.23	0.2	0.18	0.15
195	1.13	1.1	1.08	1.05	1.03	1	0.97	0.95	0.92	0.9	0.87	0.85	0.82	0.79	0.77	0.74	0.72	0.69	0.67	0.64	0.62	0.59	0.56	0.54	0.51	0.49	0.46	0.44	0.41	0.38	0.36	0.33	0.31	0.28	0.26	0.23	0.2	0.18	0.15
190	1.16	1.13	1.11	1.08	1.05	1.03	1	0.97	0.95	0.92	0.89	0.87	0.84	0.82	0.79	0.76	0.74	0.71	0.68	0.66	0.63	0.61	0.58	0.55	0.53	0.5	0.47	0.45	0.42	0.39	0.37	0.34	0.32	0.29	0.26	0.24	0.21	0.18	0.16
185	1.19	1.16	1.14	1.11	1.08	1.05	1.03	1	0.97	0.95	0.92	0.89	0.86	0.84	0.81	0.78	0.76	0.73	0.7	0.68	0.65	0.62	0.59	0.57	0.54	0.51	0.49	0.46	0.43	0.41	0.38	0.35	0.32	0.3	0.27	0.24	0.22	0.19	0.16
180	1.22	1.19	1.17	1.14	1.11	1.08	1.06	1.03	1	0.97	0.94	0.92	0.89	0.86	0.83	0.81	0.78	0.75	0.72	0.69	0.67	0.64	0.61	0.58	0.56	0.53	0.5	0.47	0.44	0.42	0.39	0.36	0.33	0.31	0.28	0.25	0.22	0.19	0.17
175	1.26	1.23	1.2	1.17	1.14	1.11	1.09	1.06	1.03	1	0.97	0.94	0.91	0.89	0.86	0.83	0.8	0.77	0.74	0.71	0.69	0.66	0.63	0.6	0.57	0.54	0.51	0.49	0.46	0.43	0.4	0.37	0.34	0.31	0.29	0.26	0.23	0.2	0.17
170	1.29	1.26	1.24	1.21	1.18	1.15	1.12	1.09	1.06	1.03	1	0.97	0.94	0.91	0.88	0.85	0.82	0.79	0.76	0.74	0.71	0.68	0.65	0.62	0.59	0.56	0.53	0.5	0.47	0.44	0.41	0.38	0.35	0.32	0.29	0.26	0.24	0.21	0.18
165	1.33	1.3	1.27	1.24	1.21	1.18	1.15	1.12	1.09	1.06	1.03	1	0.97	0.94	0.91	0.88	0.85	0.82	0.79	0.76	0.73	0.7	0.67	0.64	0.61	0.58	0.55	0.52	0.48	0.45	0.42	0.39	0.36	0.33	0.3	0.27	0.24	0.21	0.18
160	1.38	1.34	1.31	1.28	1.25	1.22	1.19	1.16	1.13	1.09	1.06	1.03	1	0.97	0.94	0.91	0.88	0.84	0.81	0.78	0.75	0.72	0.69	0.66	0.63	0.59	0.56	0.53	0.5	0.47	0.44	0.41	0.38	0.34	0.31	0.28	0.25	0.22	0.19
155	1.42	1.39	1.35	1.32	1.29	1.26	1.23	1.19	1.16	1.13	1.1	1.06	1.03	1	0.97	0.94	0.9	0.87	0.84	0.81	0.77	0.74	0.71	0.68	0.65	0.61	0.58	0.55	0.52	0.48	0.45	0.42	0.39	0.35	0.32	0.29	0.26	0.23	0.19
150	1.47	1.43	1.4	1.37	1.33	1.3	1.27	1.23	1.2	1.17	1.13	1.1	1.07	1.03	1	0.97	0.93	0.9	0.87	0.83	0.8	0.77	0.73	0.7	0.67	0.63	0.6	0.57	0.53	0.5	0.47	0.43	0.4	0.37	0.33	0.3	0.27	0.23	0.2
145	1.52	1.48	1.45	1.41	1.38	1.34	1.31	1.28	1.24	1.21	1.17	1.14	1.1	1.07	1.03	1	0.97	0.93	0.9	0.86	0.83	0.79	0.76	0.72	0.69	0.66	0.62	0.59	0.55	0.52	0.48	0.45	0.41	0.38	0.34	0.31	0.28	0.24	0.21
140	1.57	1.54	1.5	1.46	1.43	1.39	1.36	1.32	1.29	1.25	1.21	1.18	1.14	1.11	1.07	1.04	1	0.96	0.93	0.89	0.86	0.82	0.79	0.75	0.71	0.68	0.64	0.61	0.57	0.54	0.5	0.46	0.43	0.39	0.36	0.32	0.29	0.25	0.21
135	1.63	1.59	1.56	1.52	1.48	1.44	1.41	1.37	1.33	1.3	1.26	1.22	1.19	1.15	1.11	1.07	1.04	1	0.96	0.93	0.89	0.85	0.81	0.78	0.74	0.7	0.67	0.63	0.59	0.56	0.52	0.48	0.44	0.41	0.37	0.33	0.3	0.26	0.22
130	1.69	1.65	1.62	1.58	1.54	1.5	1.46	1.42	1.38	1.35	1.31	1.27	1.23	1.19	1.15	1.12	1.08	1.04	1	0.96	0.92	0.88	0.85	0.81	0.77	0.73	0.69	0.65	0.62	0.58	0.54	0.5	0.46	0.42	0.38	0.35	0.31	0.27	0.23
125	1.76	1.72	1.68	1.64	1.6	1.56	1.52	1.48	1.44	1.4	1.36	1.32	1.28	1.24	1.2	1.16	1.12	1.08	1.04	1	0.96	0.92	0.88	0.84	0.8	0.76	0.72	0.68	0.64	0.6	0.56	0.52	0.48	0.44	0.4	0.36	0.32	0.28	0.24
120	1.83	1.79	1.75	1.71	1.67	1.63	1.58	1.54	1.5	1.46	1.42	1.38	1.33	1.29	1.25	1.21	1.17	1.13	1.08	1.04	1	0.96	0.92	0.88	0.83	0.79	0.75	0.71	0.67	0.63	0.58	0.54	0.5	0.46	0.42	0.38	0.33	0.29	0.25
115	1.91	1.87	1.83	1.78	1.74	1.7	1.65	1.61	1.57	1.52	1.48	1.43	1.39	1.35	1.3	1.26	1.22	1.17	1.13	1.09	1.04	1	0.96	0.91	0.87	0.83	0.78	0.74	0.7	0.65	0.61	0.57	0.52	0.48	0.43	0.39	0.35	0.3	0.26
110	2	1.95	1.91	1.86	1.82	1.77	1.73	1.68	1.64	1.59	1.55	1.5	1.45	1.41	1.36	1.32	1.27	1.23	1.18	1.14	1.09	1.05	1	0.95	0.91	0.86	0.82	0.77	0.73	0.68	0.64	0.59	0.55	0.5	0.45	0.41	0.36	0.32	0.27
105	2.1	2.05	2	1.95	1.9	1.86	1.81	1.76	1.71	1.67	1.62	1.57	1.52	1.48	1.43	1.38	1.33	1.29	1.24	1.19	1.14	1.1	1.05	1	0.95	0.9	0.86	0.81	0.76	0.71	0.67	0.62	0.57	0.52	0.48	0.43	0.38	0.33	0.29
100	2.2	2.15	2.1	2.05	2	1.95	1.9	1.85	1.8	1.75	1.7	1.65	1.6	1.55	1.5	1.45	1.4	1.35	1.3	1.25	1.2	1.15	1.1	1.05	1	0.95	0.9	0.85	0.8	0.75	0.7	0.65	0.6	0.55	0.5	0.45	0.4	0.35	0.3
95	2.32	2.26	2.21	2.16	2.11	2.05	2	1.95	1.89	1.84	1.79	1.74	1.68	1.63	1.58	1.53	1.47	1.42	1.37	1.32	1.26	1.21	1.16	1.11	1.05	1	0.95	0.89	0.84	0.79	0.74	0.68	0.63	0.58	0.53	0.47	0.42	0.37	0.32
90	2.44	2.39	2.33	2.28	2.22	2.17	2.11	2.06	2	1.94	1.89	1.83	1.78	1.72	1.67	1.61	1.56	1.5	1.44	1.39	1.33	1.28	1.22	1.17	1.11	1.06	1	0.94	0.89	0.83	0.78	0.72	0.67	0.61	0.56	0.5	0.44	0.39	0.33
85	2.59	2.53	2.47	2.41	2.35	2.29	2.24	2.18	2.12	2.06	2	1.94	1.88	1.82	1.76	1.71	1.65	1.59	1.53	1.47	1.41	1.35	1.29	1.24	1.18	1.12	1.06	1	0.94	0.88	0.82	0.76	0.71	0.65	0.59	0.53	0.47	0.41	0.35
80	2.75	2.69	2.63	2.56	2.5	2.44	2.38	2.31	2.25	2.19	2.13	2.06	2	1.94	1.88	1.81	1.75	1.69	1.63	1.56	1.5	1.44	1.38	1.31	1.25	1.19	1.13	1.06	1	0.94	0.88	0.81	0.75	0.69	0.63	0.56	0.5	0.44	0.38

- Normally > 1.0 - 1.3 apply compression therapy
- < 0.9 indicates some arterial disease
- > 0.5 and < 0.9 can be associated with claudication and if symptoms warrant a patient should be referred for further assessment
- < 0.5 indicates severe arterial disease and may be associated with gangrene, ischaemic ulceration or rest pain and warrants urgent referral for a vascular opinion

PROFORE®

Comprilan®

JOBST® Ready-To-Wear Medical LegWear

PROFORE® Lite

References

1. Medicare Website Item Number Search: http://www9.health.gov.au/mbs/search.cfm?q=11612%2C11602%2C11610%2C+11611%2C11614&sopt=I
2. Vowden P, et al. Doppler assessment and ABPI: Interpretation in the management of leg ulceration http://www.worldwidewounds.com/2001/march/Vowden/Doppler-assessment-and-ABPI.html Accessed 29 November 2013.

Smith & Nephew Pty Ltd Healthcare Division

Australia
T 61 3 8540 6777 **F** 61 3 9544 5086
www.smith-nephew.com.au/healthcare

Customer Service
T 13 13 60 **F** 1800 671 000

New Zealand
T 64 9 828 4059 **F** 64 9 820 2867
www.smith-nephew.com/nz

Customer Service
T 0800 807 663 **F** 0800 263 222