VP-1000 Vascular Profiler

Non-invasive Vascular Screening
Ankle-brachial index (ABI) in your practice
Peripheral Arterial Disease (‘PAD’) assessment in your clinic.

- 24% (5.2 million) of the Australian population are over 55
- 10-25% of people over 55 year of age suffer from ‘PAD’
- 70-80% of those with ‘PAD’ are asymptomatic (a cardiovascular event will be their first sign)
- A simple Ankle-Brachial Index test (‘ABI’) can uncover ‘PAD’

*Does your clinic offer Ankle-brachial index screening?*
*Now you can.*
The Omron VP1000 Vascular Profiler

The Omron Colin VP-1000 is an oscillometric vascular profiling device. It uses four occlusive cuffs, ECG and PCG sensors to simultaneously measure blood pressure and arterial waveforms in all four limbs. This technique enables the VP1000 to non-invasively measure ABI (Ankle Brachial index - a marker of peripheral arterial disease), and PWV (Pulse Wave Velocity - an index of arterial wall stiffness) within minutes.

Key Features

Quick - ABI test takes 10 minutes
Simple – Fully automated. Can be operated by a nurse or technician
Accurate & Reliable – Automatic so investigator error eliminated
Important information – Identifies PAD. Information otherwise unavailable
Printed reports – automatically prints report upon completion
Mobile – on a roller stand for easy movement from room to room
Medicare Rebate - Attracts a $57.55 Medicare rebate (Item 11610)
The Process

1. Lie the patient supine on a bed, removing shoes and wrist jewellery

2. Apply the 4 pneumatic cuffs, one around each ankle and one around each upper arm (diagrams on the cuffs explain positioning)

3. Apply the 2 ECG clips, one to the inner aspect of each wrist

4. Place the PCG (phonocardiogram) on the chest directly above the heart (ideally around the 2nd intercostal space), with the ‘bean bag’ provided on top.

5. Tell the patient to relax while you input the patients personal details

6. Input the patients personal details into the VP1000

7. Once the VP1000 indicates that it has a strong ECG and PCG reading, press the ‘Measurement’ button. The VP1000 will automatically complete the assessment and print the results.

* During the test it is important that the patient stays still and doesn't talk. The tester should also remain silent, and ensure the room is as quiet as possible
VP1000 measures the following indices

1. Ankle Brachial Index (ABI)
   - Toe Brachial Index (TBI) is also possible
2. Pulse Wave Velocity (PWV)
   - baPWV (brachial-ankle PWV)
3. Blood Pressure in all 4 limbs - simultaneously
   - Systolic (SBP)
   - Diastolic (DBP)
   - Mean Arterial Pressure (MAP)
   - Pulse Pressure (PP)
4. Pulse rate
5. Arterial Waveform in all 4 limbs - simultaneously
At the completion of the analysis process the VP-1000 automatically produces printed A4 reports from its built in printer.

Reports include:

- **A ‘Clinician’ report**
  
  Intended for the medical professional (shown above right)
  
  All data is displayed on the printout

- **A ‘Patient’ report**
  
  Intended for the patient to take home (shown below right)
  
  Data displayed in a simplistic manner

- **A ‘Progress’ report**
  
  Longitudinal representation of patient results at each visit
  
  Can track a patients results over months or years

- **A ‘Post Exercise’ report**
  
  Illustrates physiological vascular changes that occur during exertion.
  
  Shows multiple test results at each pre-determined time point, both numerically & graphically
VP-1000 Printed Reports

Clinician Report

A concise professional report that displays all results in an easy to digest appropriate format.

- ECG Rhythm strip displayed
- PCG tracing displayed.
- Arterial Waveforms in each limb displayed individually
- Blood Pressure at each limb displayed
  - Systolic
  - Mean Arterial Pressure
  - Diastolic
  - Pulse Pressure
- baPWV displayed (Right & Left)
- ABI displayed (Right & Left)
- Interpretation of results automatically produced
- Comparison of results versus age group norms displayed.
VP-1000 Reports

A report that satisfies the patient's requirements for information, in a simple to understand format.

- Patient identification details
- **Blood pressure** in each limb
- PWV results (Right & Left) plotted against age group norms, with a simple interpretation
- ABI results (Right & Left) plotted on a scale that suggests relative health or disease severity
- **Progress** Chart over time – graphs the patient's PWV results at each visit.
VP-1000 Reports

A report that provides all critical data at every time point during the exercise test.

- Patient identification details
- **Graphically represented** readings at each time point
- **Numerically represented** results at each time point
- **Exercise test particulars** – lists the distance, speed and incline that the patient completed during the test.

![Post Exercise Report]

Recovery Ratio
Aug. 18, 2004, 16:09

<table>
<thead>
<tr>
<th>Time</th>
<th>R-Ratio</th>
<th>R-HR.</th>
<th>L-HR.</th>
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<td>0:00</td>
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<td>1:00</td>
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<tr>
<td>2:00</td>
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</table>

**Exercise Condition**
- Distance: 200 m
- Degree: 12%
- Speed: 40 m/min

**Observation**

[Graphical representation of post exercise data with time and corresponding R-Ratio values.]
Multiple clinical trials have assessed the VP1000’s results with Doppler ultrasound.

*In 52 normotensive and hypertensive subjects, ankle systolic blood pressures measured by the VP1000 were highly correlated with those obtained with the Doppler probe*. Cortez-Cooper et al.

*‘Our key finding was that automated ABI measurement by means of the Omron VP1000 device in a large-scale epidemiological setting is feasible.’* Cortez-Cooper et al.

The VP1000 shows a strong correlation to Doppler ‘ABI’ measurements, the current gold standard technique for ‘ABI’ measurement.

Predictive Value

- The 2007 ESH / ESC* guidelines recognised both ABI (ankle-brachial index) & PWV (pulse wave velocity) for their predictive value for future CV events.

- The VP-1000 makes testing both of these parameters possible in a wider range of clinical settings, including General Practice

<table>
<thead>
<tr>
<th>Marker</th>
<th>Predictive Value</th>
<th>Availability</th>
<th>Cost</th>
</tr>
</thead>
<tbody>
<tr>
<td>Electrocardiography (ECG)</td>
<td>++</td>
<td>+++</td>
<td>+</td>
</tr>
<tr>
<td>Echocardiography</td>
<td>+++</td>
<td>+++</td>
<td>++</td>
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<tr>
<td>Carotid Intima-Media thickness</td>
<td>+++</td>
<td>+++</td>
<td>++</td>
</tr>
<tr>
<td><strong>Pulse Wave Velocity (PWV - Arterial Stiffness)</strong></td>
<td>+++</td>
<td>+</td>
<td>++</td>
</tr>
<tr>
<td><strong>Ankle Brachial Index (ABI)</strong></td>
<td>++</td>
<td>++</td>
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</table>

Sub-clinical Organ Damage

- The 2007 ESH / ESC* guidelines also recognised ABI (ankle-brachial index) & PWV (pulse wave velocity) as markers of ‘Sub-clinical Organ Damage’.

* European Society of Hypertension / European Society of Cardiology
Inter-Society Consensus for the Management of Peripheral Arterial Disease (TASC II)

on behalf of the TASC II Working Group

1Department of Surgery, University Hospital, Örebro, Sweden
2University of Colorado School of Medicine and Colorado Prevention Center, Denver, USA

- Trans-Atlantic Inter-Society Consensus (TASC II) – Global guidelines on the management of PAD.
- Contributing nations include Japan, Australia, and South Africa in addition to Europe and North America.
- The purpose is to simplify and communicate diagnostic and treatment processes for PAD beyond the specialist cardiology population to diabetic specialist and primary care physicians.

**Recommendations**

1. The primary non-invasive screening test for PAD is Ankle Brachial Index (ABI).
2. ABI measurements should become a routine measurement in the primary care practice of medicine.
3. From a systemic perspective, a reduced ABI (<.9) is a potent predictor of the risk of future cardiovascular events.
Fast, Accurate and Easy to Use

1. **Quick** – from set up to final report the VP-1000 takes less than 10 minutes

2. **Simple** – fully automated. Ideal for nurse or technician operation

3. **Accurate & reliable** – the simultaneous (4 cuffs at once) oscillometric method provides highly accurate results that correlate strongly with the standard Doppler method, but with far greater reproducibility due to removal of investigator variability.

4. **Important information** – Identified PAD. Provides far more information that standard methods of ABI assessment

5. **Mobile** – the VP-1000 comes on a mobile trolley making movement from room to room simple

6. **Reports** – the VP-1000 automatically produces printed A4 reports for both clinician and patient

7. **Medicare Rebate** – 11610 Item number rebate of $57.55 applies to tests performed with the VP1000.
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