

# World's Fastest Ankle-Brachial Index Screening Device



# From secondary to primary healthcare with the help of technology.

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MESI founders identified the need of primary healthcare for more simple and reliable diagnostic technology.

Cardiovascular diseases cause 35% of deaths globally. Efficient diagnostics is the only way to lower this number.

With early diagnosis of Peripheral Arterial Disease, the Automated Ankle-Brachial Index Measuring Device (MESI APBI MD) will help over 200 million people.



**Jakob Šušterič**  
**CEO, co-founder**

MESI ABPI MD brings enormous time-savings, improves productivity, as well as increases patient's and doctor's satisfaction.



**Tomo Krivc**  
**CTO, co-founder**

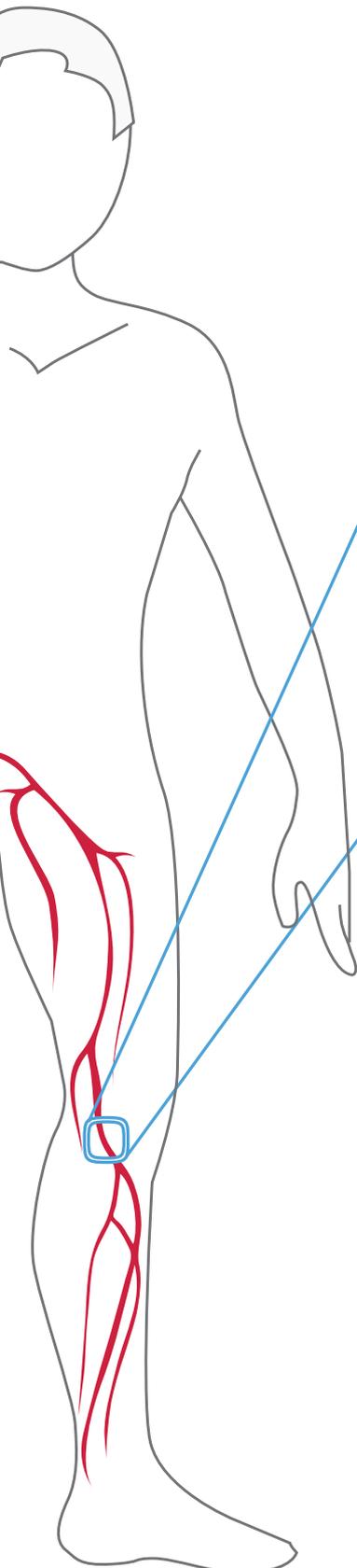
We collected over 1000 feedbacks from doctors and developed a complete diagnostic solution based on their needs: automated, simple to use, reliable and more affordable than ever.



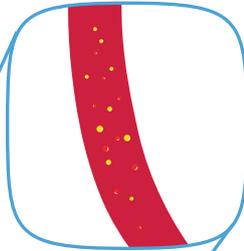
**Matjaž Špan**  
**CV surgeon, co-founder**

In 5 years, our goals are to decrease the number of people, who are not aware of Peripheral Arterial Disease, by 50% and bring automated ABI technology to every physician to enable on-time screening of all patients in the risk group.

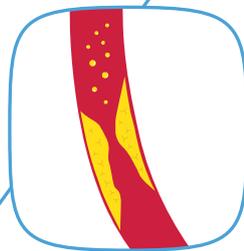
# What is Peripheral Arterial Disease (PAD)?



PAD is a circulatory problem in which narrowed arteries reduce blood flow to your limbs.



Healthy arteries.



Arteries are narrowed by build-up of plaque in the walls. The blood flow is partially restricted. The patient does not feel leg pain or other symptoms.



Arteries are clogged. The flow of oxygen rich blood is heavily restricted, leading to possible heart attack, stroke, gangrene, amputation and ulcerations.

When PAD develops, your extremities — usually your legs — don't receive enough blood flow to keep up with demand. This causes symptoms, most notably leg pain when walking (intermittent claudication).

Over 70% of patients do not know about the disease because they do not feel or recognize the symptoms until severe complications occur.

PAD is likely to be a sign of a more widespread accumulation of fatty deposits in your arteries (atherosclerosis). This condition may be reducing blood flow to your heart and brain, not only to your legs.

With early diagnosis your physician will help you to determine the best treatment.

Early diagnosis of PAD in primary healthcare is crucial.

# Who must be screened for PAD?



World population

**7 billion**



PAD risk group

**Over 700 million**

**50+**

Individuals over 50 years old with cardiovascular risk factors:



Hypertensive



Overweight



Diabetic



Smoking

**70+**

Everyone older than 70

Everybody in the risk group should be screened for PAD.



Disease prevalence

**Over 200 million**

**15-20 %** of people over 60 years old have PAD.

70% of patients with PAD experience no symptoms and are not diagnosed.

Cardiology associations recommend Ankle-Brachial Index screening on complete PAD risk group for early detection of the disease.

# Ankle-Brachial Index measurement

## Simple solution for diagnosing PAD

Ankle-Brachial Index (ABI) is a very simple comparison of blood pressures in legs and arms. It is non-invasive and painless. With MESI ABPI MD the procedure becomes reliable, objective and even possible to be performed as screening in first-contact healthcare. ABI screening is incredibly important for at least two reasons:

- It is a reliable predictor of occlusion of lower extremity arteries - PAD. Detection of PAD is even more important when we know, that over 70% of population is not aware of the occlusions at all.
- Because of high correspondence of PAD with Coronary Artery Disease (CAD) and Cerebrovascular Disease (CVD), patients diagnosed with PAD have a great chance of early diagnosis of CAD and CVD as well.

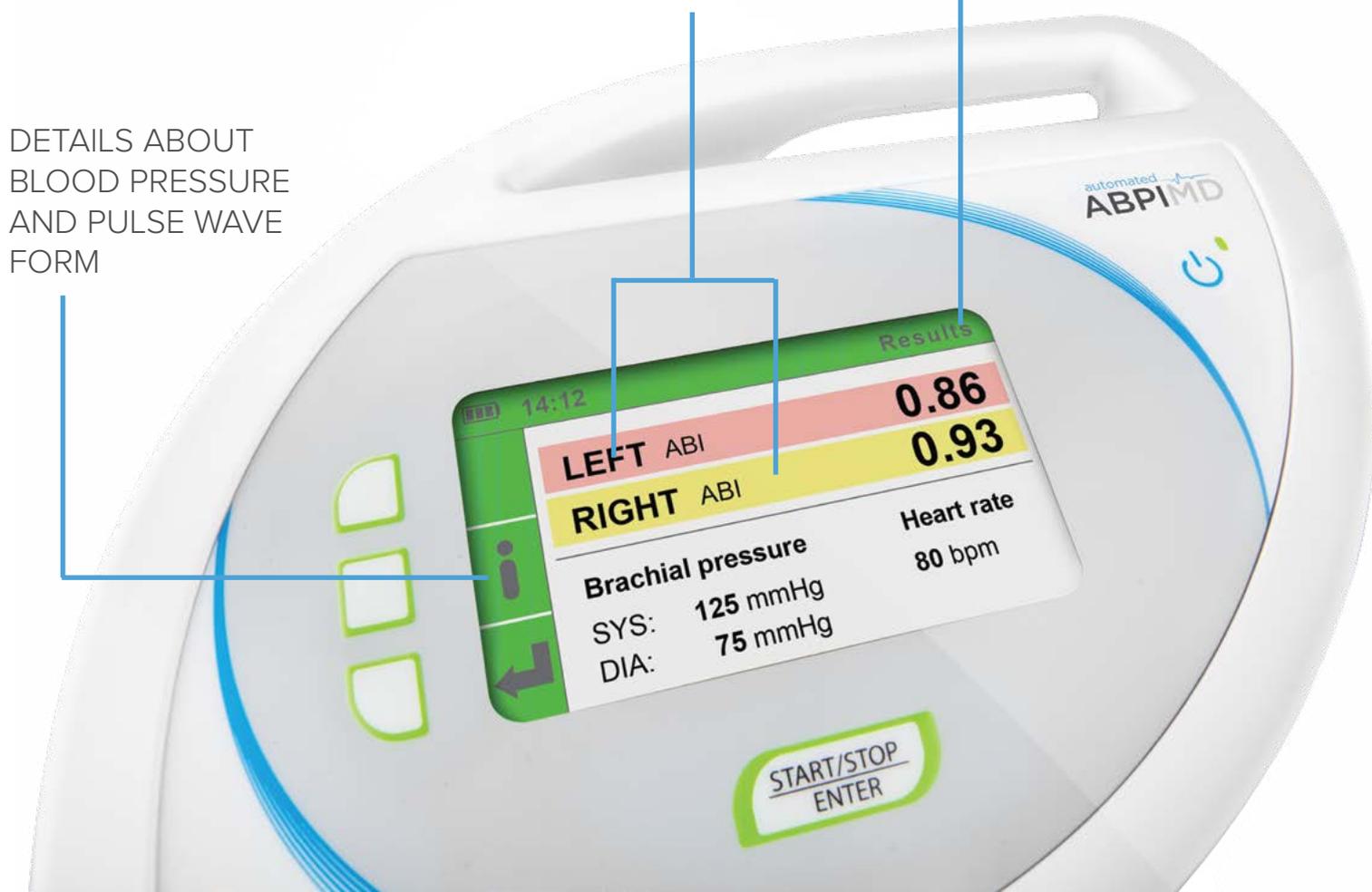
### ABI screening reference scale

1.41 or more	1.40 - 1.00	0.99 - 0.91	0.90 - 0.51	0.50 or less
non-compressible	normal	borderline	abnormal	severe

DETAILS ABOUT  
BLOOD PRESSURE  
AND PULSE WAVE  
FORM

SIMULTANEOUS  
MEASUREMENT OF  
LEFT AND RIGHT  
ANKLE-BRACHIAL  
INDEX

ABI RESULTS AND  
BRACHIAL BLOOD  
PRESSURE IN JUST  
1 MINUTE



## World's fastest ABI screening device

Compared to the handheld Doppler probe, MESI ABPI MD performs an automated ABI measurement. Innovative technology enables the device to provide accurate and objective results, based on which the physicians can diagnose Peripheral Arterial Disease with great confidence.

### Advanced error detection system

Smart software prevents false results even in the case of critical ischemia or medial calcinosis, and gives physicians all the confidence they need.

### Unique algorithm for ankle blood pressure calculation

It is not possible to measure blood pressure in ankles with a brachial blood pressure device. Therefore our algorithm is different, developed with human ankle anatomy in mind.

### Cuff based technology

Plethismography sensors detect the smallest changes in volume. Ease-of-use excludes the possibility of human error as well as there is no need for additional training.

### Simultaneous measurement

Because blood pressure is constantly changing, simultaneous measurement is crucial to avoid error from blood pressure drift.



**DOPPLER  
PROBE**



**MESI ABPI MD**

**ABPI MD USE  
ARGUMENTS**

	DOPPLER PROBE	MESI ABPI MD	ABPI MD USE ARGUMENTS
Measurement duration	30 min	1 min	Plethysmographic method
Pre-measurement resting	10-20 min	0 min	Elimination of blood pressure drift error and time-savings
Measuring process	One extremity at a time	Simultaneous	Medical staff is familiar with the cuffs
Additional education	YES	NO	Instant left and right ABI and more accuracy
Calculations	Manually	Automatic	For the patient record and insurance billing
Measurement report	NO	Automatic via PC	Increased patient comfort
Clothes removal	YES	NO	
Gel appliance	YES	NO	

# Accuracy is the key

## Unique error detection without false results

Thanks to a unique error detection system, MESI ABPI MD will alert the operator of any irregularities, which have occurred during the measurement process.

If the cuffs have been poorly placed or if the patient has been moving during the measurement, the error message will be displayed on the screen.

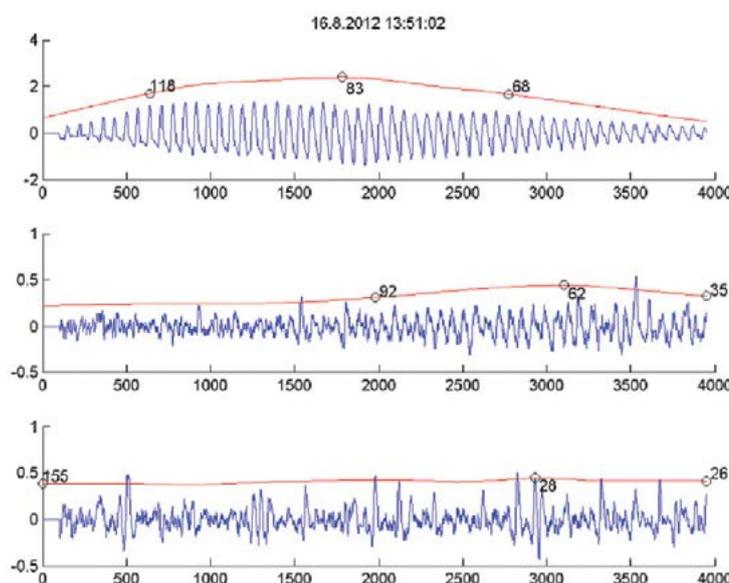


## Reliable even in the case of critical ischemia and medial calcinosis

It is crucial to provide a reliable measurement also when examining a patient with severe PAD.

Our improved plethysmographic sensors detect critical ischemia and medial calcinosis even when pressure oscillations are not available due to heavy occlusion.

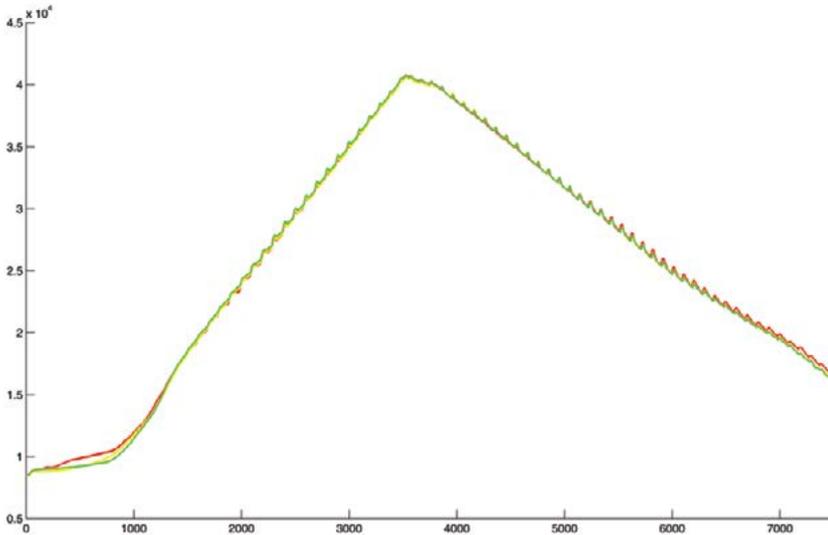
Every measurement with MESI ABPI MD provides sufficient information for further actions.



*While performing the measurement on a patient with severe PAD, it is possible that no pulse is detected. The obstruction of the artery is heavy, resulting in weak blood flow after the obstruction. The pressure is suppressed and the difference between systolic and diastolic pressure vanishes.*

PAD increases the risk of heart attack or stroke!

## Elimination of blood pressure drift error



Simultaneous cuff inflation. Red line for the cuff on the upper arm, green for the cuff on the right ankle and yellow for the cuff on the left ankle.

It is crucial to eliminate the delay between separate measurements on each extremity to achieve maximum ABI accuracy.

MESI ABPI MD conducts simultaneous blood pressure measurements on all extremities.

## Cuffs are essential for the ABI measurement



Conical shape of the cuffs provides perfect fitting to patient's extremities, providing the best accuracy.

Different colours indicate where to place each cuff.

The red cuff should be positioned on the upper arm, green on the right and yellow on the left ankle.

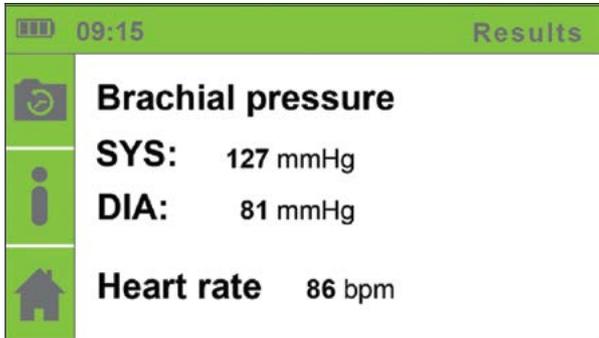
Each cuff is clearly labelled and includes a diagram to ensure correct placement. No training is needed as comprehensive guidelines are provided.

Cuffs are available in medium and large sizes.

Low ABI indicates the narrowed arteries and reliably predicts PAD.

# With attention to user experience

## 2 in 1 : ABI and BP measurements



Expertly developed MESI ABPI MD enables two measurement modes:

- Simultaneous measurement of left ABI, right ABI, brachial pressure and heart rate.
- Stand-alone measurement of brachial blood pressure and heart rate.

## Stand supplements MESI ABPI MD

The place for MESI ABPI MD is next to the examination bed. A stand with magnetic base has been designed to hold both - the device and the cuffs.

The stand enables the device to be easily portable and significantly helps with the durability of the device and the cuffs respectively.



Long lasting battery for maximum portability

During the measurement, patient needs to be lying down.

Examination beds are not always next to the electrical sockets, which is why MESI ABPI MD is equipped with a long lasting rechargeable battery.



## Save ABI measurement with MESIresults

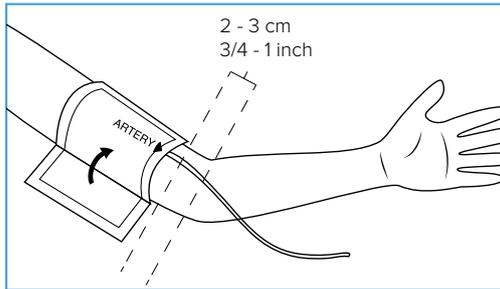
MESIresults application comes free with the device. MESI ABPI MD can be connected to a computer to provide an electronic copy or a printout of the ABI result.

MESIresults also enables information such as name, address and logo of the healthcare institution to be imported into every measurement report.

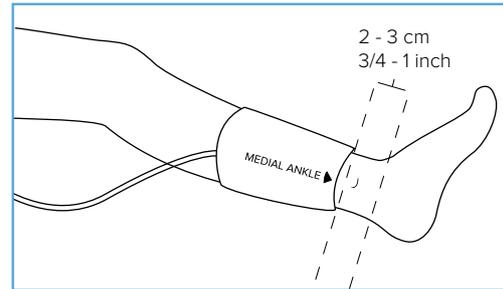


ABI should be measured in primary healthcare as a standard method of diagnosing and monitoring PAD.

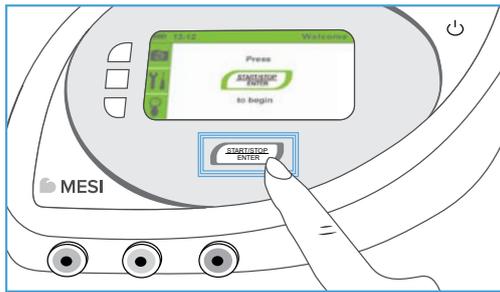
# Simple ABI measurement procedure



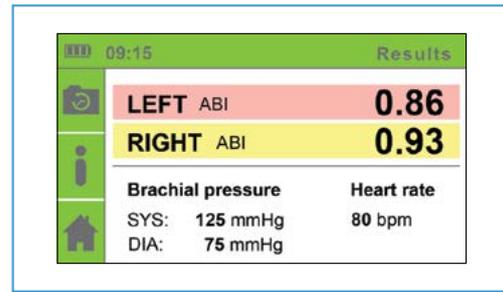
Step 1: Place the arm cuff.



Step 2: Place the ankle cuffs.



Step 3: Press Start button to run the measurement.



Step 4: See the result.

## Added value of MESI ABPI MD



Simultaneous measurement

1 min

1 minute measurements



No human error



Healthcare staff friendly



Report printout



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