

# ARTERIOGRAPH

## *The successor of normal blood pressure measurement devices*

Expanding upon the traditional, simple blood pressure measurements, the Arteriograph system has been developed, based on an innovative, patented non-invasive pulse wave measurement method, that provides an opportunity to detect elevated cardiovascular risks in an accurate manner. Arteriograph allows multiple new parameters to be measured, such as aortic pulse wave velocity (PWVao), central systolic (aortic) blood pressure (SBPao) and the so-called aortic augmentation index (AIxao). The combination of these parameters facilitates an effective diagnosis of the elevated risk for cardiovascular diseases, aiding the doctor in decisions regarding differential therapies, thus providing an improved patient care.

The innovative, non-invasive Arteriograph measuring system (TensioMed Ltd., Budapest) is able to easily and rapidly determine the above-mentioned parameters and detect the current condition of the vascular system. The PWVao parameter, in particular, is being represented in scientific studies extensively as an excellent, accurate biomarker of arterial stiffness, and as such, an independent predictor of morbidity and mortality.

*Easy*

*Just like an oscillometric blood pressure measurement*

*Fast*

*As it takes only 3 minutes (including patient data input)*

*User Independent*

*As it is fully automatic - the user only has to start the measurement*

*Excellent Reproducibility*

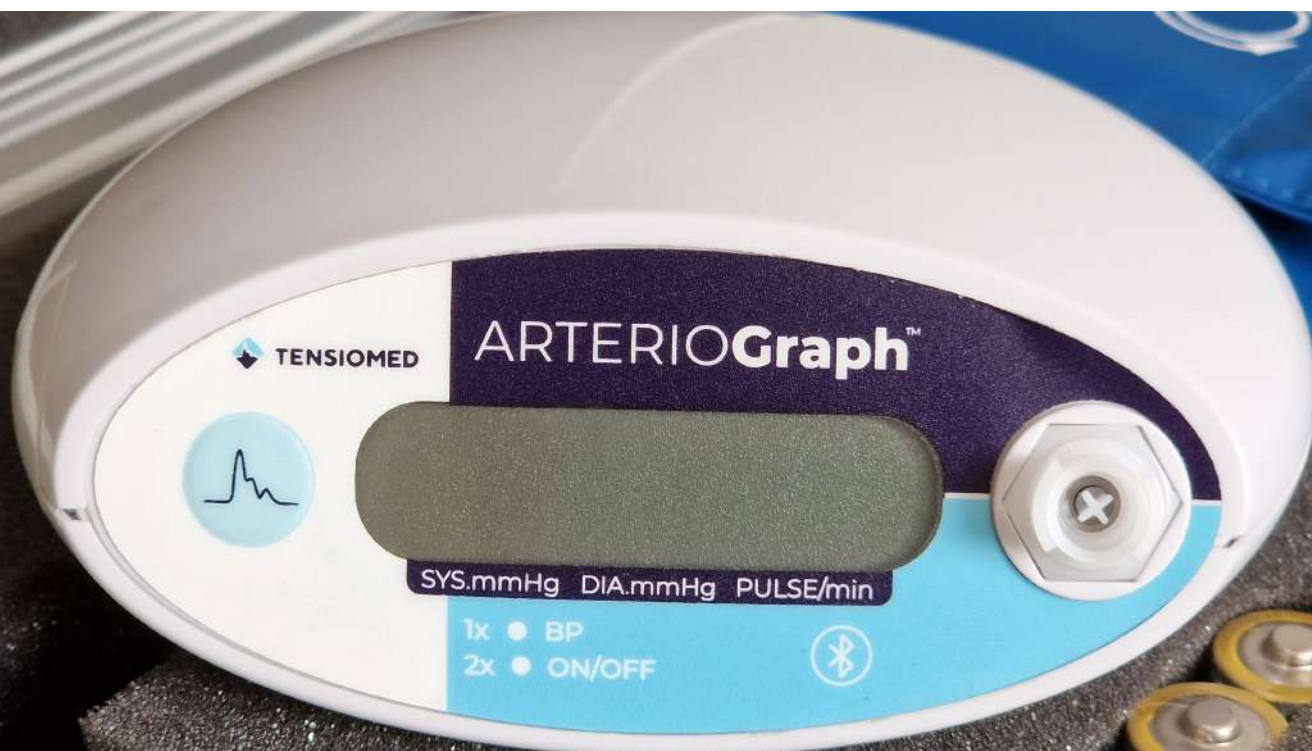
*As it proved to be the best among non-invasive devices*

*Outstanding Cost-Benefit Ratio*

*Among clinically accepted devices*

*Validated*

*With invasive and non-invasive measurements*

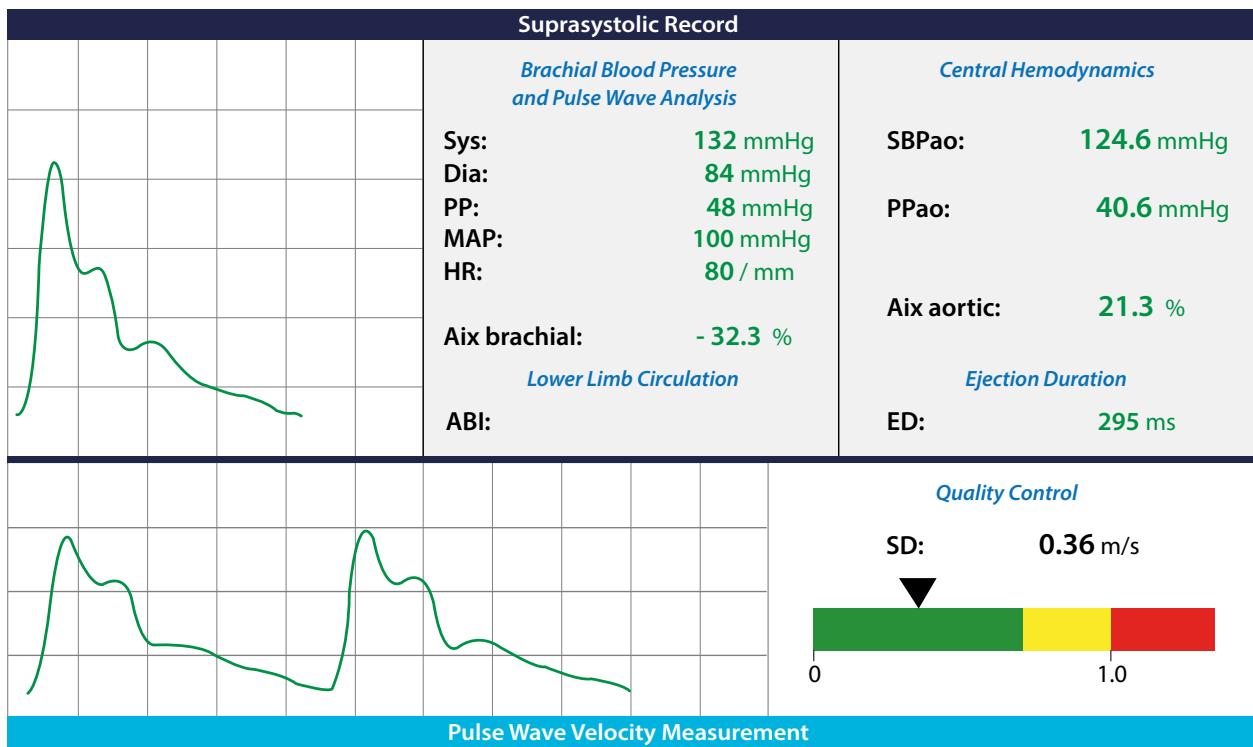


## Measured Parameters:

Arteriograph measures the first and the reflected pressure waves precisely. The raw data obtained by this device is processed using the specialised software through series of evaluations. The result includes pulse wave analysis and additional parameters, as listed below:

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|--|--|
| <ul style="list-style-type: none"> <li>• Aortic Pulse Wave Velocity (PWVao)*</li> <li>• Central Systolic (Aortic) Blood Pressure (SBPao)**</li> <li>• Augmentation Index (AIX)***</li> <li>• Ankle-Brachial Index (ABI)</li> <li>• Systolic/Diastolic Blood Pressure</li> <li>• Aortic Pulse Pressure</li> </ul> | <ul style="list-style-type: none"> <li>• Systolic/Diastolic Area Index</li> <li>• Diastolic Reflection Area</li> <li>• Mean Arterial Pressure</li> <li>• Return Time</li> <li>• Ejection Duration</li> <li>• Heart Rate</li> </ul> |
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\* Increased PWVao has been shown to predict cardiovascular diseases and complications even in their early stages in the general population.  
 \*\* SBPao is a more effective indicator of cardiovascular morbidity and mortality than brachial blood pressure.  
 \*\*\* The AIX value has been found to strongly correlate with the risk of developing the coronary artery disease in asymptomatic individuals, even with no relevant prior history.



PWVao: 10.2 m/s

RT: 112 ms

## *What are the main benefits for measuring arterial stiffness parameters with Arteriograph?*

Cardiovascular diseases create a significant burden on the healthcare system worldwide. The primary cause of the cardiovascular diseases is atherosclerosis and vascular calcification. As a result of these processes the arteries gradually stiffen and lose their elasticity.

The worsening condition of arteries is generally detected only when their stiffening process has already reached a significant level. It is essential, however, for the prevention or effective treatment of cardiovascular diseases to recognise their early, asymptomatic signs and act accordingly.

The results of the measurements with Arteriograph are useful data for the doctor assessing them to suggest appropriate prevention steps or treatment for a patient even before a developed stage of their cardiovascular disease. Thus, major cardiovascular events and the death of patients due to these problems can be avoided.

### *Clinical application*

Performing a normal blood pressure measurement is a routine procedure in many countries as a part of a medical examination. While the results of these measurements provide – a limited amount of – insight into the current state of a patient's cardiovascular system, they do not allow proper diagnosis of asymptomatic patients. Arteriograph, on the other hand, offers a possibility of selecting the proper preventive treatment method even for patients with no apparent symptoms of cardiovascular events or diseases. The following clinical example demonstrates the significance of measurements performed using the Arteriograph device.

A -47-year-old, seemingly healthy patient initiated a cardiovascular (CV) examination without a medical indication of requiring it. The SCORE analysis results suggested a 1% risk of cardiovascular diseases, detecting only a slight increase in cholesterol levels. Thus, no intervention was deemed necessary.

*SYS: 129      DIA: 77      CHOLESTROL: 5.5 mmol/L*

Examining this patient with Arteriograph revealed however, that his aortic pulse wave velocity is exceedingly high (12 m/s), and his central systolic blood pressure, aortic pulse pressure and central augmentation index are also elevated.

*SBPao: 133      AIXao: 38      PWVao: 12      PPao: 54*

The values of these parameters indicate advanced vascular calcification. According to scientific literature the asymptomatic atherosclerosis develops in the carotid artery with a 76% sensitivity in the case of abnormal aortic pulse wave velocity (higher than 9 m/s). For this reason, the patient was subjected to a neck ultrasound examination, which allowed the detection of plaques in his carotid artery. A subsequent computed tomography procedure on the heart showed atherosclerotic plaques formed on his coronary arteries as well.



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