

Microlife® WatchBP O3 Ambulatory Blood Pressure Monitor



**Extended manual for explanation and
background of blood pressure data**

Introduction

Dear healthcare professional,

The present manual is offered to you by Microlife Corporation. It entails explanations of blood pressure data as provided by the Microlife® WatchBP O3 software. In addition, some scientific background is given to indicate the clinical relevance of these data. The Microlife® WatchBP O3 device is validated according to the International Protocol [1] and the reports as provided by the software are developed according to the guidelines of the European Society of Hypertension and American Heart Association. We hope that the present manual will help you for better understanding and interpretation of the blood pressure data of your patient. The recommendations in this manual do not indicate an exclusive course of treatment or serve as a standard of medical care. Variations, taking into account individual differences and circumstances, may be appropriate

Yours sincerely,

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Hourly average: The average BP values are calculated from the average BP value of each hour separately during 24 hour. This method is chosen to give similar weight to every hour of the day. In practice this means i.e. for the average value of 24h BP measurement a nocturnal hour is just as important as any hour during the day despite the fact that during daytime BP probably was measured more frequently.

Standard deviation (SD): This index indicates the absolute variability of the BP or pulse of a given period. It is calculated with the following formula:

$$\sigma = \sqrt{\frac{1}{N} \sum_{i=1}^N (x_i - \mu)^2},$$

σ = Standard deviation

N = The number of BP (or pulse) values

μ = The average BP (or pulse) value

Σ = The total sum

It has been shown that the BP variability correlates closely with target-organ damage and with the incidence of cardiovascular events, independent of absolute BP levels [10].

24-hour: The average BP value calculated from the total number of BP values.

Awake: The average BP values calculated from BP values as measured when the patient was awake (daytime BP)*.

Asleep: The average BP value calculated from all values as measured when the patient was sleeping (night time BP)*.

*Before each measurement the day and night period can be set with the button "Ambulatory Settings". However, when these time points deviate from those as given by the patient afterwards, the actual awake and asleep period can be programmed with the button "Report settings". The average awake and asleep values will then be calculated on the basis of these actual time points as provided by the patient.

Pulse: Heart rate provided in beats per minute.

Mean arterial pressure (MAP): Defined as the average arterial pressure during a single cardiac cycle. Oscillometric devices automatically measure the MAP and calculate the systolic and diastolic pressure from there. For calculating the MAP from systolic and diastolic BP the formula is as follows:

$$\text{MAP} \approx \text{DP} + \frac{1}{3} (\text{SP}-\text{DP})$$

DP = diastolic pressure

SP = systolic pressure

Pulse Pressure (PP): Calculated with the formula:

$$\text{PP}=\text{SP}-\text{DP}$$

SP = systolic pressure

DP = diastolic pressure

PP is a measure of the stiffness of the aorta and large arteries. Increased stiffness leads to an increase in PP through a reduction in arterial compliance and effects on wave reflection [11] PP has been recognized as an independent predictor of cardiovascular risk in a hypertensive [12] and general population [13].

White coat window: The maximum reading in the first hour of ambulatory BP measurement. As in this first hour the patient normally is in or has just left the hospital or GP's practice, the BP values largely reflect the office BP measurement. The white coat window has proven its clinical value for detection of the white coat effect and/or white coat hypertension [14].

Diary: Highly recommended to any patient who undergoes 24h ambulatory BP measurement. The actual awake and asleep periods should be based on this diary. With the diary deviating BP values could be explained (i.e. patient has just had his meal, held a siesta, was smoking or was watching a football match) and the time of (antihypertensive) drug intake should be registered, which allows verification of the effectiveness of the drug. For the latter, the WatchBP O3 device is equipped with a button that should be pressed by the patient directly after antihypertensive drug intake.

Indication for ambulatory BP measurement: the recommended procedure about when to perform 24h BP measurements is provided in Figure 2. The Table provides indications at which ambulatory BP measurement should and could be considered.

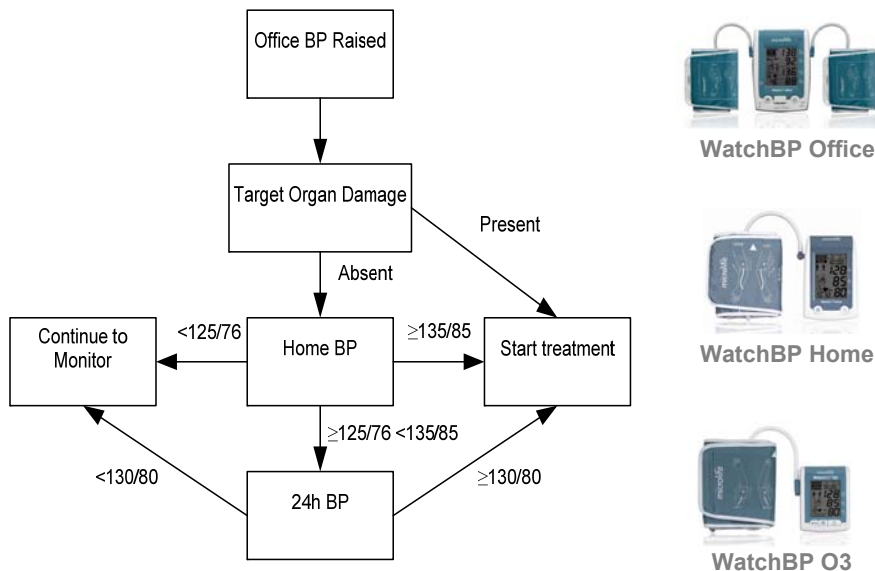


Figure 2. Schema for evaluating BP status of hypertensive patients [15]

Table. Indication for performing 24h blood pressure measurement

Accepted indications	<ul style="list-style-type: none"> Suspected white-coat hypertension Suspected nocturnal hypertension Suspected masked hypertension To establish dipper status Resistant hypertension Hypertension of pregnancy
Potential indications	<ul style="list-style-type: none"> Elderly patient As a guide to antihypertensive drug treatment Type 1 diabetes Evaluation of symptoms suggesting Orthostatic hypotension Autonomic failure

References

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Recommended literature

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Recommended websites

www.watchbp.com (also for downloading the newest WatchBP software)
www.dableducational.org
www.bhsoc.org

When you have more questions about the context of this manual or need to know more about blood pressure data that are not mentioned in the present manual, please contact the following email address:

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