

*Disclosure of interest* The authors declare that they have no competing of interest.

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### Lack of interest in repeated measures of blood pressure below 135/85 mmHg



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**Objective** For the detection and monitoring of hypertension, several consecutive blood pressure measurements are recommended to account for variability in BP. The rule is to perform three consecutive measurements after a rest period of a few minutes. It is the average of the last 2 measurements carried out which determines the level of the BP at the visit (Protocol SPRINT) or in self-measurement (rule of the three). The objective of the study was to look for the threshold at which the 3 consecutive measurements are no longer useful for evaluating BP.

**Methods** In the PREDIC-HTA survey, consecutive taking of 3 measurements of BP in a seated position according to a standardized methodology was carried out using an automatic blood pressure monitor (BP5, IHealth, Paris) connected to a tablet and allowing the realization of a self-screening protocol for BP in volunteers. For each subject, the value of the first BP measurement was compared

to the average of measures 2 and 3. The analysis focused on the difference between the "M1" and the "M2M3 average" with the search for a threshold of agreement. Two methods were used for threshold search: Bland-Altman plot and regression to the mean analysis.

**Results** In 6527 subjects, 3 BP measurements can be analyzed. BP is different and decreasing between measurements: 125.0/82.8 (M1) and 122.2/82.2 (M3). Bland-altman plot observed a positive regression line with an intersection at the value 0 observed for a SBP at 134 mmHg and a DBP at 84 mmHg. Regression to the mean analysis indicates that if M1 SBP is  $> 135/85$  then mean M2/M3 is  $-9.1/-2.2$  mmHg lower, and if M1 SBP is  $\leq 135/85$  then mean M2/M3 is  $-0.8/-0.3$  mmHg lower.

**Conclusion** When three BP measurements are performed with an automatic blood pressure monitor and in a standardized way, the first measurement is comparable to the average of the next two when the BP does not exceed the 135/85 values. When the first measure of BP does not exceed 135/85, there is no point in carrying out additional measurements. This result should be taken into account when the BP measurement is done by a health professional or a patient during self-measurement.

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