

## Arterial stiffness recordings with pOpmètre® in a general primary care population: the IPC cohort.

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### Objectives:

Aortic stiffness, best approached by pulse wave velocity (PWV), is one major determinant of health in hypertension. Among the devices measuring PWV, gold standard are pulse transit time recording techniques. pOpmètre® (P®) measures pulse at finger and toe levels using simple oximetry plethysmographs and adequate algorithm. It allows an assessment of stiffness in less than 5 minutes. It showed good agreement against reference techniques, but P® feasibility and relevance were never tested in a large general population. We assessed P® in individuals from a primary care cohort.

### Population and methods:

From September to December 2015, 332 subjects aged from 18 to 95 years had a standard health check-up at the IPC Center (Paris, France) including finger to toe pulse wave velocity recording with pOpmètre®, performed by nurses after 10 minutes lying rest permitting ECG and blood pressure measurements (three values averaged). Hypertensives were 54 (HTn: Systolic BP $\geq$ 140 mmHg or Diastolic $\geq$ 90 mmHg or treatment). Data from normotensives (NTn) were compared to aortic PWV reference values (Eur Heart J, 2010; 31, 2338–2350).

### Results:

224 NTn (47 $\pm$ 16 years) had correct recording according to our pre-specified quality criteria. Factors for measurement failure were variation coefficient within one record higher than 30%, and PWV extreme outliers. BP and PWV were respectively: 119 $\pm$ 11/72 $\pm$ 7 mmHg and 7.70 $\pm$ 2.98 m/sec; 108 had optimal BP, 81 normal and 34 high normal BP. For the 54 HTn, BP and PWV were 154 $\pm$ 14/87 $\pm$ 10 mmHg and 9.66 $\pm$ 3.90 m/sec. PWV increased with age classes from <30 to >70 years. For NTn, comparatively with aortic PWV reference values for age classes, the P® values fell exactly within the aortic reference ranges: <30 6.04 $\pm$ 1.08, 30-39 7.00 $\pm$ 1.88, 40-49 7.78 $\pm$ 2.30, 50-59 7.60 $\pm$ 1.8, 60-69 9.23 $\pm$ 2.70, > 70 10.80 $\pm$ 2.50 m/sec.

### Conclusion:

**The very simple and quick measurement of finger to toe arterial stiffness with the pOpmètre® device, can be performed by nurses during a tight time schedule. It provides values within aortic Reference value ranges. It appears as a promising substitute to reference techniques with the advantage of simplicity for assessing PWV during standard health check-up.**