mature real BP status. However, both for research and clinical purposes, casual (office) BP measurements still remain the most widely used methods for the evaluation of treatment efficacy.

Aim of the present study was to evaluate how 3 different types of BP measurements (office BP taken by the nurse, office BP taken by the doctor and by repeated office BP measurement with automated device) compare with ambulatory BP monitoring (ABPM). We considered 45 patients on stable treatment with one or more antihypertensive drugs, consecutively referred to our Hypertension Unit for "inadequate BP control", diagnosed according to casual BP measurements.

Before setting the ABPM device, BP was measured, in random order, by the physician, by the nurse and by using repeated office blood pressure (ROBP) measurement. After 20-minute resting, the doctor and the nurse each took 3 BP readings (phase V of the Korotkoff sounds). ROBP was performed by automated oscillometric device, set to obtain 10 valid readings at 2.5-minute intervals, with the patients sitting alone in the office. The average of the last 2 measurements obtained by the doctor and the nurse, the average of the last 5 measurements obtained with ROBP were compared with mean daytime ABP.

Mean ROBP measurements highly correlated with daytime ABP values (table).

<table>
<thead>
<tr>
<th>Systolic BP</th>
<th>Diastolic BP</th>
<th>p value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Doctor BP</td>
<td>163.4 ± 13</td>
<td>89.7 ± 8</td>
</tr>
<tr>
<td>Nurse BP</td>
<td>157.4 ± 14</td>
<td>87.2 ± 9</td>
</tr>
<tr>
<td>ROBP</td>
<td>138.8 ± 13</td>
<td>83.4 ± 7</td>
</tr>
<tr>
<td>Daytime ABP</td>
<td>138.8 ± 12</td>
<td>83.4 ± 7</td>
</tr>
</tbody>
</table>

Mean systolic and diastolic blood pressure values (mmHg ± SD) evaluated with 4 different techniques: by the doctor, by the nurse, by repeated office blood pressure (ROBP) using automated device and by ambulatory blood pressure (daytime ABP). Pearson test, level of significance versus ABP.

ROBP measurement identified 27 out of the 29 well controlled patients (ABP value 132/85 mmHg). BP taken by the physician correctly diagnosed a satisfying BP control (140/90 mmHg) only in 16 subjects while nurse BP did it in 20 patients. In conclusion, our data indicate that ROBP measurements, performed under standardized conditions, in the medical environment, may be extremely helpful for the evaluation of blood pressure control in treated hypertensive patients.

Key Words: Blood Pressure Measurement, International Validation Protocol

P-58
VALIDATION OF THE OMRON® RX-3 BLOOD PRESSURE MEASURING DEVICE AT THE WRIST LEVEL ACCORDING TO THE INTERNATIONAL PROTOCOL OF THE EUROPEAN SOCIETY OF HYPERTENSION

Objective: The aim of this study was to perform a clinical validation of the Omron RX-3 model HEM-640-E blood pressure (BP) measuring device at the wrist level according to the International validation Protocol.

Design and Methods: The International validation Protocol is divided into 2 phases: the first phase is performed on 15 subjects fulfilling the inclusion criteria requested by the protocol; the second phase is performed on additional 18 subjects, only if the device passes the first phase. The inclusion criteria require to select subjects according to BP ranges. For each subject, 4 BP measurements were performed simultaneously by 2 observers (trained according to the French Hypertension Society criteria) using standard mercury sphygmomanometers alternately with 3 Omron measurements. The difference (D) between the BP value given by the device and that obtained by the 2 observers (mean of the 2 observers) was calculated for each measure. The 99 differences (D) were classified into categories (≤ 5, ≤ 10, ≤ 15 mmHg). The number of D (n) in each category was compared to the number required by the International Protocol. An individual analysis was then done to determine for each subject the number of comparisons ≤ 5 mmHg. At least 22 of the 33 subjects should have 2 of their 3 comparisons ≤ 5 mmHg.

Results: The mean age of the 33 included subjects (18 men, 15 women) was 54 ± 13 years. The Omron RX-3 device fulfilled the required criteria of the primary phase (15 subjects) of the International Protocol. Regarding the 33 subjects, the difference between the 2 observers was -0.35 ± 1.34 mmHg and -0.08 ± 1.38 mmHg for systolic and diastolic BP respectively. The results of the comparison of the device and the observers are shown in the table below:

| SBP | n | n | n | 136 ± 22 | 135 ± 21 | 0.8 ± 4.1 |
| DBP | n | n | n | 83 ± 14 | 83 ± 14 | -0.4 ± 3.0 |

Number of patients having 2 of their 3 comparisons ≤ 5 mmHg was 32 for both systolic and diastolic BP.

Conclusions: The OMRON® RX-3 device fulfils the recommendations of the international validation protocol.

Key Words: Blood Pressure Measurement, International Validation Protocol

P-59
IN-TREATMENT BLOOD PRESSURE AND CARDIOVASCULAR OUTCOMES
Jing Fang, Hillet W Cohen, Susan M Halpern, Michael H Alderman, Epidemiology and Population Health, Albert Einstein College of Medicine, Bronx, NY.

Hypertension is a major risk for cardiovascular disease (CVD). While clinical trials have consistently demonstrated that blood pressure (BP) reduction is associated with substantial protection against CVD events, less is known about the relationship of in-treatment BP and CVD. Based on data from worksite hypertension treatment program, we determined the association of in-treatment BP, as well as changes of BP from pre-treatment level, and CVD outcomes among 11,768 hypertensive patients. We eliminated those with BP <140/90, <1 year follow-up, with history of myocardial infarction (MI) and stroke. The remaining 8,902 patients, with mean age 52.7 ± 9.5 years, entry BP 156.2 ± 19.1/97.8 ± 13.7 mm Hg, observed for 6.4 ± 4.8 years (range 1 to 25.5 years) were subjects for this analysis. Outcome events were incident MI (including revascularization) (n = 255) and stroke (n = 103). In-treatment BP, as reflected by final BP were 137.0 ± 16.4/84.4 ± 9.7 mm Hg, and 50.4% of patients had controlled BP (< 140/90 mm Hg). Stratifying patients by in-treatment BP categories (<130/80, 130-139/80-89 and ≥140/90 mm Hg) exposed increasing age-gender-adjusted rates for MI (2.8, 3.6 and 5.3/1000 person-years, p = 0.009) and stroke (0.9, 1.0, 2.6/1000 person-years, p = 0.03). Cox regression models estimated the hazard ratio (HR) of MI and stroke by in-treatment BP measures, controlling for age, gender, education, race/ethnicity, smoking status, body mass index, history of diabetes and kidney disease, serum cholesterol and pre-treatment BP. Compared to patients with in-treatment BP ≥ 140/90 mm Hg, among those with in-treatment BP <130/80 and 130-139/80-89 mm Hg, HR (95% confidence interval) for MI were 0.50 (0.31-0.81), p = 0.004 and 0.73 (0.54-0.99), p = 0.041 respectively; and for stroke, HR were 0.35 (0.16-0.77), p = 0.009 and 0.41 (0.24-0.68), p = 0.001 respectively. In separate models, in-treatment systolic BP, diastolic BP and pulse pressure (PP) were individually entered into the models. While both increased systolic and diastolic BP were significantly associated with increased MI and stroke events, PP was significantly related only to stroke. Treatment induced fall in BP did not predict either MI or stroke. In summary, this data confirms the benefit of BP reduction for hypertensive subjects and suggests that regardless of the magnitude of treat-