OR-7
SELF-MEASUREMENT OF BLOOD PRESSURE AS ALTERNATIVE TO AMBULATORY MONITORING FOR DIAGNOSIS OF WHITE-COAT HYPERTENSION
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Compared with conventional blood pressure (CBP) measurements, automated techniques are more reproducible, not subject to digit preference or observer bias and are increasingly being used to diagnose white-coat hypertension. Self-measurement of the blood pressure at home (HBP) is less expensive than ambulatory blood pressure monitoring (ABP), but needs further clinical validation.

In 224 patients, we compared the BP values obtained by CBP, HBP and ABP. The thresholds to diagnose hypertension were ≥140/≥90 mm Hg for CBP and ≥135/≥85 mm Hg for ABP or HBP. Indexes reflecting left ventricular mass (LVM) were calculated from ECGs (n=221) or echocardiograms (n=39). Mean systolic/diastolic CBP, HBP and ABP were 160.5/101.2 mm Hg, 146.4/91.3 mm Hg and 148.5/93.0 mm Hg, respectively. The white-coat effect was 2.1/1.7 mm Hg larger on HBP compared with ABP (14.1/9.9 v. 12.0/8.2 mm Hg; P≤0.01). The correlation coefficients between the white-coat effects based on CBP and ABP were 0.67 systolic and 0.68 diastolic (P<0.001). HBP and ABP gave concordant results in 189 patients (84.4%) of whom 173 had sustained hypertension and 16 had white-coat hypertension. Systolic HBP and ABP, but not systolic CBP, correlated positively and significantly with LVM indexes.

Under standardized conditions of measurement, the white-coat effects based on HBP and ABP are correlated, but HBP and ABP identify slightly different subsets of white-coat hypertensive patients. In contrast to CBP, both HBP and ABP correlated closely with LVM indexes.

Key Words: Blood Pressure Monitoring, Home Blood Pressure, White Coat Hypertension

OR-8
A NOVEL CORRECTION FACTOR FOR PREDICTING OFFICE BP FROM AMBULATORY BLOOD PRESSURE MONITORING IN HYPERTENSION PATIENTS
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24 hour ambulatory blood pressure monitoring (ABPM) can provide a more accurate profile of blood pressure control. UK guidelines advise a correction factor of +12/7 mmHg to mean day ABPM readings, however this is the first study to examine whether this factor adjusts appropriately for the difference between office BP and ABPM in a population of treated and untreated hypertensive subjects.

Demographic data, office BP and mean day ABPM recordings from 1585 consecutive patients were studied. Completed data from 1365 patients (Age: 49.7±14.9 y, 50.7% female, 70.3% treated) was analysed. Mann-Whitney statistical analysis was used. Consequently, this data was analysed to derive a new correction factor.

For a given office systolic BP (OSBP), a greater difference exists between office and ABPM readings as OSBP increases: (Mean ABPM-OSBP difference: +5.1+/−1.5 mmHg (OSBP <140mmHg); +4.7+/−3.1 mmHg (OSBP >200 mmHg)). BMI, ethnicity and diabetes did not affect OSBP to ABPM difference. However, it is more appropriate to derive an OSBP equivalent from ABPM. In contrast, the difference between office and ABPM readings remains the same as ABPM increases. (Mean ABPM-OSBP difference: +21.8+/−2.5 mmHg (ABPM 130-140mmHg); +20.5+/−2.6 mmHg (ABPM >165mmHg)). Diastolic readings revealed a similar trend. We derived a new correction factor using ABPM data stratified into quartiles and compared this (+179 mmHg) with the current correction factor in hypertensive patients. The accuracy of predicted OSBP was similar (Current v. New: within 5%: 42% v. 44 %, within 10%: 69% v. 72%). However, under estimation of true office BP by >10% occurred in 28% cases with the current equation compared to only 21% with the new equation. Diastolic values were similar (Current v. New): accuracy within 5%: 41% v. 42 %: accuracy within 10%: 69% v. 72%; underestimation >10%: 24% v. 17%.

The current +127 mmHg correction factor is based predominantly on studies in normotensive people. However, this study was more heterogeneous and has highlighted a novel equation that is substantially less likely underestimate office BP. If ABPM is used to assess treatment thresholds or targets in a hypertensive population, we propose the use of the +179 mmHg correction factor.

Key Words: Essential Hypertension, Ambulatory BP, Correction Factor

OR-9
VARIATION IN BLOOD PRESSURE (BP) CONTROL RATES DURING WAKING HOURS: IMPLICATIONS FOR RESEARCH
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Background: Systolic (SBP) and diastolic (DBP) blood pressures are well known to exhibit a circadian rhythm. We examined whether this factor would affect the assessment of BP control rates during the hours of 0700 to 1900.

Methods: 55,809 BP measurements in 9,111 patients in the Mayo Clinic Hypertension Continuity Clinic Database from 1997-2001 were analyzed by the time of day the BP was measured: 0700-0900, 0900-1100, 1100-1300, 1300-1500, 1500-1700, and 1700-1900. BPs were measured by strict JNC VI standards. BP control rates (BP <140/90 mm Hg) were tabulated according to each time period. To control for the possibility that patient selection was not independent of time of day, the data were further analyzed after subtracting each patient’s overall mean SBP and DBP; then the residuals were subjected to analysis of variance by the same time periods.

Results: Overall visit-based control rates were 40.9%. In each time block the control rates were: 43.9%, 40.2%, 39.6%, 43.0%, 37.5%, and 31.8% respectively (P<0.0001 for the significance of variation).

Logistic regression controlling for age and sex showed that the time of day effects remained significant. Residuals of SBP within patients were subjected to one way ANOVA and the results were −0.8, −0.6, +0.4, −1.0, +2.4 and +4.7 mm Hg respectively (P<0.0001) showing that hourly patterns were not all due to patient selection. See Figure 1 below.

Conclusions: These differences in BP control rates by time of day have some significance for assessment of the individual patient in practice. These findings are very significant for epidemiologic studies. To avoid bias in population studies of longitudinal changes or in between-population comparisons of BP control rates, time of day of BP measurement should be standardized.

Figure 1: % of visits SBP<140 & DBP<90 ± 3 SE

Key Words: BP Control, BP Varability, Daytime BP Variation