**ONLINE SUPPLEMENT**

**Direct comparison of the reproducibility of in-office and
self-measured home blood pressures**

Short title: Reproducibility of Office and Home BP

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This appendix functions as part of the original submission and has been peer-reviewed.
We have posted it as supplied by the authors.

**Supplementary Table 1. Blood pressure and pulse rate differences from Visit 1 to Visit 2 and Visit 1 to Visit 3 among participants with the same drug regimen at each interval**

|  |  |  |  |
| --- | --- | --- | --- |
|  | **Between Visits 1 and 2** |  | **Between Visits 1 and 3** |
| **Variable**  | ***n*** | **Difference, mean (SD)** | **CV, mean (SD)** | **Sample size** |  | ***n*** | **Difference, mean (SD)** | **CV, mean (SD)** | **Sample size** |
| Systolic blood pressure, mmHg  |  |  |  |  |  |  |  |  |  |
| Attended office | 279 | 1.57 (15.11)  | 6.03 (4.68)  | 98 |  | 167 | 0.34 (14.76)  | 6.06 (4.44)  | 96 |
| Unattended office | 279 | 1.40 (11.96)  | 5.23 (4.13)†  | 64 |  | 167 | 0.75 (12.94)  | 5.29 (4.51)\*  | 72 |
| Combined home | 279 | 0.93 (5.89) | 2.55 (2.18)§ | 18 |  | 167 | -0.49 (7.09) | 3.16 (2.49)§ | 24 |
| Morning home | 279 | 1.14 (6.58)  | 2.76 (2.50)  | 22 |  | 167 | -0.50 (8.06)  | 3.49 (2.86)\*  | 30 |
| Evening home | 271 | 0.70 (7.36)  | 3.15 (2.81)  | 26 |  | 159 | -0.61 (7.61)  | 3.41 (2.75)  | 28 |
| Diastolic blood pressure, mmHg |  |  |  |  |  |  |  |  |  |
| Attended office | 279 | 0.72 (7.75)  | 5.60 (4.65)  | 104 |  | 167 | -1.48 (8.19)  | 5.87 (4.96)  | 116 |
| Unattended office | 279 | 0.51 (6.56)  | 5.32 (4.37)  | 76 |  | 167 | 0.16 (7.27)  | 5.72 (4.69)  | 92 |
| Combined home | 279 | 0.60 (3.72) | 2.90 (2.36)§ | 26 |  | 167 | -0.19 (5.51) | 4.23 (3.48)‡ | 54 |
| Morning home | 279 | 0.78 (4.00)  | 3.08 (2.56)  | 30 |  | 167 | -0.08 (6.10)  | 4.36 (3.88)†  | 66 |
| Evening home | 271 | 0.39 (4.65)  | 3.61 (3.07)\*  | 40 |  | 159 | -0.49 (5.76)  | 4.72 (3.66)  | 58 |
| Pulse rate, beats per minute  |  |  |  |  |  |  |  |  |  |
| Attended office | 279 | 1.00 (8.39)  | 5.63 (5.28)  | 122 |  | 167 | 0.19 (9.36)  | 6.50 (4.74)  | 150 |
| Unattended office | 279 | 0.56 (7.40)  | 5.20 (4.78)  | 96 |  | 167 | 0.87 (8.04)  | 6.07 (4.72)  | 112 |
| Combined home | 279 | 0.30 (3.71) | 2.76 (2.59)§ | 26 |  | 167 | -0.56 (4.87) | 3.59 (3.13)§ | 42 |
| Morning home | 279 | 0.27 (4.23)  | 3.16 (3.07)‡  | 34 |  | 167 | -0.52 (5.52)  | 4.22 (3.51)†  | 54 |
| Evening home | 271 | 0.30 (4.27)  | 3.17 (2.83)  | 34 |  | 159 | -0.70 (5.57)  | 4.18 (3.53)  | 56 |

Values are means (SD) of the variables. CV denotes inter-individual coefficient of variation (units are dimensionless), and significance of differences from the superjacent row (those with full evening measurement information were compared in the comparison between morning and evening blood pressures): \*p<0.05; †p<0.01; ‡p<0.001; and §p<0.0001. Sample size is the number of total participants required for a parallel-group design clinical trial in order to detect a difference between the 2 drug effects of 10/5 mm Hg in systolic/diastolic blood pressure, or 5 beats per minute in pulse rate, with a power of 0.90 and significance level of 0.05 in each measurement.

**Supplementary Table 2. Independent factors associated with differences in the systolic blood pressure taken at Visits 1 and 2 among participants with the same drug regimen (*n*=279)**

|  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
|  | **Attended**  |  | **Unattended**  |  | **Combined Home**  |  | **Morning Home**  |  | **Evening Home** |
| **Variable**  | **PE** | **95% CI** |  | **PE** | **95% CI** |  | **PE** | **95% CI** |  | **PE** | **95% CI** |  | **PE** | **95% CI** |
| Average blood pressure (per 1 mmHg) | 0.09 | (-0.05, 0.22)  |  | 0.03 | (-0.08, 0.14)  |  | -0.12 | (-0.21, -0.02)\*  |  | -0.10 | (-0.19, 0.00)  |  | -0.06 | (-0.17, 0.04)  |
| Women (vs. men) | -1.32 | (-5.60, 2.95)  |  | -0.40 | (-3.80, 3.00)  |  | -1.81 | (-3.46, -0.16)\*  |  | -1.95 | (-3.81, -0.09)\*  |  | -1.83 | (-3.96, 0.30)  |
| Age (per 10 years) | -1.19 | (-3.16, 0.77)  |  | -0.29 | (-1.86, 1.27)  |  | 0.67 | (-0.08, 1.43)  |  | 0.65 | (-0.21, 1.50)  |  | 0.59 | (-0.39, 1.56)  |
| Overweight  | -3.26 | (-7.09, 0.56)  |  | -0.89 | (-3.94, 2.16)  |  | -1.23 | (-2.71, 0.25)  |  | -1.42 | (-3.09, 0.25)  |  | -1.07 | (-2.97, 0.84)  |
| Current smoker  | -0.82 | (-7.63, 5.99)  |  | 2.33 | (-3.09, 7.76)  |  | -0.33 | (-2.97, 2.30)  |  | -0.34 | (-3.31, 2.63)  |  | -0.49 | (-3.87, 2.89)  |
| Current habitual drinking  | 1.23 | (-2.84, 5.30)  |  | 1.32 | (-1.93, 4.57)  |  | -0.22 | (-1.80, 1.35)  |  | 0.07 | (-1.71, 1.85)  |  | -0.41 | (-2.46, 1.64)  |
| Diabetes mellitus | 0.69 | (-4.08, 5.46)  |  | -0.85 | (-4.64, 2.93)  |  | -0.28 | (-2.13, 1.57)  |  | -0.72 | (-2.80, 1.36)  |  | 0.24 | (-2.13, 2.62)  |
| Dyslipidaemia  | 2.24 | (-1.71, 6.19)  |  | 2.14 | (-1.01, 5.29)  |  | 1.33 | (-0.20, 2.86)  |  | 0.92 | (-0.81, 2.65)  |  | 1.76 | (-0.21, 3.73)  |
| Previous cardiovascular disease  | -2.84 | (-11.8, 6.12)  |  | -2.45 | (-9.58, 4.68)  |  | -0.19 | (-3.66, 3.27)  |  | -0.52 | (-4.43, 3.38)  |  | -0.05 | (-4.60, 4.51)  |
| Katsuya Clinic (vs. Miyakawa Clinic) | 2.13 | (-2.76, 7.02)  |  | -0.63 | (-4.57, 3.31)  |  | -0.09 | (-2.01, 1.84)  |  | 0.45 | (-1.74, 2.63)  |  | -0.69 | (-3.12, 1.74)  |
| YSB Clinic (vs. Miyakawa Clinic) | -0.88 | (-5.73, 3.97)  |  | -2.33 | (-6.16, 1.49)  |  | 0.85 | (-0.93, 2.63)  |  | 1.08 | (-0.92, 3.08)  |  | 0.16 | (-2.14, 2.46)  |
| Defined daily doses (per unit) | 2.56 | (0.87, 4.24)†  |  | 1.76 | (0.42, 3.10)\*  |  | 0.55 | (-0.14, 1.23)  |  | 0.41 | (-0.35, 1.18)  |  | 0.53 | (-0.33, 1.39)  |

Point estimates (PEs) reflect the increase in the systolic blood pressure difference per variable unit. Combined home blood pressures were the average of morning and evening home blood pressures at each visit. Evening home measurements were unavailable in eight patients at Visits 1 and/or 2. Unattended and attended denote unattended office blood pressure and conventionally measured attended office blood pressure, respectively. The variance inflation factors were ≤1.78. CI, confidence interval; YSB, Yokohama Sotetsu bldg. Significance of differences: \*p<0.05; †p<0.01.

**Supplementary Table 3. Independent factors associated with differences in the systolic blood pressure taken at Visits 1 and 3 among participants with the same drug regimen (*n*=167)**

|  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
|  | **Attended**  |  | **Unattended**  |  | **Combined Home**  |  | **Morning Home**  |  | **Evening Home** |
| **Variable**  | **PE** | **95% CI** |  | **PE** | **95% CI** |  | **PE** | **95% CI** |  | **PE** | **95% CI** |  | **PE** | **95% CI** |
| Average blood pressure (per 1 mmHg) | 0.06 | (-0.11, 0.22)  |  | 0.21 | (0.05, 0.36)\*  |  | -0.12 | (-0.30, 0.07)  |  | -0.14 | (-0.34, 0.06)  |  | -0.01 | (-0.18, 0.17)  |
| Women (vs. men) | -0.79 | (-6.36, 4.78)  |  | -2.64 | (-7.45, 2.17)  |  | -0.54 | (-3.22, 2.14)  |  | -0.41 | (-3.46, 2.65)  |  | -1.41 | (-4.41, 1.59)  |
| Age (per 10 years) | -0.10 | (-2.64, 2.44)  |  | 0.41 | (-1.78, 2.60)  |  | -0.06 | (-1.28, 1.15)  |  | -0.02 | (-1.41, 1.36)  |  | -0.24 | (-1.61, 1.13)  |
| Overweight  | -5.70 | (-10.5, -0.90)\*  |  | -4.32 | (-8.46, -0.18)\*  |  | -1.44 | (-3.74, 0.87)  |  | -1.39 | (-4.02, 1.24)  |  | -1.47 | (-4.06, 1.11)  |
| Current smoker  | -1.24 | (-10.1, 7.64)  |  | 0.11 | (-7.54, 7.77)  |  | -0.95 | (-5.21, 3.30)  |  | -0.33 | (-5.19, 4.52)  |  | -2.19 | (-7.10, 2.72)  |
| Current habitual drinking  | 3.44 | (-1.79, 8.67)  |  | -1.13 | (-5.63, 3.37)  |  | 0.23 | (-2.27, 2.73)  |  | 0.83 | (-2.02, 3.69)  |  | -0.53 | (-3.39, 2.33)  |
| Diabetes mellitus | 6.67 | (0.79, 12.5)\*  |  | 4.15 | (-0.92, 9.21)  |  | -3.13 | (-5.96, -0.29)\*  |  | -3.59 | (-6.80, -0.37)\*  |  | -1.72 | (-4.92, 1.47)  |
| Dyslipidaemia  | 2.65 | (-2.59, 7.90)  |  | 1.74 | (-2.80, 6.27)  |  | -0.29 | (-2.80, 2.22)  |  | -0.47 | (-3.34, 2.41)  |  | -0.39 | (-3.22, 2.43)  |
| Previous cardiovascular disease  | -5.23 | (-17.2, 6.74)  |  | -9.85 | (-20.2, 0.47)  |  | -0.51 | (-6.23, 5.22)  |  | -0.55 | (-7.09, 5.98)  |  | -0.37 | (-6.65, 5.91)  |
| Katsuya Clinic (vs. Miyakawa Clinic) | 0.82 | (-5.29, 6.92)  |  | 0.28 | (-5.06, 5.62)  |  | 2.18 | (-0.79, 5.15)  |  | 1.91 | (-1.49, 5.30)  |  | 2.33 | (-0.90, 5.56)  |
| YSB Clinic (vs. Miyakawa Clinic) | -1.08 | (-7.08, 4.92)  |  | -1.00 | (-6.23, 4.22)  |  | 2.53 | (-0.17, 5.23)  |  | 2.50 | (-0.61, 5.60)  |  | 2.00 | (-1.11, 5.10)  |
| Defined daily doses (per unit) | -0.60 | (-2.93, 1.73)  |  | 0.11 | (-1.90, 2.12)  |  | 0.87 | (-0.31, 2.05)  |  | 0.76 | (-0.58, 2.10)  |  | 0.63 | (-0.65, 1.91)  |

Point estimates (PEs) reflect the increase in the systolic blood pressure difference per variable unit. Combined home blood pressures were the average of morning and evening home blood pressures at each visit. Evening home measurements were unavailable in eight patients at Visits 1 and/or 3. Unattended and attended denote unattended office blood pressure and conventionally measured attended office blood pressure, respectively. The variance inflation factors were ≤1.54. CI, confidence interval; YSB, Yokohama Sotetsu bldg. Significance of differences: \*p<0.05.

**Supplementary Table 4. Unattended office blood pressure and pulse rate differences from Visit 1 to Visit 2 and Visit 1 to Visit 3 according to the measurement time period shifts.**

|  |  |  |  |
| --- | --- | --- | --- |
|  | **Between Visits 1 and 2** |  | **Between Visits 1 and 3** |
| **Measurement**  | ***n*** | **Difference, mean (SD)** | **CV, mean (SD)** |  | ***n*** | **Difference, mean (SD)** | **CV, mean (SD)** |
| Systolic measurement, mmHg  |  |  |  |  |  |  |  |
| All participants\*  | 287 | 1.49 (12.49) | 5.41 (4.45) |  | 287 | 1.06 (14.47) | 6.16 (5.21) |
| Within 3-h difference  | 251 | 1.30 (12.51) | 5.40 (4.46) |  | 246 | 0.97 (14.35) | 6.11 (5.14) |
| Within 1-h difference  | 221 | 1.44 (12.84) | 5.51 (4.62) |  | 193 | 1.44 (14.18) | 5.98 (4.99) |
| Diastolic measurement, mmHg  |  |  |  |  |  |  |  |
| All participants\*  | 287 | 0.46 (6.77) | 5.47 (4.68) |  | 287 | 0.70 (8.39) | 6.62 (5.71) |
| Within 3-h difference  | 251 | 0.40 (6.78) | 5.50 (4.73) |  | 246 | 0.65 (8.03) | 6.43 (5.48) |
| Within 1-h difference  | 221 | 0.41 (6.55) | 5.27 (4.51) |  | 193 | 0.80 (7.85) | 6.41 (5.26) |
| Pulse rate, beats per minute  |  |  |  |  |  |  |  |
| All participants\*  | 287 | 0.60 (7.44) | 5.24 (4.79) |  | 287 | 0.67 (8.37) | 6.29 (5.11) |
| Within 3-h difference  | 251 | 0.74 (7.41) | 5.24 (4.69) |  | 246 | 0.86 (8.30) | 6.19 (5.17) |
| Within 1-h difference  | 221 | 1.04 (7.09) | 5.14 (4.15) |  | 193 | 1.07 (8.31) | 6.12 (5.28) |

Values are means (SD) of the variables. CV, inter-individual coefficient of variation (units are dimensionless). \*Data on all participants were reproduced from Table 3.

**Supplementary Table 5. Blood pressure and pulse rate differences from Visit 1 to Visit 2 and Visit 1 to Visit 3 in Katsuya Clinic and Yokohama Sotetsu bldg. clinic where attended office measurement was taken twice at each occasion**

|  |  |  |  |
| --- | --- | --- | --- |
|  | **Between Visits 1 and 2** |  | **Between Visits 1 and 3** |
| **Measurement** | ***n*** | **Difference, mean (SD)** | **CV, mean (SD)** | **Sample size** |  | ***n*** | **Difference, mean (SD)** | **CV, mean (SD)** | **Sample size** |
| Systolic blood pressure, mmHg  |  |  |  |  |  |  |  |  |  |
| Attended office | 190 | 1.02 (14.80) | 5.92 (4.98) | 96 |  | 190 | 0.03 (14.00) | 5.83 (4.53) | 86 |
| Unattended office | 190 | 0.98 (12.95) | 5.71 (4.63) | 74 |  | 190 | 0.22 (14.36) | 6.31 (5.17) | 90 |
| Combined home  | 190 | 0.82 (6.24) | 2.69 (2.18)‡  | 20 |  | 190 | 0.85 (7.68) | 3.32 (2.68)‡ | 28 |
| Morning home | 190 | 1.15 (6.82) | 2.94 (2.34) | 22 |  | 190 | 1.11 (8.74) | 3.69 (3.03)† | 36 |
| Evening home | 182 | 0.44 (8.01) | 3.37 (2.95) | 30 |  | 179 | 0.47 (8.92) | 3.92 (3.13) | 36 |
| Diastolic blood pressure, mmHg |  |  |  |  |  |  |  |  |  |
| Attended office | 190 | 0.11 (7.68) | 5.71 (5.01) | 102 |  | 190 | -0.22 (7.85) | 6.10 (5.29) | 106 |
| Unattended office | 190 | 0.32 (6.88) | 5.75 (4.86) | 82 |  | 190 | -0.03 (8.34) | 6.78 (5.81) | 120 |
| Combined home  | 190 | 0.70 (4.08) | 3.21 (2.55)‡ | 32 |  | 190 | 0.98 (5.10) | 3.91 (3.12)‡ | 46 |
| Morning home | 190 | 0.84 (4.26) | 3.26 (2.71) | 34 |  | 190 | 1.28 (5.60) | 4.20 (3.47) | 56 |
| Evening home | 182 | 0.51 (5.03) | 3.96 (3.20)\* | 46 |  | 179 | 0.49 (5.79) | 4.60 (3.53) | 60 |
| Pulse rate, beats per minute  |  |  |  |  |  |  |  |  |  |
| Attended office | 190 | 1.03 (8.28) | 5.58 (5.52) | 118 |  | 190 | 0.42 (8.97) | 6.49 (5.17) | 138 |
| Unattended office | 190 | 0.34 (7.54) | 5.44 (5.00) | 98 |  | 190 | -0.28 (7.93) | 6.24 (4.89) | 108 |
| Combined home  | 190 | 0.23 (3.61) | 2.89 (2.55)‡ | 26 |  | 190 | -0.02 (4.79) | 3.86 (3.03)‡ | 42 |
| Morning home | 190 | 0.26 (4.18) | 3.34 (3.10)† | 32 |  | 190 | -0.10 (5.58) | 4.37 (3.82)† | 56 |
| Evening home | 182 | 0.16 (4.06) | 3.17 (2.69) | 30 |  | 179 | -0.11 (5.41) | 4.30 (3.36) | 52 |

Values are means (SD) of the variables. CV denotes inter-individual coefficient of variation (units are dimensionless), and significance of differences from the superjacent row (those with full evening measurement information were compared in the comparison between morning and evening blood pressures) are marked: \*p<0.05; †p<0.01; and ‡p<0.0001. Sample size is the number of total participants required for a parallel-group design clinical trial in order to detect a difference between the 2 drug effects of 10/5 mm Hg in systolic/diastolic blood pressure, or 5 beats per minute in pulse rate, with a power of 0.90 and significance level of 0.05 in each measurement.

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**Supplementary Figure 1. Time course of the assessment of blood pressures during the study period**

Home blood pressures are the average of 5 days before each clinic visit, and unattended and attended office blood pressures are measured at each clinic visit.

~~~~**Supplementary Figure 2. Bland and Altman plots for the comparison of systolic blood pressure measurements among participants with the same drug regimen between (A) Visit 1 and Visit 2 (*n*=279) as well as (B) Visit 1 and Visit 3 (*n*=167).**

Scales of the three Y-axes are aligned. Mean differences and ±2 SD between paired measurements are represented by dotted lines, and the values of the mean (SD) difference are in boxes on each panel. Dash-dotted lines are placed where the difference is zero.

**Supplementary Figure 3. Bland and Altman plots for the comparison of diastolic blood pressure measurements** **between (A) Visit 1 and Visit 2 as well as (B) Visit 1 and Visit 3.**

Scales of the three Y-axes are aligned. Mean differences and ±2 SD between paired measurements are represented by dotted lines, and the values of the mean (SD) difference are in boxes on each panel. Dash-dotted lines are placed where the difference is zero.

**Supplementary Figure 4. Bland and Altman plots for the comparison of diastolic blood pressure measurements among participants with the same drug regimen** **between (A) Visit 1 and Visit 2 (*n*=279) as well as (B) Visit 1 and Visit 3 (*n*=167).**

Scales of the three Y-axes are aligned. Mean differences and ±2 SD between paired measurements are represented by dotted lines, and the values of the mean (SD) difference are in boxes on each panel. Dash-dotted lines are placed where the difference is zero.