



Artery Research

ISSN (Online): 1876-4401

ISSN (Print): 1872-9312

Journal Home Page: <https://www.atlantis-press.com/journals/artres>

P6.7: DETERMINANTS FOR DIFFERENCES IN CENTRAL SYSTOLIC BLOOD PRESSURE CAUSED BY DIFFERENT CALIBRATION METHODS

Christopher Mayer, Martin Bauhofer, Bernhard Hametner, Christoph Schmaderer, Uwe Heemann, Siegfried Wassertheurer*, Marcus Baumann

To cite this article: Christopher Mayer, Martin Bauhofer, Bernhard Hametner, Christoph Schmaderer, Uwe Heemann, Siegfried Wassertheurer*, Marcus Baumann (2015) P6.7: DETERMINANTS FOR DIFFERENCES IN CENTRAL SYSTOLIC BLOOD PRESSURE CAUSED BY DIFFERENT CALIBRATION METHODS, Artery Research 12:C, 26–26, DOI: <https://doi.org/10.1016/j.artres.2015.10.291>

To link to this article: <https://doi.org/10.1016/j.artres.2015.10.291>

Published online: 7 December 2019

P6.5 EFFECTIVENESS OF FACEBOOK FOR PARTICIPANT RECRUITMENT INTO A BLOOD PRESSURE RANDOMISED CONTROLLED CLINICAL TRIAL

Erin Nash ^{*}, James Sharman
Menzius Institute for Medical Research, University of Tasmania, Hobart, Tasmania, Australia

Background: The cost of conventional advertising to recruit participants for clinical trials is expensive and can be ineffective. Social media may be a useful tool to improve participant recruitment. This study evaluated the use of Facebook advertising to recruit participants into a clinical trial.

Methods: Conventional advertisements (newspaper, radio, posters in doctors clinics) were employed for the first 20 months of a clinical trial conducted in the Australian capital cities of Hobart, Brisbane and Canberra. With dwindling participant recruitment, a Facebook advertising campaign, targeting 18 to 69 year olds currently taking blood pressure medication was employed in each city. Campaigns were broadcast intermittently over a four month period, with recruitment results compared to those using conventional methods in the previous 20 months.

Results: Facebook advertisement resulted in a significant increase in the number of participants recruited per month among the Canberra and Hobart sites (from 4.1/month to 7.0/month; $p < 0.05$). However, participant recruitment remained unchanged (and low) at the Brisbane site (2.4/month to 2.6/month; $p = 0.89$). Despite a greater population reach in Brisbane ($n = 91,828$) compared with Canberra ($n = 71,343$) and Hobart ($n = 52,647$), the number of clicks onto the advertisement in Brisbane was equal to other sites ($n = 2757$, $n = 2521$, $n = 2991$ respectively). Several attempts were made to improve the Facebook advertising strategy in Brisbane, but with no effect.

Conclusion: Facebook advertisement can be a successful tool to increase participant recruitment into a blood pressure clinical trial, but effectiveness appears to be location-dependent.

P6.6 NITROGLYCERIN IMPROVES SYSTOLIC MYOCARDIAL EFFICIENCY

Haotian Gu ^{1,*}, Henry Fok ¹, Benyu Jiang ¹, Manish Sinha ^{1,2}, John Simpson ², Phil Chowieńczyk ¹
¹King's College London, London, UK
²Evelina London Children's Hospital, London, UK

Introduction: Nitroglycerin (NTG) has a particularly marked action to reduce augmentation pressure (cAP), attributed to a reduction in timing or amplitude of pressure wave reflection. However, a recent study suggests that cAP is determined in large part by ventricular contraction/relaxation dynamics. We examined whether the reduction in cAP induced by NTG is associated with a change in left ventricular (LV) systolic function.

Methods: We estimated myocardial wall stress from transthoracic echocardiographic imaging of the LV and LV pressure estimated from carotid tonometry during systole. Eighteen subjects aged 43.0 ± 11.9 (mean \pm SD) years were studied before and 7-12 min after NTG (400 μ g sublingually). Carotid pressure calibrated by mean and diastolic blood pressure was used to calculate time-varying LV wall stress from endocardial and epicardial volumes obtained from wall tracking analysis. Tissue Doppler Imaging (TDI) S wave (a measure of LV systolic function) was measured at the basal mitral annulus from an echocardiographic 4-chamber view.

Results: NTG decreased cAP from 16.3 ± 3.6 to 4.5 ± 2.9 mmHg (means \pm SEM, $P < 0.0001$) and central systolic blood pressure decreased by a similar amount. Time to peak MWS decreased from 115.9 ± 10.9 to 86.8 ± 4.6 ms ($P = 0.024$). This difference persisted after adjustment for change in heart rate and blood pressure ($P = 0.017$). TDI S wave increased from 3.1 ± 0.3 to 4.0 ± 0.4 cm/s ($P = 0.017$). By contrast, NTG had no significant effect on ejection fraction or stroke volume.

Conclusion: NTG reduces cAP and improves the efficiency of myocardial contraction with a reduction in time to peak MWS.

P6.7 DETERMINANTS FOR DIFFERENCES IN CENTRAL SYSTOLIC BLOOD PRESSURE CAUSED BY DIFFERENT CALIBRATION METHODS

Christopher Mayer ¹, Martin Bauhofer ², Bernhard Hametner ¹, Christoph Schmäderer ², Uwe Heemann ², Siegfried Wassertheurer ^{1,*}, Marcus Baumann ²
¹AIT Austrian Institute of Technology GmbH, Vienna, Austria
²Technische Universität München, Munich, Germany

Introduction: There are known issues and ongoing discussions regarding calibration methods using peripheral mean and diastolic or peripheral systolic

and diastolic pressure for the determination of central systolic blood pressure. The aim of this cross-sectional study is an analysis of determinants for the differences in central systolic blood pressure between the two calibration methods.

Methods: All measurements were obtained with the Mobil-O-Graph 24h PWA monitor calibrated with both calibration methods within the ISAR hemodialysis study. Measurement started after a short dialysis interval prior to dialysis and lasted for 24-hours. Peripheral and central systolic blood pressures were averaged. 345 patients (231 male / 114 female; 65 \pm 15 years) were included and grouped according to peripheral systolic blood pressure and one of the following factors: age, sex, body-mass-index, diabetes mellitus, length of dialysis and coronary artery disease.

Results: There is a significant influence of age, diabetes mellitus, and coronary artery disease, but not of sex, body-mass-index and length of dialysis. Exemplarily, significant differences in central systolic blood pressure were 12.5 ± 7.3 (pSBP ≤ 130 mmHg, no diabetes mellitus), 17.0 ± 9.9 mmHg (pSBP ≤ 130 mmHg, diabetes mellitus), 18.6 ± 11.3 mmHg (pSBP ≤ 130 mmHg, no diabetes mellitus) and 26.1 ± 16.2 (pSBP > 130 mmHg, diabetes mellitus).

Conclusions: These findings enhance our understanding of the differences in the two calibration methods. These results are generally assumed to play a role in future risk classification. It is suggested that the association of these factors is investigated in future studies.

P6.8 COMPARISON OF CENTRAL BLOOD PRESSURE ESTIMATED BY UPPER-ARM CUFF-BASED DEVICE WITH RADIAL TONOMOMETRY

Xiaoqing Peng ^{1,*}, Martin Schultz ¹, Walter Abhayaratna ², Michael Stowasser ³, James Sharman ¹
¹Menzius Institute for Medical Research, University of Tasmania, Hobart, TAS, Australia
²Australia National University, Canberra, ACT, Australia
³The University of Queensland, Brisbane, QLD, Australia

Background: New techniques that measure central blood pressure (BP) using an upper arm cuff-based approach require assessment for performance. The aim of this study was to compare a cuff-based device (Cuff_{CBP}) to estimate central BP indices [systolic BP, diastolic BP, pulse pressure (PP), augmentation pressure (AP), augmentation index (AIx)] with the non-invasive reference standard of radial tonometry (Ton_{CBP}).

Methods: Consecutive Cuff_{CBP} (SphygmoCor XCEL) and Ton_{CBP} (SphygmoCor 8.1) duplicate recordings were measured at seated rest in 182 people with treated hypertension (aged 61 ± 7 years, 48% male). Agreement of estimated central BP indices between methods was assessed using standard calibration of brachial (Cuff_{CBP}) and radial (Ton_{CBP}) waveforms with brachial systolic BP and diastolic BP (measured with the XCEL device), as well as by re-calibration with brachial mean arterial pressure (MAP) and diastolic BP.

Results: The mean difference \pm SD for systolic BP, diastolic BP, and PP between Cuff_{CBP} and those derived from Ton_{CBP} were -0.89 ± 3.48 mmHg (intra-class correlation [ICC] = 0.98, $p < 0.001$), -0.50 ± 1.54 mmHg (ICC = 0.99, $p < 0.001$), and -0.42 ± 3.57 mmHg (ICC = 0.97, $p < 0.001$), indicating good agreement. Wider limits of agreement were observed for AP and AIx (0.91 ± 5.31 mmHg, ICC = 0.75, $p < 0.001$; $-0.99 \pm 10.91\%$, ICC = 0.75, $p < 0.001$). Re-calibration with MAP and diastolic BP resulted in an overestimation of systolic BP with Cuff_{CBP} compared with Ton_{CBP} (8.58 ± 19.06 mmHg, ICC = 0.14, $p = 0.045$).

Conclusion: Central systolic BP, diastolic BP and PP derived from Cuff_{CBP} are substantially equivalent to Ton_{CBP}, although the level of agreement is dependent on calibration method. Further validity testing of Cuff_{CBP} by comparison with invasive central BP will be required.

P6.9 MEASURING ARTERIAL STIFFNESS USING POPMETRE® IN THE AFRICAN HETEROZYGOUS AND HOMOZYGOUS SICKLE CELL DISEASE

Valentine Ouédraogo ¹, Hasan Obeid ^{2,*}, Magid Hallab ³, Isabelle Signolet ⁴, Mor Diaw ¹, Amadou Ba ¹, Georges Lefthériotis ¹
¹Hospital of Dakar, Senegal, Dakar, Senegal
²Georges Pompidou European Hospital, Paris, France
³Hospital of Nantes, Nantes, France
⁴Hospital of Angers, Angers, France

Aim: The sickle cell trait (SCT) is the heterozygous and benign form of the homozygous SC disease (SCD). Although SCT exhibits hemorheological disturbances and increased oxidative stress, its exact role in the development of