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Contents

EO-01 – GWAS for Apparent Treatment Resistant Hypertension in UK Biobank and Polygenic Risk Score Validation in the ASCOT Clinical Trial

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Background: Apparent treatment-resistant hypertension (aTRH) is defined as uncontrolled blood pressure (BP) (systolic BPâ‰¥140mmHg or diastolic BPâ‰¥90mmHg) despite taking 3 antihypertensive drug classes, or â‰¥4 classes regardless of BP. There are limited genome-wide association studies (GWAS) for aTRH, and very few loci identified at genome-wide significance level.

Method: We derived an aTRH phenotype in UK Biobank (UKB) and performed a case-control GWAS of aTRH among European individuals taking BP medications at the initial visit. After quality control, ~10 million genetic variants were tested for association with 8,582 aTRH cases vs 31,911 controlled hypertensives (BP<140/90mmHg, taking â‰¤3 classes). We then generated a polygenic risk score (PRS) for aTRH and tested for association with aTRH in the Anglo-Scandinavian Cardiac Outcomes Trial (ASCOT) clinical dataset.

Results: Six genome-wide significant loci were identified, near: KCNK3 (p=1.12x10-11); LSP1 (p=3.27x10-9); RXFP2 (p=4.57x10-9); NEK10 (p=1.89x10-8); SBF2 (p=3.68x10-8) and SLC4A7 (p=3.84x10-8). Two of the loci are novel for aTRH (NEK10, SBF2); while LSP1, KCNK3, SLC4A7 and RXFP2 have been reported from other aTRH GWAS, but not at genome-wide significance. All loci have previously been reported in BP-GWAS. Each BP-associated variant only increases BP a very small amount, however there were meaningful effect sizes for aTRH, e.g. the SLC4A7 signal has OR=1.43 (95%CI 1.26-1.61). KCNK3, LSP1 and RXFP2 have also been associated with primary aldosteronism, indicating aldosterone as a key pathway for aTRH.
The UKB aTRH-PRS was positively associated with aTRH in ASCOT (n=6,266): per 1 SD increase in PRS increases odds of aTRH: OR=1.09 (P=0.001). Comparing top vs bottom 20% of the PRS: OR=1.21 (P=0.022).

Conclusion: We discovered 6 loci for aTRH, provide validation of an aTRH-PRS in an independent clinical trial dataset, and reveal new insights on the genetic basis of aTRH. Next steps include extension to studies of other ancestries and further testing of the aTRH-PRS.

Disclosures: None

EO-02 – Closed-Loop IV Anti-Hypertensive Delivery for Real-Time Blood Pressure Control: A Feasibility Study

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Background: Hypertension remains a significant health challenge, particularly in the context of resistant hypertension and blood pressure (BP) variability, both of which contribute to cardiovascular risk. Advances in digital health technologies could enable the development of autonomous, closed-loop systems for more personalised and precise BP management. This study aimed to evaluate the feasibility of a fully automated, real-time feedback system using Proportional-Integral-Derivative (PID) control to titrate intravenous esmolol for systolic BP (SBP) regulation in anaesthetised swine.

Method: A closed-loop system was developed, incorporating continuous SBP measurements and a PID controller algorithm to adjust IV esmolol infusion in real time. The target was a 15-22% reduction in SBP. Initial experiments were conducted to establish dose-response characteristics. PID parameters were iteratively tuned during open-loop trials. In the final closed-loop run, the optimised system autonomously regulated SBP using 60-second rolling average feedback. A safety threshold was embedded in the control algorithm to terminate infusion if SBP dropped below 25%. BP, heart rate (HR), and time-in-target range were recorded.

Results: The system achieved target SBP within 129 seconds using final PID settings. In the closed-loop phase, 51.7% of SBP readings remained within the predefined range, with a maximum undershoot of +8.4 mmHg and no overshoot. DBP and HR changes were moderate (â^'6.0% and â^'9.1%, respectively), with no bradycardic events observed. The system demonstrated rapid recovery following infusion cessation and maintained safety throughout, with no excessive SBP drops below the defined threshold.

Conclusion: This study demonstrates the feasibility of real-time, closed-loop BP control using IV esmolol. The system achieved stable SBP regulation without overshoot or adverse effects. These results support further development of wearable or implantable autonomous antihypertensive delivery systems for use in patients with resistant hypertension and high BP variability.

Disclosures: No conflicts of interest to declare

EO-03 – Long-term outcomes after reducing antihypertensive medication prescriptions in older patients in UK primary care: a retrospective cohort analysis

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Background: Reducing antihypertensive treatment in older adults may prevent harm due to overtreatment, but the safety and efficacy of this approach remains unclear. This study aimed to evaluate the association between antihypertensive treatment reduction and clinical outcomes in older patients using electronic health records.

Method: A retrospective cohort study was conducted using data from 627,341 patients aged ≥65 years in the Clinical Practice Research Datalink (CPRD) who had received at least one antihypertensive prescription. Multivariable Cox proportional hazards models were used to estimate adjusted hazard ratios (aHRs) for the association between treatment discontinuation and clinical outcomes. The primary outcome was all-cause hospitalisation. Secondary outcomes included all-cause mortality, cardiovascular mortality, stroke, myocardial infarction, heart failure, cognitive decline, acute kidney injury, electrolyte abnormalities, hypotension, syncope, falls, and fractures. Subgroup analyses for the primary outcome were conducted by age, number of antihypertensive prescriptions, and systolic blood pressure before medication reduction.

Results: Median follow-up was 3.8 years (IQR 1.7 - 7.1 years). Discontinuation of antihypertensive treatment was associated with a reduction in all-cause hospitalisation (aHR 0.93; 95% CI, 0.92-0.94), consistent across subgroups. However, there was an increased risk of adverse outcomes, including all-cause mortality (aHR 1.17; 95% CI, 1.15-1.18), cardiovascular mortality (aHR 1.10; 95% CI, 1.08-1.13) and falls (aHR 1.16; 95% CI, 1.12-1.20). There was no significant association with myocardial infarction (aHR 1.00; 95% CI, 0.97-1.02).

Conclusion: Although discontinuation of antihypertensives in older patients was associated with fewer hospitalisations, it was also linked to markedly increased risks of serious adverse outcomes, including mortality. These findings are concerning and do not support routine deprescribing. Some associations may reflect residual bias due to the difficulty and the potential classification bias from defining treatment discontinuation in large electronic health records and should therefore be interpreted with caution.

Disclosures: -

EO-04 – Hypertensive patients in the Anglo-Scandinavian Cardiac Outcomes Trail (ASCOT) with greater genetic risk are more likely to be treatment resistant and respond less effectively to treatment

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Background: Treatment resistant hypertension (RHTN) patients have increased cardiovascular risks. It's believed that RHTN may have genetic causes, and that genetics may explain the inter-individual variability in antihypertensive drug response.
Our latest genome-wide association study (GWAS) for blood pressure (BP) reports 2,103 independent BP-associated genetic signals and provides powerful genetic risk scores (GRS). We investigated whether BP-GRS are associated with: (i) RHTN; (ii) antihypertensive drug response.

Method: BP-GRS were constructed for systolic (SBP), diastolic (DBP) and pulse pressure (PP) for 6,266 ASCOT European ancestry patients, with available genetic data. Each BP-GRS comprised 2,103 BP variants, weighted by their BP-GWAS effects: increasing scores correspond to increasing BP.

We defined RHTN cases as patients with uncontrolled high BP despite taking â‰¥3 drug classes, vs controls (controlled BP from <3 classes).

ASCOT patients were randomized to either beta-blocker (BB) or calcium channel blocker (CCB). BP drug response was considered for patients on monotherapy only: 1,518 BB patients; 1,780 on CCB.

We tested BP-GRS for association with: (i) RHTN, adjusted for sex, age, BMI, diabetes, BB-vs-CCB, LVH; (ii) BP drug response, adjusted for sex, age, baseline-BP, dose, baseline antihypertensive use.

Results: All three BP-GRS are significantly associated with RHTN (3,103 cases vs 3,163 controls): P=6.73Ã—10-15 for SBP-GRS; P=2.86Ã—10-4 for DBP-GRS; P=3.12Ã—10-18 for PP-GRS: increased genetic risk of hypertension increasing odds of RHTN. Patients in top 20% of SBP-GRS have 1.78Ã— odds of RHTN than the lowest 20% (P=6.90Ã—10-11).

BP-GRS are also significantly associated with CCB response: patients in lowest 20% of SBP-GRS achieve better SBP mean lowering response by 3.79mmHg (P=4.9Ã—10-4). Results were non-significant for BB.

Conclusion: Our results confirm genetic contributions to both RHTN and BP drug response. RHTN patients are likely to be those with highest genetic risk of hypertension. Similarly, patients with greater BP genetic risk respond less effectively to antihypertensives.

Disclosures: The author does not have any disclosures.

EO-05 – Cardiovascular Determinants of Blood Pressure at age 10 years: a Generation R Study

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Background: We aimed to determine the contributions of heart rate (HR), stroke volume (SV), cardiac output (CO), and systemic vascular resistance (SVR) to blood pressure (BP) in children, and how these relate to sex, body size, and adiposity.

Method: This was a cross-sectional analysis at age 10 years in the population-based Generation R cohort. BP was measured using a validated automatic sphygmomanometer. Abdominal and cardiac MRI and dual-energy X-ray absorptiometry (DXA) were used to assess ventricular volumes, pericardial/visceral fat, and total body composition. Mean arterial pressure (MAP), CO, and SVR were derived from ventricular volumes and established hemodynamic equations. Cardiovascular properties were examined across height-adjusted MAP and pulse pressure (PP) quartiles. Regression analyses assessed associations between cardiovascular properties and measures of adiposity.

Results: We included 2,033 children (940 males, 1,093 females; mean BMI 17.5 ± 2.5 kg/m^2; 60.8% Western European). In both sexes, increasing height-adjusted MAP quartile was associated with higher CO, HR, and SVR (all $p<0.001$), but not SV. In contrast, higher PP quartile was associated with increased SV and CO and decreased SVR (all $p<0.001$). Visceral fat in boys and lean mass in girls showed the strongest associations with MAP ($\hat{I}^2$ = 0.208 and 0.214, respectively; 0.001). Lean mass was most associated with PP in both sexes (β = 0.100 and 0.216; p = 0.04 and <0.001). However, adjusting for adiposity did not significantly alter cardiovascular differences across quartiles of height adjusted BP.

Conclusion: Determinants of “static” and “pulsatile” BP at the age of 10 years are similar in boys and girls, with SV determining PP and HR and a combination of HR driven CO and SVR determining MAP. The relationship with adiposity is complex and in this predominantly healthy population cohort, adiposity does not appear to be a key determinant of the haemodynamic differences observed.

Disclosures: Nil

EO-06 – The dynamics of primary aldosteronism: Insights from ambulatory biosampling

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Background: Primary aldosteronism (PA) affects up to 20% of the hypertensive population and associated with increased mortality and morbidity. However, establishing a correct diagnosis is hampered by laborious and time-consuming protocols unable to capture the pulsatile variability of aldosterone across the day. In this study we applied a home-based ambulatory hormone profiling technique to study the dynamics of aldosterone and other corticosteroids in patients with established PA to gain insights into PA physiology.

Method: Sixty patients with an established diagnosis of PA were recruited: 26 unilateral, 24 bilateral, and 10 with undetermined PA subtype. Ambulatory 24-hour profiles of corticosteroids including aldosterone and the hybrid steroids 18-hydroxycortisol and 18-oxocortisol were quantified in subcutaneous tissue microdialysate by liquid chromatography tandem mass spectrometry and compared with profiles in 215 healthy participants (without a known diagnosis of hypertension). High resolution (72 time point) time series of hormones were constructed and analysed using mathematical and statistical techniques.

Results: Hormone profiles in PA patients were obtained during regular daily activity and during sleep. Nocturnal and early morning hypersecretion of aldosterone, 18-hydroxycortisol and 18-oxocortisol were prominent in unilateral PA. Pulsatile secretion and diurnal rhythmicity of aldosterone, cortisol, 18OHF, and other steroids was also noted. Cortisol and aldosterone were significantly correlated in both types of PA suggesting that HPA axis modulation of aldosterone is important. Normalisation of aldosterone hypersecretion was observed after adrenalectomy.

Conclusion: 24-hour tissue corticosteroid profiling in the home setting is achievable and reveals new insights into the pathophysiology of PA, which is characterised by nocturnal hypersecretion of aldosterone and hybrid steroids. The technique highlights the importance of dynamic pathological changes that occur in PA and which cannot be revealed with single time point assessment. The technique holds promise for potential future use in the diagnosis and management of endocrine hypertension.

Disclosures: Stafford Lightman is founder of Dynamic Therapeutics Ltd

EO-07 – Blood Pressure Changes in Late-Life are Associated with Declining Cardiovascular Function: Analysis of UK Biobank Cohort

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Background: Blood pressure(BP) trends vary in older age, with different phenotypes ranging from new onset hypertension to declining BP. Mechanisms driving late-life BP declines remain unexplained. We used detailed data from the UK Biobank cohort study linked to healthcare records with serial BP measures to investigate the association between late-life changes in BP and cardiovascular function.

Method: We estimated associations between systolic BP trend (stable normotension, increasing, stable low, declining) and cardiovascular function in UK Biobank participants who underwent cardiac MRI (CMRI) with â‰¥3 systolic BP (SBP) measurements in the 10 years before CMRI. Outcome measures included stroke volume, ejection fraction and arterial stiffness index. Regression models were used to estimate the association between categories of SBP trend and CMRI measures.

Results: We analysed data from 3452 (N=3835 stable normotension, N=193 increasing, N=350 declining, and N=74 stable low) participants (59.2% female; mean age 73 years). SBP reduction over 10 years was associated with reductions in stroke volume (Î²=-1.7mL/m 95%CI, -2.6, -0.8; p<0.05, end-diastolic volume (Î²=-6.63mls 95%CI -10.1, -3.2; p<0.05), end-systolic volume (Î²=-4.9mls 95%CI, -8.0, -1.8; p<0.05, and an increase in arterial stiffness (Î²=0.64m/s 95%CI, 0.49, 0.78;p<0.05).

Conclusion: We found that declining SBP was associated with impaired cardiac function: reduced stroke volume, end-diastolic volume, end-systolic volume with an increase in arterial stiffness. This provides insights into the underlying pathophysiology of BP declines in later life. Further research is planned to explore distinct BP phenotypes in cardiovascular ageing and frailty to guide treatment approaches, including selection of people appropriate for de-prescribing.

Disclosures: None

EO-08 – Patients with Familial Hyperkalemic Hypertension (FHHt) Have an Altered Immune Response

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Background: Evidence suggests a relationship between immunity and renal sodium handling. Inflammatory cytokines (e.g IL-17) promote tubular sodium reabsorption, and patients with salt-losing tubulopathies are immunodeficient with impaired IL-17 responses. To explore possible interactions between hypertension and immunity, we investigated immune responses in Familial Hyperkalaemic Hypertension (FHHt). FHHt is an inherited form of monogenic hypertension due to increased activity of the sodium-chloride co-transporter in the distal convoluted tubule.

Peripheral blood mononuclear cells (PBMCs) were isolated from 11 patients with genetically confirmed FHHt and 11 healthy controls. PBMCs were stimulated for 3 days with anti-CD3 and anti-CD28, and for 7 days with this stimulation alongside Th17 polarising cytokines, with and without salt (+40mM NaCl). T-cell subsets were analysed using flow cytometry, with staining for IL-17 and IFNg. Cytokine expression was determined in CD4-positive (Th17 and Th1) and CD4-negative (Tc17 and Tc1) cells. Differences were determined using Mann-Whitney and Wilcoxon tests.

Of 11 FHHt patients, 6 (54.5%) were male and median age was 44 years.

After the 3-day stimulation, FHHt patients produced fewer Th1 (CD4+IFNg+) cells than controls (median 16.0% vs 21.9% [p=0.03]) and had a higher Th17 (CD4+IL17+):Th1 ratio (median ratio 0.20 vs 0.12 [p=0.02]). Sodium increased Tc17 (CD4-IL17+):Tc1 (CD4-IFNg+) ratio in FHHt patients (median 0.02 vs 0.03 [p=0.01]).

After the 7-day stimulation, FHHt patients produced more IL-17 expressing cells than controls (median 6.8% vs 4.2% of live cells [p=0.03]) and had more Th17 cells (median 9.2% vs 6.2% [p=0.03]) . Sodium decreased Th1 and Tc1 production in controls, 16.9% vs 14.7% (p=0.02) and 36.8% vs 33% (p=0.04), respectively. Sodium produced a similar effect in FHHt.

FHHt patients have increased IL-17 and decreased IFNg responses. We provide the first demonstration of immune dysregulation in monogenic hypertension. Mechanisms of this effect and potential immune dysregulation in other forms of hypertension should be investigated.

Disclosures: nil

EO-09 – Investigating the Relationships between Blood Pressure Polygenic Risk Scores and disease outcomes within the UK Biobank

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Background: Hypertension is a leading cause of mortality and morbidity worldwide. Blood pressure (BP) is influenced by both genetics and lifestyle. Genome-wide association studies (GWAS) have identified >2,000 BP-associated genetic signals. Polygenic Risk Scores (PRS) quantify genetic susceptibility for increased BP, and provide new approaches for investigating relationships between BP and other health outcomes. We performed a hypothesis-free Phenome-Wide Association Study (PheWAS) using new BP-PRS to reveal new insights into the influence of BP on other diseases.

Method: We conducted new meta-analyses of BP-GWAS data of European ancestry (N=458,575) for systolic BP (SBP), diastolic BP (DBP) and pulse pressure (PP), excluding UK Biobank (UKB) data, and used this to generate BP-PRS in all UKB individuals (N=478,814, across all ancestries). We performed three BP trait-specific multi-ancestry PheWAS analyses of SBP-PRS, DBP-PRS and PP-PRS, within UKB, testing associations between BP-PRS and 762 disease outcomes (â€œPheCodesâ€) based on ICD9/ICD10 codes using linked electronic health record data, after filtering for N-cases>200.

Results: Across all three BP-PRS, we identified 169 associated PheCodes achieving Bonferroni significance after multiple-testing correction (P<6.5Ã—10-5). 64 PheCodes were significantly associated with all three BP-PRS, whereas 44 were significant for only one BP-PRS: 34 for SBP-PRS; 6 for DBP-PRS; 4 for PP-PRS.

Two PheCodes were trait-specific with Bonferroni-significance for only one BP-PRS, but non-significant (P>0.01) for the other BP-PRS: secondary polycythaemia (DBP-PRS only, P=1.5Ã—10-7; OR=1.24 per 1 SD-increase in PRS; N-cases=437; nausea and vomiting (SBP-PRS only, P=3.7Ã—10-5; OR=1.05; N-cases=6,780).

For most associations, increased genetic susceptibility to elevated BP increases disease risk, except for aortic aneurysms, inversely associated with PP-PRS (OR=0.9; P=8.5Ã—10-7), consistent with published Mendelian Randomization findings.

Conclusion: Our findings reveal trait-specific disease associations with BP-PRS. We are validating novel associations within independent datasets and exploring underlying biological pathways. We will assess directionality and causality of BP-disease relationships through Mendelian Randomization analyses.

Disclosures:

EO-10 – Resting Heart Rate Trajectories Across Life and Cardiovascular Risk: a Longitudinal British Birth Cohort Study

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Background: Resting heart rate (RHR) is a simple, non-invasive marker of cardiac function which predicts future cardiovascular disease (CVD) and mortality. We examined RHR trajectories from childhood to late adulthood and their associations with cardiovascular outcomes in a British birth cohort.

Method: 4793 participants were investigated from the National Survey of Health and Development. RHR was obtained at ages 6, 7 , 11, 43 , 53, 60-64 , 69-70, 72 and 77y. RHR trajectories were assessed using fractional polynomial mixed models in a complete case analysis. Confounders were chosen a priori and were sex, body mass index, alcohol intake and self-reported physical activity. Deviation from the average trajectory was calculated using the mean of the absolute residuals; this was then used in logistic regressions to evaluate its association with atrial fibrillation (AF) and heart failure (HF).

Results: RHR declined in a non-linear manner with age, the decline being steepest in childhood and plateauing around age ~50y. RHR trajectory was higher in women and in people with obesity. Higher deviation from the average trajectory was associated with greater odds of adverse cardiovascular outcomes. For a fully adjusted model, each 1bpm higher absolute deviation across the life-course was associated with a 44% higher odds of developing HF (OR:1.44 95% CI:1.17, 1.76 p=0.001) and a 19% higher odds of developing AF (OR:1.19 95% CI:1.06, 1.34, p=0.004). This relationship was more pronounced in the 5th to 7th decade of life (HF OR:1.32 95% CI:1.16, 1.51, p<0.001 and AF OR:1.24 95% CI:1.14, 1.34, p<0.001).

Conclusion: Deviation from the average age-related RHR trajectory is independently associated with increased risk of future heart failure and atrial fibrillation, particularly in older age.

Disclosures: None

OO-01 – Prediction of cardiovascular disease events from the photoplethysmograph waveform

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Background: A photoplethysmographic pulse waveform (PPG) can be obtained optically by digital health technologies such as a smart phone or wearable devices. Features of the PPG may provide prognostic information additive to blood pressure.

Method: We performed comprehensive feature extraction of PPG waveforms recorded during 2009 â€“ 2010 in 114,884 participants in UK Biobank and examined the association of individual and panel features with incident cardiovascular disease (CVD) events over approximately 10 years of follow up. Results: A total of 9,242 participants developed CVD events. There were 3,378 deaths, with CVD the primary cause of death in 417 participants. In a penalised Cox proportional hazards model, after adjustment for classical risk factors (age, sex, BMI, ethnicity, smoking, presence of diabetes, total cholesterol/HDL-cholesterol ratio, systolic blood pressure and medication), PPG indices that were most strongly associated with CVD events included systolic time, the area under the systolic portion of the PPG and curvature of the mid-late systolic PPG with standardised hazard ratios [95% CI] of 1.43 [1.28-1.61], 0.79 [0.72-0.88], and 0.80 [0.74-0.86] respectively. The addition of PPG indices to classical risk factors increased the prediction of CVD events and this was more marked in younger compared to older people.

Results:

Conclusion: These results suggest that the PPG features related to systolic performance, and that may be related to pre-clinical heart failure, offer important prognostic information. Further studies to identify the physiological properties to which they relate and to optimise their use in risk prediction are merited.

Disclosures: None

OO-02 – The role of hypoxia and HIF signalling in sympathoadrenal development

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Background: Normal development occurs in physiological hypoxia, but severe hypoxia has pathological consequences. Gestational hypoxia results in sympathetic hyperinnervation and cardiovascular dysfunction in fetal and postnatal life, but the underlying mechanisms remain unclear. Hypoxia-inducible factors (HIF1/HIF2) are oxygen-regulated transcription factors that coordinate the transcriptional response to hypoxia. HIFs mediate adaptive cardiorespiratory physiology in the adult but are also widely active in the hypoxic environment of embryogenesis and could regulate cell fate. The vertebrate-specific HIF2 is highly expressed in developing sympathoadrenal tissues and is essential for fetal catecholamine homeostasis. HIF2-activating mutations also cause heritable catecholamine-producing tumours (pheochromocytoma/ paraganglioma), suggesting that the sympathoadrenal lineage is particularly HIF-sensitive.

We hypothesize that hypoxia regulates sympathoadrenal development via activation of HIF-2, with consequences for post-natal physiology and disease.

Method: We use directed differentiation of human embryonic stem cells into sympathoadrenal cells with markers of neuronal (PRPH+) and neuroendocrine identity (chromogranin A+) via defined intermediate stages, including trunk neural crest (NC), to assess the effects of HIF-activating interventions.

Results: Moderate hypoxia(1-5%) promotes lineage commitment during all stages of sympathoadrenal differentiation in vitro, possibly reflecting physiological oxygen exposure in normal development. However, cells at each stage of sympathoadrenal development show differential sensitivity to pharmacological HIF activation by Roxadustat. Trunk NC cells are highly sensitive, with evidence of Roxadustat-induced toxicity at low-moderate doses. We observe dose-dependent reduction in expression of NC markers (SOX10, TFAP2A), markedly impaired cell growth in cells treated with Roxadustat for 20h, and cell death with longer exposure. In contrast, Roxadustat induces proliferation of sympathoadrenal progenitors and up-regulation of genes for sympathoadrenal specification(PHOX2B, TH) and both neuronal (PRPH) and neuroendocrine (CHGA) differentiation.

Conclusion: Together, these stage-specific effects show the importance of dynamic HIF regulation for normal development of the sympathoadrenal lineage, and provide a credible pathway by which developmental hypoxic stimuli may programme adult pathology.

Disclosures: funded by The Wellcome Trust and The British Heart Foundation

OO-03 – Myocardial fibrosis is associated with left ventricular early systolic function in a pressure overload induced heart failure rat model

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Background: The induction of pressure overload instigates myocardial fibrosis (MF) and diminishes myocardial compliance, precipitating left ventricular dysfunction, and eventual heart failure (HF). Timely evaluation of myocardial remodelling and fibrosis in HF holds significant clinical implications for patient management. First-phase ejection fraction (EF1) has demonstrated sensitivity in detecting left ventricular early systolic dysfunction. This study aims to explore the relationship between EF1 and MF in a transverse aortic constriction rat model.

Method: A pressure overload heart failure rat model was established through minimally invasive transverse aortic constriction. Echocardiography was conducted weekly, with an equivalent number of rats randomly selected from each group to measure EF1, myocardial strain, and conventional parameters. Subsequently, rat hearts underwent haematoxylin and eosin staining and Masson's trichrome staining analysis.

Results: Compared to the control and sham-operated groups, the HF group exhibited a significant reduction in EF1 starting from the second week post-operation, with further declines observed over time ($P < 0.05$). Left ventricular global longitudinal strain (GLS) and ejection fraction (EF) were impaired by the third week post-operation ($P < 0.05$), while MF and hypertrophy manifested as early as the second week post-operation ($P < 0.05$). Linear regression analysis demonstrated a robust association between EF1 and MF, after adjusting for GLS, EF, global circumferential strain (GCS), and global radial strain (GRS) ($P < 0.001$). Diagnostic efficiency assessments revealed that the area under the receiver operating characteristic curve of EF1 for detecting MF was the highest (AUC = 0.89), surpassing that of GLS and EF.

Conclusion: EF1 is a sensitive non-invasive marker of early left ventricular systolic dysfunction and a promising indicator for identifying MF at early stage of heart failure. Incorporating EF1 into routine clinical assessments may facilitate timely interventions to mitigate myocardial fibrosis progression.

Disclosures: None

OO-04 – Title: Screening for Primary aldosteronism in hypertension with 24-Hour URinary aLdosterone: initial results from the PURL study

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Background: Primary aldosteronism (PA) is an underdiagnosed cause of secondary hypertension. The plasma aldosterone-renin ratio (ARR) is a standard screening test, but it is prone to variability. We hypothesised that 24-hour urine aldosterone (24-hr UAldo), along with urine electrolytes, could serve as a practical alternative. The PURL study (NCT06047912) is a multicentre observational pilot comparing 24-hr UAldo and ARR for PA screening in UK hypertensive patients.

Method: Patients with and without suspected PA were recruited from specialist hypertension centres and underwent paired plasma ARR and 24-hr UAldo measurements (n=117). PA-suspected patients underwent confirmatory tests: oral salt loading test (OSLT) and/or saline suppression test (SST) where feasible (n=35). Agreement between ARR and UAldo positivity (using published cut-offs: ARR â‰¥55 pmol/mU; UAldo â‰¥14 mcg/24 hr) was assessed via Cohenâ€™s Kappa and paired t-tests, and equivalence testing (TOST) evaluated mean differences. Youden optimal cut-offs and diagnostic performance metrics (sensitivity, specificity, and predictive values) of ARR and Ualdo were assessed for the two confirmatory tests separately.

Results: Among 117 participants (mean age 37 yrs, 56% male), with mean (SD) systolic blood pressure: 139 (18) mmHg, diastolic blood pressure: 92.00 (16.00) mmHg, 21% had positive-ARR and 44% positive-UAldo; 20.5% met positive-OSLT criteria. Agreement between ARR and UAldo was poor (Kappa=0.081, p=0.358). Tests differed significantly (t = 2.85, p = 0.005) and were not equivalent (TOST). Youden cut-offs and diagnostic values varied for both screening tests (ARR and UAldo), depending on the reference confirmatory tests (OSLT and SST) (Kappa = 0.075, p = 0.606).

Conclusion: The poor agreement between the screening and confirmatory tests based on the published cut-offs indicates the two tests are discordant in how they classify subjects with and without PA. These results demonstrate the need to further evaluate screening and confirmatory test strategies for PA in current practice.

Disclosures: This study was funded by BHF-CRE pump priming fund (Cambridge)

OO-05 – A systematic review of blood pressure monitor validation studies

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Exeter Collaboration for Academic Primary Care, University of Exeter, BIHS Standing Committee on Blood Pressure Measurement; University of Exeter, University of Oxford, University College London, Imperial College London, Stepping Hill Hospital Stockport, Cardiff Metropolitan University, Kings College London, University of Galway, Brighton & Sussex Medical School, BIHS Standing Committee on Blood Pressure Measurement

Background: Hypertension management relies on accurate blood pressure (BP) readings, from successfully validated BP monitors that can be recommended as accurate. The British and Irish Hypertension Society (BIHS) maintains a peer-reviewed list of BP monitors, independent of commercial interests. The list is cited in NICE hypertension guidance and informs NHS monitor choices. The 2018 Universal Standard for BP device validation has stimulated an updated literature review to update the BIHS BP monitor list.

We sought to systematically identify BP monitor validation studies published since the last update in 2018, assess uptake of the Universal Standard, and review compliance with the various validation protocols used.

Method: Systematic review: we searched Medline and Embase to August 2024 for BP monitor validation studies published since 2018. Retrieved citations and full texts were screened independently by two authors. Included studies were reviewed independently by two authors against checklists of key validation protocol criteria. Disagreements were resolved through discussion and/or reference to a third author.

Results: Seven reviewers screened 1483 unique citations and reviewed 216 full texts. Nine reviewers double-extracted data from 135 included publications reporting 175 device validation studies. The majority (102; 58%) used the 2013 or 2018 universal protocols. 161 (92%) validation studies were reported as successful by their authors, however, only 129 (74%) validations were agreed to fulfil all protocol criteria on review. Thus, 32 (18%) validations published as successful were considered inadequate by reviewers due to non-fulfilment of key validation criteria and/or violations of BP measurement protocols, such as incomplete BP range coverage.

Conclusion: This review has updated the BIHS list of approved validated BP monitors. The review process has highlighted inadequacies in current journal peer-review processes, justifying the independent review process undertaken by the BIHS BP measurement Standing Committee, to provide impartial guidance for health professionals, purchasers and the public.

Disclosures: Funding: BIHS Legacy fund and South West GP Trust; this review is registered with PROSPERO - registration number: 480953. This is a BIHS funded body of work undertaken by the BIHS Standing Committee. As such, assuming scientific review is favourable, the authors are particularly keen to see this work presented in an oral session at the ASM.

OO-06 – Hypertensive phenotypes: impact of age and sex on haemodynamic mechanisms

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Background: Essential hypertension is often treated as a uniform condition. However, there are distinct patterns of blood pressure (BP) elevation such as isolated systolic (ISH), systolic diastolic (SDH) and isolated diastolic hypertension (IDH), and these phenotypes vary in prevalence according to age and sex. We aimed to explore the haemodynamic mechanisms responsible for the age- and sex-related differences in these hypertensive phenotypes.

Method: 5371 individuals (2402 males), aged 18-92 years, free of cardiovascular disease and medication were included in this cross-sectional analysis of the Anglo-Cardiff Collaborative Trial (ACCT). BP was measured using an oscillometric device, cardiac output (CO) by inert gas rebreathing, and aortic pulse wave velocity (aPWV) using applanation tonometry. Peripheral vascular resistance (PVR) was calculated as the ratio of mean arterial BP to CO. Participants were stratified by sex and age group (<30, 30-60 and >60 years), and categorised by BP phenotype based on clinic (seated) BP.

Results: In young males, ISH was the most common hypertensive phenotype and was characterised by an elevated CO. In contrast, SDH and IDH were more common in younger females, with SDH associated with elevated PVR and aPWV, and IDH with increased PVR. In the middle-aged group, SDH was the most common phenotype and was accompanied by increased PVR in both sexes. In older adults, ISH was again the most common phenotype, however, in contrast to younger adults, it affected both males and females equally (~1:1) and was characterised by elevated aPWV and PVR.

Conclusion: There are significant age- and sex-specific differences in hypertensive phenotypes and the primary haemodynamic mechanisms underlying these. Targeting therapy toward these primary haemodynamic abnormalities â€“ especially in younger adults, where sex-related differences are pronounced, and irreversible structural changes in the cardiovascular system have not yet occurred â€“ could lead to improved BP control and better long-term outcomes.

Disclosures: The authors have nothing to declare.

OO-07 – Cardiac Morphology and Flow Dynamics in Children Born to Hypertensive Pregnancies

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Background: Hypertensive pregnancies affect up to 10% of pregnancies globally and are linked to greater cardiovascular risk in offspring. Subclinical changes in cardiac structure and function have been reported across developmental stages. This study aimed to assess whether children born to hypertensive pregnancies exhibit altered left ventricular (LV) morphology and impaired cardiac pump efficiency.

Method: In this cross-sectional study, cardiovascular magnetic resonance (CMR) was performed on a 3.0-Tesla Siemens Prisma scanner in children aged 6â€“9 years: 44 offspring of hypertensive pregnancies (50% female) and 56 controls from normotensive pregnancies (37.5% female). Cardiac SSFP longitudinal and short-axis cine images were acquired to assess cardiac structure and function and to create a computational shape atlas capturing the morphology of the LV. Four-dimensional (4D)-flow CMR was acquired to characterise LV blood to quantify LV blood flow kinetic energy (KE).

Results: Children born to hypertensive and normotensive pregnancies were matched in age (7.49 +- 0.73 and 7.41 +- 1.12 years, respectively), but those from hypertensive pregnancies had significantly shorter gestations (median 37.3 weeks [IQR 35.6â€“39] vs. 39 weeks [37.7â€“40.8], p=0.005). No differences were observed in conventional measures of cardiac structure or function. The computational atlas revealed LV remodelling with basal anterior wall thickening in hypertensive pregnancy offspring compared to basal inferoseptal thickening in normotensive pregnancy offspring (p=0.0144, AUC=0.635). LV retained inflow end-diastolic KE index measured from 4D-flow was also lower (3.35 [3.03â€“4.80] vs 5.70 [4.35â€“6.80] Î¼J/mL, p=0.016) in offspring of hypertensive pregnancies.

Conclusion: Children born to hypertensive pregnancies show early LV remodelling and reduced diastolic flow efficiency, undetected by conventional measures. Longitudinal follow-up is warranted to determine how these early adaptations progress over time.

Disclosures: None

OO-08 – Online Availability of Non-Validated Blood Pressure Monitors in the UK: Implications for Patient Safety and Regulation

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Background: Home blood pressure (BP) monitoring is widely recommended for hypertension management, yet many patients purchase devices online without guidance. Non-validated monitorsâ€”those lacking internationally recognised accuracy testingâ€”risk misdiagnosis and inappropriate treatment of hypertension and cardiovascular disease. The extent of their availability on the UK online market remains unclear. This study assessed the number, type, validation status, and cost of home BP monitors sold through online platforms.

Method: A scoping search using Google UK identified 86 online vendors selling BP monitors in the UK, grouped into five categories: pharmacies, medical suppliers, general retailers, e-commerce platforms, and charities. Using SimilarWeb, the top five vendors in each categoryâ€”covering >96% of total UK web traffică€”were selected. The top 250 search results for "blood pressure monitor" from each site were screened, extracting data on model, brand, type (arm cuff, wrist cuff, wristband), price, user rating, number of reviews, certification status, and whether the device had claimed to be â€œclinically validatedâ€. In total, 1,873 listings from 23 vendor sites were reviewed. Exclusions included non-BP devices, manual/professional-use monitors, inactive links, and duplicates including same model variants, totalling 599 unique BP monitors. Validation status was assessed through six sources: Medaval, StrideBP, ValidateBP, PubMed, Google, and Dabl Educational.

Results: Preliminary analysis of BP monitors on Amazon.co.uk showed that 78.6% claimed validation, but only 40.1% were clinically validated according to recognised protocols, most commonly BIHS and ESH standards. The average price of a BP monitor was 37.4, with 83.3% being upper-arm monitors, 15.4% wrist cuff monitors, and 1.3% wristband-style monitors. No wristband-style monitors were found to be validated. Validated cuff BP devices were more expensive than non-validated devices: median (interquartile range) of 22.5 (19.3-30.7) versus 20.4 (16.5-24.4).

Conclusion: Many online BP monitors lack clinical validation and transparency, highlighting the need for clearer regulation and consumer guidance.

Disclosures: None

OO-09 – Evaluating the Prevalence and Risk Factors for Hypertension in an HIV-positive population in Zimbabwe: The case for integrated screening

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Background: Hypertension is the leading preventable cause of death globally, and sub-Saharan Africa (SSA) has among the highest global disease burden. We investigated hypertension prevalence and associated factors among people living with HIV (PLHIV) in Harare, Zimbabwe, who participated in a cohort study (VAXEF) investigating COVID-19 Vaccine Effectiveness in Adults with Co-Morbidities in Zimbabwe.

Method: VAXEF recruited adults (â‰¥18 years) living with HIV, diabetes, or hypertension from May 2022 to August 2023, attending for care across seven health facilities in Harare. Hypertension was defined as blood pressure â‰¥140/90 mmHg or documented/self-reported diagnosis or treatment. Logistic regression modelling examined the association between sociodemographic, behavioural, and clinical characteristics with hypertension. Factors associated with hypertension in the crude analysis ($p<0.05$) were included in a multivariable model.

Results: In total, 2,899 PLHIV (70.2% female) had blood pressure measurements (median age 43.6 years); median body mass index (BMI) was 24.6 kg/mÂ². The prevalence of hypertension was 41.4%, with 22.0% undiagnosed. Among those previously diagnosed, 51.8% had uncontrolled hypertension. After adjusting for age, socioeconomic quintile, marital status, clinic type, location, diabetes, renal disease, BMI, and antiretroviral therapy duration which were associated with hypertension in the crude analysis, and a priori adjustment for sex, increasing age, diabetes, renal disease, obesity, and overweight vs BMI â‰¤18.5 kg/mÂ², being in the wealthiest three quintiles vs lowest, and being married, divorced, or widowed vs never married ($p<0.05$) were associated with hypertension.

Conclusion: Hypertension is prevalent, often undetected and poorly controlled among Zimbabwean PLHIV despite receiving care for HIV. Integration of systematic screening for hypertension and associated co-morbidities into existing HIV services may be a cost-effective way to achieve holistic care for PLHIV.

Disclosures: None.

OO-10 – Biochemical Detection and Psychosocial Correlates of Antihypertensive Adherence in Hypertension: Initial Observations from a Cross-Sectional Study in Two Irish Tertiary Care Centres

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Background: Non-adherence to antihypertensive drugs (AHDs) is a significant contributor to suboptimal blood pressure control in hypertension, but adherence assessment methods can be unreliable. Chemical adherence testing (CAT) using liquid chromatographyâ€“high resolution mass spectrometry (LC-HRMS) offers an objective approach, but the interpretation of results alongside psychosocial profiling remains underexplored. This study aims to investigate the extent and patterns of antihypertensive non-adherence in a tertiary care population and explore associated psychosocial and demographic characteristics.

Method: In this prospective observational cross-sectional study, 171 participants attending specialist hypertension clinics in two tertiary centres underwent CAT using LC-HRMS of unannounced spot urine samples. Participants also completed validated questionnaires evaluating self-reported adherence (MARS-5), beliefs about medicines (BMQ), health literacy, anxiety and depression (HADS), and perceptions of patient-provider communication.

Results: Initial results are available for 85 participants, of whom 62 (73%) had all prescribed AHDs detected, 16 (19%) had partial detection, and 7 (8%) had none detected, of whom only one participant self-reported not having taken their medications in the previous 24 hours. Among those with partial adherence, 6 cases involved fixed-dose combination therapies in which only one component was detected. Spironolactone was the most frequently absent drug (n=6). The BMQ results show that the most common attitude towards taking antihypertensive drugs was indifference (55%), while 39% of participants were overall accepting. Further analysis will explore relationships between these variables and adherence patterns.

Conclusion: Chemical adherence testing in a consecutively recruited cohort from a specialist hypertension referral centre confirmed significant rates of partial or complete non-adherence (27%). Preliminary findings highlight the need for individualised multidimensional adherence assessment. Future analyses will apply predictive modelling and causal inference techniques to explore for possible relationships between AHD detection with CAT and psychosocial factors. These insights may inform more tailored, patient-centered interventions for improving hypertension management and resource utilisation.

Disclosures: No disclosures

PS-01 – Non-invasive estimates of central blood pressure and other aortic pulse wave analysis indices: Comparison of the CONNEQT Pulse and SphygmoCor CvMS devices.

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Background: Central systolic blood pressure (cSBP) and aortic pulse waveform analysis provide important markers of cardiovascular health and may serve as intermediate cardiovascular outcomes. While applanation tonometry is the non-invasive gold standard for measuring cSBP, its technical complexity limits widespread clinical use. The CONNEQT Pulse is a user-independent, brachial cuff-based oscillometric device designed to simplify central blood pressure assessment at home and in clinic. This study aimed to compare estimates of cSBP and other waveform-derived indices provided by the CONNEQT Pulse device with those obtained from the widely-used, tonometer-based SphygmoCor CvMS system, in a healthy adult population.

Method: Thirty-eight healthy adults (24 females) underwent brachial blood pressure measurement using the CONNEQT Pulse. These readings were used to calibrate the SphygmoCor device, which provided reference central pulse waveform data derived from applanation tonometry. Key derived measures included cSBP, central pulse pressure (cPP), augmentation pressure (AP), augmentation index (AIx), and subendocardial viability ratio (SEVR). Pearsonâ€™s correlation coefficients were used to assess the strength of associations, while agreement was evaluated using Blandâ€“Altman analysis.

Results: The CONNEQT Pulse showed a strong correlation with SphygmoCor for cSBP (r=0.88, P<0.001), with excellent agreement (mean difference = â€“0.07Â±2.26 mmHg, P=0.88) fulfilling the AAMI criteria (ï‚£5.00ï‚±8.00mmHg). Similarly, cPP and SEVR demonstrated strong correlations (r=0.93 and 0.86, respectively; P<0.001) with acceptable agreement (0.57Â±2.47 mmHg, P=0.17; â€“16.97Â±15.84%, P< 0.001). AP and AIx showed moderate-to-strong correlations (r=0.79 and 0.68; P< 0.001) and good agreement (â€“0.60Â±3.22 mmHg, P=0.26; â€“2.53Â±10.24%, P=0.14).

Conclusion: The CONNEQT Pulse provides similar estimates of cSBP and central waveform indices comparable with those obtained by the SphygmoCor CvMS. The ease of use and user independence of the Pulse device support its application in routine clinical assessment of central blood pressure in healthy adults.

Disclosures: GJB's position is funded by Cardiex, Sydney, Australia

PS-02 – Same Diagnosis, Different Consequences: Ethnic Inequities in Hypertensive Organ Damage

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Background: While current hypertension guidelines acknowledge the importance of hypertension-mediated organ damage (HMOD) in clinical decision-making, they provide limited guidance on systematic assessment. The role of ethnicity in shaping the prevalence, severity, and pattern of HMOD remains poorly defined, despite well-documented disparities in hypertension burden and outcomes. In this study, we aimed to investigate the prevalence of HMOD in a dual-ethnic cohort with primary hypertension and explore potential ethnic differences that may inform more equitable and personalised approaches to cardiovascular risk stratification.

Method: Adults with primary hypertension and self-identified ethnicity as either â€œBlackâ€ or â€œWhiteâ€ were consecutively recruited from a specialist hypertension clinic in South-East London. Participants were assessed for HMOD, categorised into three domains: (1) vascular, defined as carotid-femoral pulse wave velocity (cf-PWV) >10 m/s, measured via applanation tonometry; (2) cardiac, defined by the presence of left ventricular hypertrophy (LVH) on 2D transthoracic echocardiography; and (3) renal, defined as microalbuminuria and/or reduced estimated glomerular filtration rate (eGFR).

Results: A total of 287 participants (mean age 46Â±12 years, 58% Black) were included. Overall, 56.1% had evidence of HMOD, with vascular HMOD most common (42.5%). Compared to White individuals, Black participants had significantly higher blood pressure (152Â±17/94Â±15 mmHg vs 146Â±15/91Â±12 mmHg, P<0.05), higher diabetes prevalence (10% vs 2.5%, P<0.001), and lower dyslipidaemia (17% vs 35%, P<0.001). The prevalence of HMOD was significantly higher in Black individuals (67% vs 41%, P<0.001), particularly vascular (49% vs 33%) and cardiac (25% vs 9%, both P<0.01), while renal HMOD rates were similar.

Conclusion: Black individuals with hypertension exhibited a significantly higher burden of HMOD, particularly in vascular and cardiac domains, despite similar age and lower dyslipidaemia rates. These findings highlight the need to address ethnic disparities in HMOD and suggest that guideline-based risk stratification must evolve to incorporate more tailored, equitable assessments of cardiovascular risk.

Disclosures: None

PS-03 – Efficacy of spironolactone in reducing the risk of cardiovascular events and long-term mortality in those with resistant hypertension: findings from the Anglo-Scandinavian Cardiac Outcomes Trial and the ASCOT Legacy cohort.

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Background: Spironolactone is a mineralocorticoid receptor antagonist widely used to treat resistant hypertension (RH). It is known to be effective in reducing blood pressure; however, amongst RH patients, there is little evidence for its efficacy in reducing cardiovascular (CV) morbidity and/or long-term mortality.

Method: Using the Anglo-Scandinavian Cardiac Outcomes Trial (ASCOT) cohort, we identified 8,776 participants with RH, and amongst them, as a part of the ASCOT Legacy cohort, 4,196 participants had long-term follow-up (median follow-up: 13.5 years). All patients were given algorithm-based treatment to a target BP of below 140/90 mmHg. The primary outcome of the in-trial analysis was a composite 3-point MACE (non-fatal [NF] stroke, NF-myocardial infarction, and all-cause mortality), and for the Legacy cohort, all-cause- and CV mortality. Covariate-adjusted, marginal structural survival models were used using an â€˜at-riskâ€™ design.

Results: 13.4% of 8776 RH patients (mean age 65.0 years, 20.4% female) were subsequent spironolactone users. Compared to non-users, spironolactone users experienced a greater drop in SBP from RH diagnosis to censoring (23.34mmHg vs 13.62mmHg). The incidence of the primary outcome was numerically similar in spironolactone users (78 events; 29.3 events per 1000 person-years) than in non-spironolactone users (818 events, 30.2 events per 1000 person-years). After confounder and propensity score adjustment, spironolactone users did not have a significantly lower risk of the 3-point MACE than non-users (HR 0.93 (95% CI â€“0.31 to 0.16, p=0.53) or all-cause mortality (HR 0.88 (95% CI â€“0.40 to 0.16), p=0.39). In the Legacy cohort, spironolactone users had no significantly different risk of all-cause mortality (HR 1.04 (95% CI 0.91-1.20) or long-term CV mortality (HR 1.14 (95% CI 0.91-1.43).

Conclusion: In this analysis, amongst those with RH, the use of spironolactone was not independently associated with a significant reduction in CV morbidity and mortality in the medium term, or with long-term all-cause mortality.

Disclosures: None

PS-04 – Early changes in pulse wave morphology in children with chronic kidney disease

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Background: Chronic kidney disease (CKD) in childhood is associated with adverse changes in cardiovascular structure and function. The aim of this study was to examine differences in pulse wave morphology between children with CKD compared to healthy controls.

Method: Children with CKD and healthy controls who had attended for measurements of applanation tonometry and echocardiography as part of the HOT-KID study were included (n =230, 44% female, mean age 11.1 Â± 3.2years). Central arterial pulse waveforms were obtained through transformation of radial artery waveforms by the SphygmoCor system. Peripheral and central blood pressures (BP), central augmentation index (cAIx) and left ventricular mass index (LVMi) were compared between three groups: children with CKD and estimated glomerular filtration rate (eGFR) â‰¥ 60 ml/min/1.73m2 (CKD Group 1, n = 129), versus children with CKD and eGFR <60 ml/min/1.73m2 (CKD Group 2, n = 45) versus healthy controls (n= 56). Analysis of covariance was used to compare differences between groups, with means Â± SE presented.

Results: Age, heart rate, peripheral BP and central BP were similar between the groups. CKD Group 2 had significantly lower height and weight z-scores than the other groups (P = < 0.001 and P = 0.013 respectively).

When adjusted for height and weight z-scores, cAIx was significantly higher in CKD Groups 1 and 2 compared to healthy controls, 7.38%Â±1.05 and 10.19%Â±1.82 vs 2.75%Â±1.60 respectively, P = 0.008). There was no significant difference in mean LVMi between the three groups (P = 0.063).

Conclusion: Changes in pulse wave morphology can be seen in children with CKD compared to healthy controls, even without significant differences in LVMi. This suggests that pulse wave morphology may be a sensitive marker to detect early changes in ventricular vascular coupling prior to ventricular remodelling in children with CKD.

Disclosures: None

PS-05 – An audit of assessment and management of acute hypertension presentations in same day emergency care

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Background: Severe hypertension frequently presents in acute medical units across the UK. Timely assessment for end-organ damage and appropriate management are vital to avoid complications. This audit assessed how evaluation and treatment aligned with British and Irish Hypertension Society (BIHS) guidance.

Method: A retrospective review included patients who attended ambulatory services with systolic blood pressure (SBP) â‰¥180 mmHg and/or diastolic blood pressure (DBP) â‰¥110 mmHg between December 2021 and February 2022. Only those with an acute hypertensive episode were included. Data from electronic records covered demographics, investigations (ECG, urinalysis, fundoscopy), treatment, and outcomes. Compliance with BIHS basic assessment recommendations was evaluated.

Results: Of 98 patients, 50 (51%) were male, and 46 (47%) identified as White. Chest pain and headache were the most common symptoms. Although 66 (67%) had known hypertension, only 44 (44%) were on antihypertensives at presentation. ECGs were performed in 71 (72%) patients, urine dipsticks in 35 (36%), and fundoscopy in 20 (20%). Only 11 (11%) had an albumin-to-creatinine ratio requested. All the patients had kidney function assessed in the form of urea and electrolytes. Nifedipine was used in 70% of cases to lower blood pressure acutely. However, 51% were discharged without documented referral for ongoing hypertension care. Mean BP dropped from 198/105 mmHg at admission to 165/94 mmHg at discharge.

Conclusion: The audit highlights variability in acute hypertension management, particularly in the use of recommended investigations and discharge planning. Adopting standardised protocols could improve assessment consistency and alignment with BIHS recommendations, ultimately supporting better patient outcomes.

Disclosures: no conflict of interest

PS-06 – Effects And Safety Of Mineralocorticoid Receptor Antagonists For The Treatment Of Hypertension: A Systematic Review And Meta-Analysis.

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Background: The cardiovascular benefit of mineralocorticoid receptor antagonists (MRAs) in hypertension management remains uncertain. This systematic review and meta-analysis aimed to evaluate the efficacy and safety of MRAs in hypertensive populations.

Method: MEDLINE, and EMBASE were searched from database inception through March 14, 2025 for randomized clinical trials comprising of â‰¥ 85% participants with hypertension at baseline. Intervention group consist of all MRAs while comparators were placebo or usual care. Two reviewers independently screened and extracted data; disagreements were resolved by a third. Pooled estimates were calculated using random-effects and inverse variance models.

The primary outcome was all-cause mortality. Safety outcomes were episodes of hyperkalaemia, gynaecomastia, and adverse or serious adverse events. PROSPERO Registration Number CRD420250601811.

Results: Seventeen randomised clinical trials were eligible for inclusion (25 498 participants randomised), of which 4 were non-steroidal MRAs in the intervention arm. The mean (Â±SD) age of trial participants was 64.1 (Â±5.3) years and 43.3% were women. The mean systolic blood pressure at baseline was 134.8 (Â±9.0) mmHg. The median follow-up, 12 months (IQR: 9-32).

Use of MRAs compared with control was significantly associated with a reduced risk of all-cause mortality; odds ratio [OR], 0.91 [95% CI, 0.84-0.99]; absolute risk reduction, 0.88% [95% CI, 0.1%-1.7%]; I2 = 0.0%. The fragility index for a meta-analysis for all-cause mortality was 13 and the fragility quotient was 0.1%. Subgroup analysis of MRA classes compared to control for all-cause mortality were, non-steroidal MRAs; OR 0.91 [95% CI, 0.83-0.99] and steroidal MRAs; OR 1.16 [95% CI, 0.70-1.92] (p-interaction = 0.37). Gynaecomastia events in the non-steroidal MRAs group, OR 0.74 [95% CI, 0.29-1.89], while in the steroidal MRAs group, OR 3.82 [95% CI, 1.62-8.98] (p-interaction = 0.00019).

Conclusion: Among hypertensive populations, MRA use was significantly associated with a lower risk of all-cause mortality. Safety outcomes favoured non-steroidal MRAs.

Disclosures: This research is part supported by the Health Research Board (Ireland) and the HSC Public Health Agency (Grant number ESI-2021-001) through Evidence Synthesis Ireland/Cochrane Ireland. Dr. J.W. Teh is a recipient of the University of Galway Hardiman PhD Research Scholarship. Dr J.W. Teh reports to have received honoraria from Boerhinger Ingelheim, and travel grant for attendance at European Renal Association Annual Meeting 2024 from Bayer through the Irish Nephrology Society.

PS-07 – Perception, knowledge and attitudes of central Brighton residents towards hypertension

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Background: In Brighton, detection and management of hypertension is suboptimal in comparison to national trends, increasing the risk of cardiovascular events. This study aimed to gain a perspective from Brighton residents which might inform future targeted intervention development for quality improvement. Methods: a) Cross-sectional survey utilising an Adapted Hypertension Knowledge Test and validated Health Literacy questions. Conducted in-person (library, mosque, train station, community centre), disseminated online (13 emails, 2 WhatsApp chains, Brighton subreddit) and leafleting (18 high street locations). b) Opt-in follow up one-one semi-structured interviews to further explore understanding. Descriptive statistics and thematic analysis were performed. Results: 84 survey responses and 10 interviews were completed. 51% (n=43) of participants had the knowledge that hypertension could be asymptomatic. Only 5 (6%) were able to correctly state a hypertensive BP reading, despite 36% (n=30) indicating that they knew the correct value. Least informed were 18-24 and 45-54 year-olds. Hypertension was perceived to be potentially life- threatening by the majority (68%; 57). Similarly, a majority identified the following to reduce hypertension risk: exercising (71%; 60); losing weight (65%; 55); reducing salt consumption (65%; 55); alcohol reduction (60%; 50); enough fruits and vegetables (55%; 46). Regarding medication, 20% (n =17) believed that taking it long-term would lead to harm; only 12% (n=10) understood that they might need to take it for life. Chronicity of hypertension was understood by 44% (n=37). Participants identified complications of hypertension as: heart attack (68%; 57) or stroke (65%; 55). Qualitative analysis identified 4 themes: risk perception, role of medication, preventive measures, and service accessibility, which were underpinned by a lack of understanding of why. Conclusions: This study indicates gaps in Brighton residentsâ€™ understanding of hypertension and provides insights for enhancing the public understanding of hypertension as well as system-level factors which may contribute to sub-optimal detection and control.

Disclosures: None.

P-01 – Effect of cuff compliance on oscillometric blood pressure measurements

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Background: Oscillometric blood pressures (BPs) are standard for clinic and home measurement. Cuffs differences are a potential source of inaccuracy [1]. Because cuffs inflate asymmetrically, we investigated the biomechanical effects of cuff compliance variations on oscillometric signals used to measure BP.

Method: A human upper arm and cuff were modelled in ABAQUSÂ® 2024. Oscillometric waveforms were generated from simulated changes in arterial lumen area during deflation, using pre-published arm geometry [2] and brachial artery hyperelastic properties [3]. Cuffs with two selected cuff compliances (Ec1 = 300 MPa and Ec2 = 154 MPa) were inflated to 150 mmHg and deflated linearly at 5mmHg/s with arterial pressure waveform maintained at 110/70 mmHg.

Results: The non-uniform buckling of the inner cuff layer and pressure transmission changes resulted in different oscillation patterns. The maximum oscillometric envelope amplitude shifts from 94.5 mmHg to 82.5 mmHg with decreased compliance from Ec1 to Ec2. The SBP/DBP constant ratios for Ec1 and Ec2 are 0.89/0.67 and 0.73/0.83 respectively, indicating potential inconsistencies in oscillometric BP measurements due to cuff compliance variation.

Conclusion: Variations in cuff compliance alter the buckling pattern of the cuff around the arm causing changes in pressure transmission through the arm, which in turn alters oscillometric waveforms. If the waveforms are processed using a constant-ratio algorithm, estimated differences of up to 17% in SBP and 19% in DBP can occur as cuff compliance decreases from 300 MPa to 154 MPa. Cuffs of different compliance should not be substituted as sometimes occurs in clinical settings. This underscores the need to standardise BP cuffs not only based on size but also on their compliance.

Disclosures: None

P-02 – NOT AVAILABLE

P-03 – Resistant Hypertension in middle age: uncovering a missed diagnosis

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Background: 59-year-old man referred to specialist hypertension clinic with 12-year history of resistant hypertension. He had mild symptoms of progressive fatigue, exertional dyspnoea, and intermittent chest discomfort ongoing for two years, investigated as possible angina in the cardiology clinic. At the time of referral, he was taking maximum-tolerated doses of four anti-hypertensive medications daily (irbesartan, hydrochlorothiazide, spironolactone and amlodipine) with a clinic BP equal in both arms (167/77mmHg). Clinical examination identified a systolic heart murmur. Compliance screen confirmed adherence. Secondary screen revealed CKD stage 3A (Cre 139umol/L/eGFR 48), elevated renin (>500) and aldosterone (471 pmol/L), normal plasma metanephrines and thyroid function. Echocardiogram showed normal systolic function with no evidence of LVH. In an MDT, a CT coronary angiogram and CT chest abdomen pelvis performed two years previously were reviewed. A discrete coarctation of the aorta distal to the left subclavian artery was identified, alongside an incidental left adrenal nodule, neither of which had been mentioned in the previous imaging reports. Vasculitis screen was negative. He was referred for surgical repair of coarctation with an interposition graft. Following a successful procedure, BP improved significantly (132/67 mmHg managed with amlodipine 5 mg only), alongside resolution in symptoms and renal dysfunction.

This case highlights that structural vascular causes may be missed in adults with longstanding resistant hypertension. A high index of suspicion is needed to diagnose congenital causes such as coarctation of aorta, even in older patients and dedicated vascular imaging should be considered. The case also illustrates the crucial role of MDT evaluation in patients with resistant hypertension.

Disclosures: None

P-04 – Evaluating the Impact of Hypertension and Diabetes on Stress Echocardiography and CT Coronary Angiography Outcomes

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Background: Coronary artery disease (CAD) can lead to ischaemic heart disease (IHD). CAD is a leading cause of global mortality associated with various risk factors such as hypertension (HTN) and type 2 diabetes mellitus (T2DM). Stress echocardiography (SE) detects myocardial ischaemia whilst CCTA (coronary computed tomography angiography) detects structural abnormalities associated with CAD.

Method: A retrospective study was conducted, involving 270 patients who underwent both a SE and CCTA between December 2023 and January 2025. Electronic health records were reviewed, and patient risk factors, SE, and CCTA outcomes were recorded. SE outcomes were reported as positive (n=36) or negative (n=234), whilst CCTA outcomes were based on CAD severity (absent, mild, moderate, and severe).

Results: 219 (81.1%) patients had a positive CCTA. HTN was present in 184 patients, emerging as the most prevalent risk factor. T2DM and diabetic hypertension were reported in 38% and 33% of the patient population. On univariate analysis, HTN, T2DM, and diabetic hypertension were significant predictors of a positive CCTA (P=0.045, P=0.036, and P=0.028, respectively). These variables did not show a significant association with SE outcomes. Analysis of SE and CCTA outcomes within hypertensive, diabetic, and diabetic hypertensive cohorts revealed no statistically significant correlations (P=0.771, P=0.456, and P=0.453). Furthermore, multivariate analysis showed no significant associations between these conditions and SE and CCTA outcomes. Notably, diabetic hypertension was linked with a significantly higher probability of an absent CCTA (OR=7.25), whereas T2DM was associated with a higher likelihood of a positive SE (OR=3.58). However, both findings did not reach significance.

Conclusion: Despite being significant predictors of positive CCTA on univariate analysis, the absence of significance on multivariate analysis suggests that they may not independently influence CCTA outcomes when other factors are considered.

Disclosures: None

P-05 – Screening for Hypertension in the INpatient Environment (SHINE): A prospective diagnostic accuracy study among adult hospital patients

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Background: There are recent calls for universal facility-based screening for hypertension among all attending patients. The hospital inpatient setting, where blood pressure (BP) is measured routinely and repeatedly, presents an opportunity. However, hypertension guidelines lack diagnostic in-hospital BP thresholds. We investigated the diagnostic performance of current clinic BP thresholds in the inpatient setting.

Method: A prospective diagnostic accuracy study. We approached hospital inpatients at three UK centres without a previous hypertension diagnosis. The diagnostic performance of a mean daytime in-hospital BP of â‰¥135mmHg systolic or â‰¥85mmHg diastolic (index test) for predicting isolated day-time community hypertension alone, and either daytime or night-time hypertension was assessed using sensitivity, specificity, positive predictive value (PPV) and negative predictive value (NPV). Participants received 24-hour ambulatory BP monitoring (ABPM) 4-26 weeks post-discharge, as the reference test for community hypertension, with diagnostic thresholds of an average daytime BP of 135mmHg systolic and 85mmHg diastolic or average night-time BP of 120mmHg systolic and 70mmHg diastolic.

Results: Of 206 participants who completed ABPM, 91 (44%) had daytime community hypertension. Of 107 participants with raised in-hospital daytime BP, 59 (55%) had daytime community hypertension. Assessing the performance of the index test for detecting daytime community hypertension, sensitivity was 65% (59/91, 54%-75%) and specificity 58% (67/115, 49%-67%). The PPV was 55% (59/107, 45%-65%) and NPV 68% (67/99, 58%-77%), respectively. Assessing the performance of the index test for detecting daytime or night-time community hypertension, sensitivity was 62% (84/135, 53%-70%) and specificity 68% (48/71, 55%-78%). The PPV was 79% (84/107, 70%-86%) and NPV 48% (48/99, 38%-59%).

Conclusion: Undiagnosed hypertension is common in hospitalised patients, particularly those with raised in-hospital BP. With 16 million hospital admissions in England alone each year, identifying those at risk in hospital and arranging community ABPM post-discharge could help identify a proportion of the population with previously undiagnosed hypertension.

Disclosures: None to declare

P-06 – The future of specialist Hypertension services in the UK. We are not readying ourselves.

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Background: Hypertension is an extremely prevalent condition affecting nearly a third of UK adults. It is estimated that 12.8% of worldwide mortality is caused by hypertension. The disease affects all ages, all genders and does not differentiate for deprivation, with incidence grossly unchanged in 20 years and numbers of people potentially undiagnosed ever-rising. Treating blood pressure costs an estimated 2.1billion to the NHS every year. Blood pressure control is not optimised in around 3 million people, putting them at an even greater risk.

In the UK, >90% of hypertension is managed in Primary Care. Yet for those who require secondary care input, there is not a specialist register for doctors who manage hypertension. There is a mismatch across the nations with regards to access to secondary care for management of complex hypertension cases. Heterogeneity exists in terms of local specialist services, referral pathways, and specialties overseeing care.

There are also critical issues regarding training in the management of hypertension in secondary care.

We carried out two surveys. The first was in general practice, to assess accessibility to a local specialist hypertension clinic, the clinical reasons for referral, and the specialty to which the patient would be referred. Cardiology was by far and away the leading specialty for referrals.

A second survey, of hypertension training among cardiology trainees was undertaken.

The emerging data is that we are facing a major deficit in the specialist management of hypertension if the trainees of today are not ready to provide the required expertise and oversight for the complex cases of tomorrow.

The study will be completed and full results will be available for the BIHS Annual Scientific Meeting in September.

Disclosures: Nil

P-07 – Service Evaluation of Blood Pressure Measurement Accuracy and Practice on a Same Day Emergency Care Unit (SDEC)

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Background: Two previous in-patient audits [1] [2] have found poor adherence to BP measurement guidelines, often using non-validated monitors [1, 3]. How these factors affect blood pressure accuracy in a real-world setting is little known.

Method: Sitting BP Measurements were made on 100 SDEC patients by a single researcher comparing readings from the ward automated monitor (Fukuda Denshi Dynascope DS-8100) with simultaneous auscultation using a Littmann 3200 Electronic Stethoscope and a non-mercury sphygmomanometer (Accoson Greenlight 300) connected via a Y-connector to the cuff inflation tube following NICE office BP measurement standards with a matching arm-size-appropriate cuff, arm supported and in silence.

91 of these readings followed within 20 minutes of a standard ward BP measurement where cuff-size used was noted. 67 prior ward readings had been observed discretely, without comment, also noting arm position and if the patient talked during the measurement.

Results: Directly compared automated SBP was 4.24 mmHg (CI: 3.62 to 4.89) greater and DBP 1.29 mmHg (CI: -1.58 to -1.00) less than simultaneous auscultatory BPs. Automated ward SBP was 10.8 mmHg (CI: 9.25 to 12.37) and DBP 8.85 mmHg (CI: 7.66 to 10.03) higher than automated repeats with the correct cuff, arm position and in silence. Arm position was incorrect in 57%, cuff-size incorrect in 37% and 49% had talked during measurement. Average SBP when talking was 7.63mmHg (CI: 1.09 to 14.16) higher than if silent.

Conclusion: Inadequate ward BP measurement technique has a significant impact on BP readings and thus on accurate risk assessment including the NEWS score. There needs to be improved BP measurement with specific guidance for inpatient measurement.

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Disclosures: No conflict of interest. This service was formally registered and approved by the hospital audit department.

P-08 – Acute Severe Hypertension in the Emergency and Acute Medicine Departments: Developing a Same Day Emergency Care (SDEC) Pathway

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Background: Hypertension affects approximately 1 in 3 adults in England; however 50% are either untreated or uncontrolled. The numbers of those presenting to hospital with hypertension is increasing and there is great variability in management.

An initial emergency department (ED) audit found that amongst patients whose primary presenting issue was BP>160/90mmHg (excluding hypertensive emergency), less than half were screened for hypertensive mediated organ damage (HMOD) or received treatment for raised BP and 9.2% were admitted to hospital. We reasoned there was an unmet clinical need in appropriate follow up for patients with acute severe hypertension who required prompt investigation and review.

Method: In collaboration between the acute medicine and clinical pharmacology (CPT) departments we developed an SDEC hypertension pathway. Any patient presenting to acute services with either BP>180/110mmHg or BP>160/100mmHg with new HMOD were eligible for referral. As part of a weekly â€˜one-stopâ€™ service patients were reviewed by a CPT SpR, embedded in SDEC, to evaluate for HMOD, secondary causes of hypertension and to develop a treatment regimen.

Results: Data collected from the first 50 patients seen in the SDEC hypertension pathway revealed 67% of patients had additional HMOD or a secondary cause of hypertension identified. A comparative sample of ED patientsâ€™ pre- pathway showed there was an approximately two times greater reduction in BP on remote follow-up compared to standard care with some early data suggesting that fewer patients re-attended ED with a hypertension-related presentation or cardiovascular complication in the post- compared to the pre-SDEC cohort.

Conclusion: These preliminary findings demonstrate the positive impact of having hypertension specialists working in conjunction with acute services to provide early intervention for patients with acute severe hypertension as a bridge to primary care. We plan to explore how remote monitoring may be used in the future care of this patient cohort.

Disclosures: Nil

P-09 – The comparative accuracy of two validated home blood pressure monitors

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Background: Oscillometric home blood pressure monitors (HBPMs) are recommended for hypertension diagnosis and follow-up. Few direct comparisons of validated blood pressure monitors exist. We assessed the accuracy of two popular monitors against each other and against simultaneous auscultatory BP.

Method: The BPs of 100 healthy volunteers (56 male, 44 female, mean age 21.7 years, range 18-41) were measured using two BIHS validated monitors (A&D UA-767 and Omron Complete) in randomised order. Three NICE standard sitting measurements per monitor were made at one-minute intervals with simultaneous auscultation using an Accoson Greenlight 300 sphygmomanometer connected via a three-way tap to the cuff inflation tube. Appropriately sized cuffs for arm circumference were used â€“ the A&D standard (22-32 cm; n = 86) or large (31-45 cm; n = 14) cuff and the Omron Easy Cuff (22-42 cm). Paired t-tests and Bland-Altman plots evaluated differences, with subgroup analysis for cuff size effects.

Results: Overall, A&D and Omron SBPs were higher than auscultation by 3.9 mmHg (95% CI: 3.1, 4.8, P<0.001) and 5.4 mmHg (4.4, 6.4, P<0.001) respectively. DBPs were not different. A&D standard cuff SBPs were 4.5 mmHg (3.7, 5.3, P<0.001) higher than by auscultation, and 1.9 mmHg (-2.9, -0.9, P<0.001) lower than Omron. A&D standard cuff DBPs were 2.8 mmHg (-3.6, -2.1, P<0.001) lower than Omron. A&D large cuff participants had BPs similar to auscultation but lower than Omron SBPs by 17.0 mmHg (-20.9, -13.1, p<0.001) and DBPs by 5.7 mmHg (-7.4, -4.0, p<0.001) whilst Omron SBPs were 8.0 mmHg (4.6, 11.5, p<0.001) higher and DBP 3.7 mmHg (-5.8, -1.5) lower than by auscultation.

Conclusion: Clinically validated HBPMs exhibit significant SBP discrepancies between monitors and with auscultation, with cuff size contributing to variability. Stricter validation standards are needed to ensure reliable hypertension diagnosis and management.

Disclosures: -

P-10 – Impact of a one-off text message based nudge on home blood pressure monitoring

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Background: Home blood pressure monitoring (HBPM) is recommended to guide long term management of patients with hypertension. However, the adherence to HPBM amongst patients with hypertension is known to be suboptimal. Anecdotal experience in our referral center also aligns with this data.

The use of text messages as a 'nudge intervention' has been shown to improve positive healthcare related behaviour in other disease areas.

Although there are some data that show an improvement in hypertension self management with bespoke apps, remote clinician contact, or bidirectional communication systems; these interventions are resource intensive.

To our knowledge, there are no data specifically looking at adherence to HBPM with a one-off simple nudge intervention.

Method: We introduced a text message reminder to patients to encourage HBPM prior to the clinic appointment. We collected data on the association of this text message and adherence to HBPM when subsequently seen in the clinic. Patient involvement was sought when designing the wording of the text message.

Results: Demographics: Total number of patients - 43, mean age - 50.42 (SD 16.4), Female - 46.5%, Index of multiple deprivation - 1 to 3 (most deprived) 33%; 4 to 7 33%; 8 to 10 (least deprived) 33%, mean duration of hypertension diagnosis 8.21 years (SD 8.77, range 0-29), family history of hypertension 60%, mean number of antihypertensives 2.74.

Of the patients who did not receive the text message 30.10% (8/21) had done HBPM.

Amongst patients who received the text message, 68.20% (15/22) had done HBPM.

Conclusion: A simple text based one-off nudge reminder showed a large intervention effect of improving adherence to HBPM prior to a specialist hypertension clinic appointment in the UK.

This can be easily adopted by other centers using the existing patient communication infrastructure at minimal/negligible cost.

Disclosures: No conflict of interest

P-11 – Effectiveness and patient satisfaction of a pharmacist-led secondary care hypertension clinic in East Kent Hospitals (EKH)

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Background: Secondary-care hypertension clinics in the UK are largely provided by doctors. Existing literature has demonstrated benefits of community pharmacist-led hypertension interventions, but little is known regarding the pharmacistâ€™s role in secondary-care settings.

EKH hypertension clinic referral criteria align to NICE hypertension guidelines and BIHS position statements. This service evaluation compares efficacy, patient satisfaction and cost-effectiveness provided by an advanced prescribing pharmacist (P) vs. a consultant nephrologist (N).

Method: Retrospective extraction of demographic, administrative and clinical data for new referrals seen during 2023 (n=134). Patients who did not attend follow-up appointments, died or switched clinicians were excluded from effectiveness analysis. Separately we distributed patient feedback surveys from Oct 2024 through June 2025. Data were collated and analysed using Microsoft Excel, and results are presented as descriptive statistics.

Results: Referral for investigation (aged <40 or other reason, n=80): P more likely to organise endocrine tests (99.3% vs. 75.7% for N), and imaging (42.2% vs. 35.1% for N). Secondary cause identification was 2.2% vs. 5.4% for P and N respectively.

Referral for uncontrolled, resistant or drug-intolerant hypertension and followed up to discharge (n=35): mean clinic BP from baseline to discharge -11.4/6.4 mmHg (P) vs. -6.4/2.8 mmHg (N); average home BP -16.8/5.0 mmHg (P) vs. -20.1/7.0 mmHg (N). BP control at discharge was 80% (P) and 88% (N). The average number of antihypertensive medications prescribed remained unchanged from referral to discharge (3.2 for P, 2.8 for N) with treatment intensity score changes of -0.2 for P and +0.05 for N.

Median number of appointments and staff costs per completed episode were 3 and 267.61 for P (n=52) vs. 2 and 339.70 for N (n=52).

Conclusion: Pharmacist-delivered specialist hypertension clinics demonstrate comparable efficacy and patient satisfaction to consultant-delivered services while offering greater cost-effectiveness. These findings support integration of prescribing pharmacists into secondary-care hypertension services.

Disclosures: None

P-12 – A 12-month Service Evaluation of a South East London Hypertension Service

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Background: We performed a 12-month service evaluation to define referrals to our hypertension service and identify major areas for improvement. We assessed the effectiveness of local referral criteria suggesting consideration of referral of patients <40 years of age.

Method: Patients who were scheduled to attend our hypertension clinic between October 2023 and December 2024 were identified. Patient data were extracted from electronic health records.

Results: 215 patients were referred into our clinic from October 2023 to October 2024, 188 (87.4%) attended and 27 (12.6%) did not attend (DNA) any appointments. Of attending patients, 107 (56.9%) were female, 87 (46.3%) were Black-African or Caribbean, 41 (21.7%) White, 11 (5.9%) Asian, 11 (5.9%) mixed, 11 (5.9%) other and 27 (14.4%) unstated ethnicity. 14/20 (70%) of DNA patients with stated ethnicity were of Black African or Caribbean ethnicity. 23 (12.2%) were diagnosed with secondary hypertension, 21 primary hyperaldosteronism, 2 renal artery stenosis. Those with LVH had higher systolic blood pressure (157mmHg vs 143mmHg; p=0.003). Those with secondary hypertension had higher systolic blood pressure (168mmHg vs 147mmHg; p=0.001).

85% of attending patients met referral criteria. 79/188 (44.1%) were <40 years. Median blood pressure in this group was 138/93 mmHg; median BMI was 32.3 (IQR 27.6-38.7). All patients aged <40 had eGFR >60mls/min and 15 (19.2%) had left ventricular hypertrophy (LVH) on echocardiogram.

Conclusion: A large proportion of patients <40 years of age met referral criteria, though may be better initially managed in primary care with holistic lifestyle interventions addressing metabolic risk factors, including BMI. More explicit referral guidelines in this group may be warranted. Given the association between Black African and Caribbean ethnicity and poor outcomes in hypertension, the disproportionate number of patients that DNA represents an area for future research and service improvement.

Disclosures: None

P-13 – Identifying Obstructive Sleep Apnoea (OSA) in the Hypertension clinic: A Missed Opportunity in Primary Care?

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Background: Obstructive Sleep Apnoea (OSA) is an important secondary cause of both early onset and resistant hypertension. It is also an independent risk factor for coronary artery disease, stroke and pulmonary hypertension. It is estimated that up to 50% of patients with OSA have hypertension, and conversely, OSA may be present in up to 30-40% of patients with resistant hypertension. This audit aimed to evaluate the diagnostic yield of OSA among hypertensive patients referred to secondary care and highlight the importance of early screening in primary care.

Method: We conducted a retrospective audit at Sunderland Royal Hospital looking at all patients referred to the specialist hypertension clinic between 22nd March 2022 and 8th March 2024. We collected data on patient demographics, BMI, standardised blood pressure at referral, Epworth Sleepiness Scales (ESS) and clinical outcomes.

Results: In the study period, 263 patients were seen in the specialist hypertension clinic and 42 patients (16%) were referred for sleep studies after screening. 6 patients did not attend for overnight oximetry. Among those referred who attended, 17 (47%) were diagnosed with OSA and 14 patients (38%) were started on CPAP. 12 positive cases (70%) were in patients aged 25-45. All 17 patients with a confirmed diagnosis of OSA had a BMI >30. 12 patients (70%) had uncontrolled hypertension defined as standardised clinic BP >140/90 at presentation.

Conclusion: This audit supports a strong association between hypertension and undiagnosed OSA in younger patients with obesity. Earlier screening with a validated screening questionnaire (such as ESS or STOP-BANG) in patients with a high BMI and clinical symptoms will help identify high risk patients and prompt referral for further investigation and treatment of OSA. These findings support the development of targeted screening protocols for OSA in hypertensive populations and tailored referral pathways in primary care.

Disclosures: None

P-14 – Obesity should not discourage Secondary Hypertension Screening in Early Onset and Resistant Hypertension.

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Background: . Obesity is strongly associated with primary hypertension, and its prevalence is increasing. A significant number of people referred to our tertiary service for secondary hypertension (SH) screening are obese, and it is unclear how obesity is associated with SH. We studied our cohort to investigate whether obesity impacts the risk of SH.

Method: . We conducted a cross-sectional retrospective analysis of the cohort of patients referred to our tertiary Hypertension Clinic in London for SH screening in early onset and resistant hypertension between January-2016 and January-2024. We excluded patients with incomplete screening. Odds ratios (OR) were adopted as measure of association. Appropriate statistics were adopted for data distribution and results expressed with 95% confidence intervals. We studied the association between clinical diagnosis of SH and obesity, and their association with clinical and biochemical results in univariate and multivariate models.

Results: . 679 out of 1020 patients completed secondary screening investigations for analysis. 43.5% were female, mean age at hypertension onset was 35.1 years (34.2-36.0), mean eGFR was 94.9 ml/min/1.73m2 (93.3-96.5), mean BMI was 30.1 (29.6-30.5). A specific cause of SH was identified in 185 (27.2%): 67 (9.9%) with endocrine disorders, 59 (8.7%) with renal disease, 29 (4.3%) with renal artery stenosis, 30 (4.4%) with other causes including drug-induced and monogenic forms. No association was found between obesity and SH (27.4% in non-obese vs 27.02% in obese, crude OR 0.98, 0.70-1.38, p=0.910). In a multivariable logistic model, only potassium (OR 0.65, 0.43-0.96, p=0.030) and eGFR (OR 0.99, 0.98-1.00, p=0.021) showed a significant association with SH. No association was found between obesity and SH (OR 0.85, 0.59-1.23, p=0.394) after controlling for sex, familiarity, ethnicity, age at onset, potassium and eGFR.

Conclusion: . Obesity does not appear to be associated with a different risk of SH in patients with early onset or resistant hypertension.

Disclosures: none

P-15 – Familial Hyperkalaemic Hypertension: Clinical Presentation from a Combined Tubular and Hypertension Specialist Cohort in London.

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Background: s. Familial Hyperkalaemic Hypertension (FHHt, Pseudo-hypoaldosteronism type II, Gordon Syndrome) is caused by increased activity of the sodium-chloride co-transporter in the distal convoluted tubule. Clinical features include hypertension, low renin with normal-to-high aldosterone, hyperkalaemia, hyperchloremic metabolic acidosis, and hypercalciuria - all reversed by thiazide diuretics. Despite being a well-recognised form of monogenic hypertension, timely diagnosis remains elusive. This report highlights the clinical features at presentation for a FHHt cohort from a single London center, aiming to boost awareness among hypertension specialists.

Method: . We retrospectively analysed the presenting clinical features of 12 cases with genetically confirmed FHHt managed within our Tubular and Hypertension services.

Results: . Nine index cases were identified. Median age at diagnosis was 32 years, with five (55.6%) being male. The genetic mutations were found in KLHL3 (7), WNK4 (4), and WNK1 (1). Hyperkalaemia in normal renal function was the key feature at presentation in six (66.7%) patients with a median potassium of 6 (IQR 5-6.1) mmol/L. Only four (44.4%) cases were hypertensive at presentation. Only five (55.6%) had a family history of hypertension. Three patients were already on a thiazide diuretic prior to clinical suspicion of FHHt, which would have masked most clinical features. Median plasma renin activity and aldosterone level were 0.6 nmol/mL/h (IQR 0.50-0.85) and 330 pmol/L (IQR 117.5-510.0), respectively.

Three additional cases were identified among indexesâ€™ family members, two of which were female. Considered together, nine out of 12 cases (75.0%) were hyperkalemic (median 5.6 mmol/L, IQR 5.2-6.1) while only five (42.0%) were hypertensive.

Conclusion: . Unexplained hyperkalaemia, as opposed to hypertension, was the most common presenting feature in our FHHt cohort. Common use of thiazide diuretics, inconsistent hyperkalaemia, and lack of clear family history may complicate the diagnosis. This requires a high index of suspicion and consideration for first-line tubular function tests in unexplained hypertension.

Disclosures: none

P-16 – Postural Hypo Tension and Associations with physical activity in UK biobank

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Background:

Method: We used UK Biobank derived accelerometery data detailing the average time participants spent sleeping, sedentary, doing light activity, or moderate & vigorous activity (MVPA). We ascertained participants with a PH diagnosis prior to the accelerometer wear period and assessed the associations between PH and physical activity using generalised linear models, compared to controls without PH or recorded hypotension.

Results: 96652 UK biobank participants had accelerometer data of sufficient quality. Compared to participants without PH or recorded hypotension (n=95411), those with PH (n=366) spent less minutes per day at light ($\hat{I}^2$=-30.36, 95%CI, -40.48, -20.24; p<0.001) and MVPA intensities ($\hat{I}^2$=-7.48, 95%CI, -11.04, -3.92;p<0.001), as well as more time spent sedentary ($\hat{I}^2$=17.14, 95%CI, 5.94, 28.35; p<0.001) and sleeping ($\hat{I}^2$=20.70, 95%CI, 12.98, 28.40; p<0.001). In addition, those with PH had shorter bouts of activity ($\hat{I}^2$=-0.38, 95%CI, -0.54, -0.21; p<0.001) and longer sedentary bouts ($\hat{I}^2$=1.68, 95%CI, 1.11, 2.25; p<0.001).

Conclusion: We found that PH was associated with reduced daily activity overall, shorter active bouts and increased sedentary time. More research is required to ascertain mechanisms of reduced activity, patient experience, and associations with adverse outcomes including falls and fractures.

Disclosures: Authors don't report any conflict of interest

P-17 – Attitudes and Perception of Artificial Intelligence in Hypertension: A Cross-sectional Survey among Patients and Clinicians

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Background: Artificial intelligence clinical decision-support systems (AI-CDSS) show promise for improving blood pressure control, but limited data exist on clinicians' and patients' perceptions of such tools. This study explores both groups' views on the use of AI-CDSS in hypertension management.

Method: We conducted a cross-sectional survey (Aug 2024â€“Mar 2025) of primary and secondary care clinicians in Ireland, distributed through national Nephrology, Hypertension, and General Practice Societies. A parallel patient survey was conducted via hypertension clinics and community networks. Surveys were designed using the Value-Based Adoption Model (perceived risks, benefits and intention to use) and refined through a Public and Patient Involvement (PPI) event. Responses were collected using a 5-point Likert scale.

Results: 201 clinicians and 304 patients with hypertension completed the surveys. Most clinicians, 84 (42%), were aged 30â€“39 and most patients, 192 (64%), were â‰¥60 years. Basic AI understanding was reported by 164 clinicians (83%) and 206 patients (67%). A high proportion of patients, 175 (58%) had tried two or more antihypertensive medications.

Willingness to use AI-CDSS was high: 138 clinicians (71%) said they would use it, and 223 patients (75%) were comfortable with their doctor using it. 121 clinicians (80%) and 204 patients (68%) believed AI could support better antihypertensive medication selection. The leading concern among clinicians was legal liability: 148 (77%) were worried about responsibility if AI recommendations caused harm. For patients, it was lack of regulation, cited by 172 (60%). The most unanimous response was to potential decision conflict: 290 patients (97%) said they would follow their doctorâ€™s recommendation over AI’s.

Conclusion: Clinicians and patients expressed strong openness to AI-CDSS use in hypertension care. Patients emphasised the need for stronger regulation, while clinicians highlighted medico-legal concerns. Safe implementation of AI-CDSS for hypertension should prioritise regulation, legal clarity, and clinician authority to ensure AI supports not replaces clinical judgment.

Disclosures: None

P-18 – Evaluating the associations of endothelin-1 with novel biomarkers of the renin-angiotensin-aldosterone system in black and white hypertensives.

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Background: Black ethnic individuals experience higher rates of hypertension and associated cardiovascular complications than white individuals. Ethnic differences in the renin-angiotensin-aldosterone system (RAAS), including lower renin and aldosterone levels in black populations, may contribute to this disparity. Endothelin-1 (ET-1) may interact with RAAS pathways differently by ethnicity. This study investigates ethnic differences in the relationship between RAAS peptides and ET-1 in both hypertensive (HT) and normotensive (NT) black and white individuals.

Method and Results:

A total of 62 HT participants (32 white; 45 male) and 27 NT controls (12 white; 20 male) were included. ET-1 levels did not differ significantly between Black and white HTs (median 1.41 vs. 1.36 pg/mL; $P = 0.71$) but were significantly higher in Black NTs compared to white NTs (1.37 vs. 0.79 pg/mL; $P = 0.008$). Black HTs had significantly lower renin levels than white HTs ($P < 0.001$). However, for a given renin level, black HTs exhibited higher aldosterone, reflected in a significantly elevated aldosterone-renin ratio (ARR; $P < 0.001$).

In black HTs, ET-1 positively correlated with renin, 24-hour urinary sodium-to-potassium ratio, angiotensin (Ang) I, Ang III, and Ang-(1-5). Inverse associations were seen with aldosterone, ARR, and aldosterone Ang II ratio. No significant associations between ET-1 and RAAS peptides were observed in white HTs or in NT groups of either ethnicity.

Conclusion: This study reveals ethnic differences in the interaction between ET-1 and RAAS peptides in HT individuals. The ET-1 associations in black HTs may suggest altered ET-1 sensitivity or downstream signalling in this group, potentially contributing to hypertension pathophysiology. These findings emphasise the need for mechanistic studies and larger, prospective studies are warranted to validate these observations and explore their clinical implications.

Disclosures: British Heart Foundation and Medical Research Council

P-19 – Self-Reported Additional Sodium Intake and Urinary Sodium in Young Hypertensives: An Observational Study

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Background: Although secondary causes of hypertension are more common in individuals under the age of 40, most cases remain attributable to non-secondary causes. The impact of lifestyle factors on hypertension in this population remains underexplored, and in this study, we aimed to explore if reported added dietary salt intake aligns with recommended limits.

Method: A retrospective observational study was conducted on 95 individuals with young-onset hypertension (diagnosed â‰¤40 years) within a specialist centre between 2022 and 2024. Participants were separated into cohorts: (1) those who reported adding salt to food, and (2) those who did not. Baseline characteristics were compared between cohorts. Median 24-hour urinary sodium levels and interquartile ranges were calculated, correcting for 90% expected renal excretion of consumed NaCl. Median predicted NaCl intake was compared against the recommended threshold of â‰¤6 g/day and between cohorts. To validate sample completeness, urinary creatinine results were compared with expected values (14 mg/kg/day for males and 11 mg/kg/day for females). All P-values were false discovery rate corrected.

Results: In individuals who reported adding salt to food, median predicted intake was 11.59 g/day (8.03â€“15.59) which was above recommended limits ($P < 0.001$); in those reporting no added salt to food, median predicted intake was 8.94 g/day (5.92-11.80), which was above recommended limits ($P < 0.001$). Individuals who reported adding salt to food had greater predicted salt intake than those who did not ($P < 0.01$). These results remained significant on exclusion of (1) incomplete urinary samples and (2) secondary causes of hypertension.

Conclusion: Self-reported no added salt intake corresponds to lower predicted intake in young-onset hypertensives although remains above recommendations. Further investigation is required to explore the role of salt consumption in this population and identify effective interventions to lower intake. We suggest it remains prudent, regardless of self-reported intake, to provide dietary advice.

Disclosures: Nil

P-20 – Non-Proteinuric Diabetic Kidney Disease in the Middle East: Prevalence, Treatment, and the Renal Protective Role of SGLT-2 Inhibitors

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Background: Diabetic kidney disease (DKD) is a significant global health concern, especially in the Middle East countries. Non-proteinuric diabetic kidney disease (NP-DKD), affecting 50-60% of type 2 diabetes (T2D) patients, is often underrecognized and inadequately managed. Current treatment guidelines recommend treatments (such as SGLT-2, GLP-1, RASi, and finerenone) for DKD, with tailored use based on proteinuria and cardiovascular risk. Emerging therapeutic strategies emphasize and advocate for early combination therapies for better management of DKD.

Method: This retrospective observational study analysed epidemiological and clinical data of 33524 T2D across the UAE. Patients â‰¥ 18 years with DKD were included in this study, while those with complete renal failure were excluded. Demographic, pathological, and treatment data were assessed with CKD risk categorized as per KIDGO guidelines. Statistical analysis was performed using Microsoft Excel and IBM SPSS Statistics Version 23.0.

Results: Out of 33,524 T2D patients, 2.98% had NP-DKD, and 3.66% had P-DKD with an eGFR < 60 mL/min/1.73 mÂ², indicating a high risk of CKD. The prevalence of both P-DKD and NP-DKD was higher among females. However, the P-DKD group was found to be associated with higher systolic BP and HbA1c levels. Moreover, SGLT-2 treatment exhibited improved hemoglobin and hematocrit levels in both groups.

Conclusion: This study highlights DKD-associated burden in the UAEs T2D population. Furthermore, it emphasizes the risk factors and treatment modalities involved in both P-DKD and NP-DKD patients. The results indicate that SGLT2 inhibitors may offer renal protection, substantiating a need for future research on their long-term advantages.

Disclosures: Nil

P-21 – Chemical adherence testing for antihypertensive medications: dispensable pressure?

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Background: Objective evaluation of adherence should be considered in the clinical work-up of patients with apparent resistant hypertension. This is a class 2a recommendation based on level B evidence (ESC guidelines 2024).

This area of clinical practice is a wellspring of ethical and clinical quandaries that have been overlooked by the guidelines.

Method: This narrative review discusses arguments against routine chemical adherence testing for patients with apparent resistant hypertension, and the risk associated with haphazard use.

Results: The literature that the above recommendation directly is based on says that 63% of patients had concerns about the impact on the patient-physician relationship. If a detailed explanation of the thought process behind the test is routinely discussed pre-test, how reliable is the finding?

Demonstration of non-adherence with chemical testing has not yet been shown to improve blood pressure control via randomised trials. Aren't the ends as important as the means?
should be considered if resources allow is not a substitute phrase that confirms cost effectiveness.

The main non-pill option of renal denervation is recommended for consideration even in patients who are non-adherent to the medications (ESC 2024). If proven non adherence is not going to change the eventual management considerations, is the resource (including finite clinician time) worth the benefit?

Conclusion: The aim of this poster is to generate a discussion around the topic and summarise the current evidence.

Other disease areas such as lipid, diabetes, and antiretroviral therapy also show high rates of non-adherence to medications. This has not led to recommendations of widespread chemical testing, nor has it reduced the systemwide benefits of these medications.

Unless fully informed, there are significant risks to undertaking chemical adherence testing, including lifelong deterioration of trust in clinicians and in the healthcare system. The benefits of the gotcha strategy are at best guarded.

Disclosures: Nil

P-22 – Enhancing CVD Prevention in Primary Care: Outcomes of a Structured Fellowship Programme in Hypertension and Quality Improvement

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Background: The NHS Long Term Plan prioritises hypertension as part of its strategy to reduce cardiovascular disease (CVD) a leading cause of preventable death and health inequality. Primary care plays a central role in managing CVD risk. Through a fellowship education programme, clinicians gained support and confidence to improve hypertension care.

Method: From April 2022 to November 2024, 192 healthcare professionals in South London participated in a seven-month programme delivered in three annual cohorts. Monthly webinars covered clinical topics, including hypertension. Fellows also led improvement projects in their practices or Primary Care Networks (PCNs), applying quality improvement (QI) skills to enhance care for patients with hypertension.

Results: Across the programme, 40 educational sessions were delivered: 22 clinical and 16 QI-focused. Each fellow received at least 13 hours of training. A total of 118 fellows completed final reports on 98 improvement projects, including 34 focused on hypertension.

Reported patient impacts from these projects included:

- 2522 patients contacted

- 1369 notes reviewed

- 628 consultations held

- 196 updated medical codes

- 195 patients tested

A survey of 95 fellows showed 97% felt more confident managing at-risk patients, and 85% observed improved care in their practice or PCN.

Conclusion: The fellowship was well-received and seen as relevant to improving patient care. With high-risk conditions like hypertension often symptomless, early intervention is key. The programme supported local QI initiatives, helping to close care gaps in CVD prevention. It also demonstrated that structured education can equip clinicians to apply guidelines in daily practice, with scalable potential for broader healthcare settings.

Disclosures:

P-23 – SGLT2 inhibitors use is associated with reduced hypertension-related hospitalizations including aortic dissection and cardiovascular death in hypertensive patients with morbid obesity

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Background: Sodium-Glucose Co-Transporter-2 (SGLT2) inhibitors have demonstrated cardiovascular protective effects and reduces blood pressure. Whether it has a clinical role in patients with hypertension and morbid obesity, particularly metabolic syndrome, remain undefined.

Method: We performed a territory-wide, multi-centre, retrospective cohort study using data collected from the Clinical Data Analysis and Reporting System (CDARS) clinical data network of the Hong Kong Hospital Authority (period 1998-2023). A total of 2,013 morbidly obese hypertensive patients with metabolic syndrome were included. Primary composite endpoint was defined as hospitalizations due to hypertension-related complications, comprising aortic dissection, hypertensive heart diseases, congestive heart failure, acute coronary syndrome, myocardial infarction, atrial fibrillation, hemorrhagic and ischemic stroke, as well as cardiovascular death. Multivariable Cox proportional regression was used to derive adjusted Hazards Ratio (HR) of the primary endpoint.

Results: Over mean follow-up duration of 2265 +/- 1168 days, 382 (19%) primary endpoints and 119 cardiovascular deaths (5.9%) occurred. Kaplan-Meier analyses showed that SGIT2 inhibitors use was associated with improved event-free survival (mean survival, SGLT inhibitors: 6823 [95%CI: 6417 -7228]; control: 6823 [95%CI 5294-5854], Chi-Square=42.0, P<0.001). Multivariable Cox proportional regression showed that after adjusted for potential confounders including age, sex, socioeconomic indicator, baseline history of hyperlipidemia, congestive heart failure, ischemic heart disease, atrial fibrillation, stroke, chronic kidney disease, smoking proxied by chronic obstructive pulmonary disease, use of other cardiovascular medications including aspirin, statin, and various anti-hypertensive medications as well as GLP1 agonists, SGLT2 inhibitors remained independently predictive of significantly lower risk of primary endpoint (HR=0.72, [95%CI: 0.55-0.95], P=0.018). Moreover, It also independently predicted lower risk of cardiovascular death (HR=0.50, [95%CI 0.28-0.89], P=0.017).

Conclusion: SGLT2 inhibitors are associated with reduced hypertension-related hospitalizations including aortic dissection and cardiovascular death in morbidly obese hypertensive patients with metabolic syndrome. Further randomized controlled trials are needed to confirm such findings.

Disclosures: Nil.

P-24 – Heterogeneous blood pressure trajectories and their role in the development of frailty and cardiovascular risk predictions

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Background: Frailty, a state of increased vulnerability due to cumulative physiological decline, is a key driver of health inequalities in older adults. Cardiovascular frailty, marked by dysregulated blood pressure (BP) homeostasis, poses challenges for both clinical management and accurate risk prediction. Evidence from previous studies indicates that BP tends to decline toward the end of life, even in individuals with a history of hypertension. We hypothesise that characterising distinct BP trajectory patterns, which may reflect the underlying BP dysregulation, may offer a nuanced understanding of cardiovascular risk in frail older adults. Although cardiovascular risk tools such as the Qrisk3 are commonly used, they perform sub-optimally in older adults and with multimorbidity. Furthermore, their predictive validity in frailty and heterogeneous BP trajectories remains poorly understood.

To identify and characterise heterogeneous BP trajectories in older adults and examine their association with frailty and cardiovascular risk prediction.

Method: We conducted a retrospective cohort study using the Clinical Practice Research Datalink (CPRD), a large, representative UK primary care database. The cohort included individuals aged 60 and above, with up-to-standard registration between 01/01/2010 and 31/12/2024 (4149222 males and 4571212 females). Latent class trajectory models are applied to repeated BP measurements before the index date (01/01/2015). Cardiovascular risk scores are evaluated at the index date and compared with the observed cardiovascular events in the 10 years of follow-up, among the distinct BP trajectory and frailty classes.

Results: & Conclusion: Our results suggest that the BP trajectories in later life are heterogeneous and closely tied to frailty progression and may alter the cardiovascular risk across time. Recognising these patterns may improve cardiovascular risk stratification and guide personalised care strategies for older adults.

Conclusion:

Disclosures: None

P-25 – Differential associations of on-treatment systolic blood pressure with cardiovascular events in different vascular territories: are universal blood pressure targets acceptable?

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Background: Most guidelines suggest universal systolic blood pressure (SBP) targets for reducing cardiovascular events. However, evidence suggests associations between mean on-treatment achieved SBP and events differs based on vascular territory; and may be modified by past cardiovascular disease (CVD). Using data from 3 hypertension trials (ASCOT, ALLHAT and SPRINT), we examined the relationship between cumulative mean SBP achieved after 1y of treatment (cum_mean_SBP1y) and risk of coronary heart disease (CHD), stroke and peripheral arterial disease (PAD) in those with/without previous CVD.

Method: Trial- and event-specific Cox models estimated multivariable adjusted HRs (95%CI) of events associated with cum_mean_SBP1y (reference 120mmHg) using restricted cubic splines. Levels of cum_mean_SBP1y were categorised as potentially harmful when HR>1, lower CIâ‰¤1; and clearly harmful when HR>1, lower CI>1.

Results: At 1y, average cum_mean_SBP1y was 152mmHg (SD14) in ASCOT, 130 mmHg (SD9.5) in SPRINT, and 140 mmHg (SD13) in ALLHAT.

Amongst CVD-free participants (N~14500 ASCOT, ~6500 SPRINT, ~19300 ALLHAT): For CHD, potential harm appeared at cum_mean_SBP1y>120mmHg in ALLHAT and >160mmHg in ASCOT. For stroke, potential harm was apparent at cum_mean_SBP1y>120 mmHg in ALLHAT and ASCOT; clear harm only at cum_mean_SBP1y>130 mmHg in ALLHAT, >140 mmHg in SPRINT. For PAD, cum_mean_SBP1y<120 mmHg was potentially harmful in ALLHAT, with clear harm beyond ~145 mmHg in ASCOT and ALLHAT.

Among participants with CVD (N~2900 ASCOT, ~1700 SPRINT, ~6000 ALLHAT): For CHD, cum_mean_SBP1y<120mmHg was harmful in all 3 trials, while between 120â€“160mmHg was protective in ALLHAT. For stroke, cum_mean_SBP1y<120 mmHg was clearly harmful in ASCOT and SPRINT. For PAD, cum_mean_SBP1y<120 mmHg and >130 mmHg was associated with potential harm in ALLHAT; potential harm was also apparent with cum_mean_SBP1y>120mmHg in ASCOT and SPRINT.

Conclusion: On-treatment achieved SBP levels carry differing levels of harm for different cardiovascular events, suggesting primary and secondary prevention of CVD may need distinct event-specific SBP targets.

Disclosures: None

P-26 – CKM (cardio kidney metabolic) risk factors in male and female patients with diabetic kidney disease that may drive the sex difference in progression

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Background: Chronic kidney disease (CKD) is more prevalent among females, yet men progress more rapidly to kidney replacement therapy. This study investigates gender-based differences in CKD progression among 33,000 patients with type 2 diabetes mellitus (T2DM), focusing on cardio-kidney-metabolic (CKM) risk factors.

Method: Data were extracted from the Diamond database at the Imperial College London Diabetes Centre, Abu Dhabi, comprising patients with T2DM over a 7-year period. This cross-sectional analysis included adults aged â‰¥18 years with estimated glomerular filtration rate (eGFR) <60 mL/min/1.73 mÂ^2 and recorded urine albumin-to-creatinine ratio (ACR). Clinical and laboratory values were assessed from the most recent clinic visit. Statistical analysis was conducted using STATA MP version 17.

Results: Of 2040 patients with eGFR <60, 55% were female. The mean age was similar between males (71.16Â±9.73 years) and females (71.43Â±9.03 years). Males had higher hemoglobin (12.92 vs. 11.91 g/dL) and hematocrit levels (38.77% vs. 35.74%), while females had significantly higher LDL cholesterol (1.98 vs. 1.80 mmol/L). No significant sex differences were found in systolic or diastolic blood pressure or pulse pressure. Among 1000 patients with non-proteinuric diabetic kidney disease (NP-DKD), 62.6% were female; among 1230 with proteinuric DKD (P-DKD), 52.1% were female. Notably, all male patients with DKD had P-DKD, suggesting proteinuria may be a stronger marker of progression in men.

Conclusion: While more women have CKD and adverse CKM profiles, male patients with T2DM are more likely to exhibit proteinuria, a key factor in disease progression. These findings emphasize the need for sex-specific strategies in CKD management and call for further research into gender-related drivers of renal decline, including the potential role of diabetic retinopathy.

Disclosures: none

P-27 – Ethnic disparities in blood pressure and kidney disease risk factors in patients referred to a South-East London hypertension service

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Background: There are widely recognised ethnic disparities in hypertension prevalence and burden, with individuals from Black-African/Caribbean backgrounds experiencing worse hypertension-related healthcare outcomes than White populations, including higher rates of kidney failure at younger ages. We sought to explore care pathways to identify opportunities to improve outcomes.

Method: Retrospective review of electronic medical records of patients attending Kingâ€™s College Hospital hypertension clinic between October 2023-December 2024.

Results: Of 223 patients with clinic appointments, 188 (84.3%) attended at least once. Of these, 87 (46.3%) identified as Black-African/Caribbean, 41 (21.7%) White, 11 (5.9%) Asian, 11 (5.9%) mixed, 11 (5.9%) other and 27 (14.4%) had unstated ethnicity. Black-African/Caribbean patients had a higher median initial clinic systolic blood pressure (145mmHg [IQR 136-158] vs. 132mmHg [IQR 134-150];$p<0.05$) compared to White patients and were prescribed the highest median number of anti-hypertensive medications of all ethnic groups (3 [IQR 1-4] vs. 2 [IQR 1-3] in White; $p=0.05$). Black-African/Caribbean patients had a lower median estimated glomerular filtration rate (eGFR), (76mls/min/1.73m2 [IQR 55.5-90.0] vs. 90 [IQR 82.0-90.0];$p<0.05$) and a higher proportion with urinary albumin creatinine ratio (uACR)>3.5mg/mmol (17% vs. 5%, $p<0.01$) compared to White patients. However, they were less likely to be prescribed angiotensin-converting enzyme inhibitors (ACEi) or angiotensin-II receptor blockers (ARB), (61% vs. 71%).

Conclusion: Within our hypertension clinic, Black-African/Caribbean patients, despite being of comparable age to White patients, have a higher systolic blood pressure and worse kidney function at presentation. They are prescribed more anti-hypertensive medications but are less likely to be on reno-protective ACEi/ARBs. This is likely due to NICE guidelines which do not consider chronic kidney disease risk, including genetic factors (e.g. APOL1 kidney disease). Consideration for co-prescription of renin-angiotensin-aldosterone system (RAAS) blockade medication for Black hypertensive patients is warranted, including assessment of genetic risk. Hypertension services should include kidney function assessment, especially in Black-African/Caribbean patients.

Disclosures: Nil

P-28 – Underutilisation of RASi (Renin angiotensin Inhibitor) in patients with type II diabetes

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Background: Despite strong guideline recommendations and decades of supporting evidence, the real-world use of renin-angiotensin system inhibitors (RASi) in patients with type 2 diabetes (T2DM), hypertension, and proteinuria remains suboptimal. Data from the PART-AE registry of 33,000 patients highlight underutilization, particularly among those at high or very high cardio-kidney-metabolic (CKM) risk.

Method: This cross-sectional study analyzed data from the Diamond database at the Imperial College London Diabetes Centre in Abu Dhabi. All participants had T2DM and attended the center within the past seven years. Inclusion criteria required patients to have at least annual measurements of urine albumin-creatinine ratio (ACR) and estimated glomerular filtration rate (eGFR), per ADA guidelines. Blood pressure, lab, and urine tests were recorded during the last visit. Analyses were conducted using STATA MP v17.

Results: Total cohort: 33,000 patients with T2DM

Suboptimal BP control: 40%

Albuminuria present: 25% (~8,250 patients)

RASi use overall: 40%

RASi use among those with albuminuria: 60%

RASi use in high/very high KDIGO risk: 60%

These rates fall short of international guideline targets, especially among high-risk individuals.

Conclusion: RAS inhibitors, including ACE inhibitors and ARBs, are cornerstone therapies for T2DM patients with hypertension or albuminuria, with proven cardio-renal benefits. Yet, real-world use remains insufficient. The ROAD-BP study also found only 60% RASi use despite clear benefits in well-controlled diabetic patients. While concerns like hyperkalaemia may limit use, modern "RAS enablers" offer solutions. Efforts are needed to address prescribing barriers and improve long-term adherence to this essential therapy.

Disclosures: none

P-29 – Meta-analysis and systematic review of the ethnic differences in baseline concentrations and regulatory mechanisms of plasma aldosterone

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Background: Black individuals have disproportionately higher rates of essential hypertension, and its complications compared to white individuals. The Framingham study identified elevated aldosterone as a risk factor for hypertension. However, despite a higher prevalence of hypertension, black individuals tend to have lower plasma aldosterone concentrations (PAC) than white individuals. Notably, for a given plasma renin activity (PRA), black individuals often exhibit a higher aldosterone-renin ratio (ARR), suggesting possible differences in aldosterone sensitivity or organ responsiveness. This review investigates ethnic differences in baseline PAC and explores potential explanatory factors.

Method: This review was carried out in accordance with PRISMA guidelines. Four databases were searched (PUBMED, Embase, Scopus, and Cochrane Library). Two reviewers screened title and abstract before full-text eligibility assessment. Results were pooled for meta-analyses; meta-regressions were performed to explore possible reasons for heterogeneity.

Results: 4943 title and abstracts were screened before 196 full-text articles were reviewed for eligibility. 24 met the pre-determined criteria. Compared to white individuals, black individuals had lower aldosterone in both hypertensive cohorts (mean difference [95% CI] -3.03 ng/dL [-5.56; -0.50], p<0.001) and normotensive cohorts (-2.95 ng/dL [-3.95; -1.95], p<0.001). ARR was higher in black cohorts (Hedgesâ€™ g [95% CI] 0.23 [0.03; 0.43], p=0.03). Both black males and females had lower aldosterone compared to white males and females. Subgroup analysis revealed that ethnic difference in baseline PAC did not differ in males and females (p=0.67). Meta-regressions revealed that heterogeneity was not explained by systolic or diastolic blood pressure, serum sodium or potassium, or 24-hour urinary sodium or potassium.

Conclusion: Black ethnic individuals have lower PAC and PRA compared to white individuals. Despite this, black individuals have a higher ARR. These conclusions are consistent for both normotensive and hypertensive cohorts. These findings warrant further investigation into the ethnic differences in the regulation and sensitivity of aldosterone.

Disclosures: None

P-30 – Rethinking Ethnicity in Hypertension: Is Renin the Key to Personalised Hypertension Therapy?

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Background: UK hypertension guidelines recommend ethnicity-based prescribing to improve blood pressure (BP) control in diverse populations. However, however all authorities recognise the considerable overlap in treatment response between ethnic groups and that ethnicity is a poor surrogate for biological differences underlying treatment response. In a drive towards personalised hypertension treatment, renin-guided prescribing has been proposed as a potential method to individualise antihypertensive therapy, offering an equitable alternative. However, the clinical utility of renin to guide treatment selection has not been systematically assessed.

Method: A systematic review to identify studies assessing whether baseline renin predicts BP response to different antihypertensive medications. The search was performed on MEDLINE, Embase and CENTRAL. Inclusion criteria were (1) measurement of renin at baseline, (2) change in BP after antihypertensive treatment and (3) reporting of the relationship between renin and BP response.

Results: 80 studies (N=6,907) were included. Renin predicted BP response in 63% of studies of thiazide diuretics (19/30), with lower renin associated with greater BP reduction. Similarly, in 71% of studies of mineralocorticoid receptor antagonists (MRAs), lower renin predicted better response, particularly in resistant hypertension. Conversely, beta-blockers showed better response with higher baseline renin in 61% of studies (14/23). Renin was a less consistent predictor for ACE inhibitors (53%, 8/15) and ARBs (56%, 5/9) and rarely predicted response to calcium channel blockers (23%, 3/13). Predictive value was strongest in studies using standardised assays, single-agent therapy, and homogeneous populations.

Conclusion: Renin can serve as a valuable biomarker for predicting response to several antihypertensive classes. Renin-guided prescribing could be used as an alternative or alongside current approaches, offering an additional tool to individualise hypertension management. Integrating renin testing into routine practice may help optimise treatment selection, support more precise risk stratification, and advance the move toward personalised medicine in hypertension care.

Disclosures: None

P-31 – STanding blood pressure and its AssociatioN with cardiovascular Disease and aDverse events (STANDD)

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Background: The prognostic value of standing blood pressure (BP) is unclear. NICE hypertension guidelines recommend measuring and treating to standing BP in people with a significant postural BP drop or postural symptoms on standing. We aimed to quantify the association between standing BP and cardiovascular events, injurious falls and mortality.

Method: Systematic review: We searched MEDLINE, Embase and Cochrane CENTRAL to October 2024 for randomised controlled trials (RCTs) and cohort studies reporting sitting or lying and standing BP, with a minimum of two years follow-up, in people aged over 70. Meta-analyses were not feasible due to paucity of data findings were synthesised narratively.

Results: We included 19 studies (n=33,854 participants; 2 RCTs, 17 cohorts). Sixteen studies reported major adverse cardiovascular events (MACE) as a composite or constituent outcome; 3 reported falls outcomes. No studies provided point estimates of any association between standing BP and cardiovascular or falls outcomes. Two studies reported an association between standing BPs and all-cause mortality with conflicting findings; one reported a 17% (95% CI: 34%) increased risk of all-cause mortality per 10-mmHg rise in standing diastolic BP whilst the other reported a 21% (32% 18%) reduction in all-cause mortality for every 10-mmHg increase in standing systolic BP. Eleven studies measured BP in lying and standing positions, 8 in sitting and standing positions.

Conclusion: There is limited evidence to inform NICE's expert consensus guidance to treat older people with postural symptoms according to standing BP values. Substantial heterogeneity existed between studies in the measurement of standing BP. These findings justify our current individual participant data meta-analysis which seeks to estimate the relationship between standing BP, MACE and injurious falls. It also informs ongoing research on the relative validity of sitting-to-standing versus lying-to-standing BP measures and future guidelines on the management of hypertension in the presence of postural hypotension.

Disclosures: None

P-32 – Effects of glucagon-like peptide-1 receptor agonists on blood pressure: a systematic review and network meta-analysis

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Background and Aims: Recent clinical trials reported blood pressure-lowering effects of glucagon-like peptide-1 receptor agonists (GLP1Ra). A recent systematic review has focused on the effects of semaglutide. However, there has been no comprehensive evaluation of the BP effects of all GLP1Ra available, including the double agonist tirzepatide and the triple agonist retatrutide. Additionally, the extent to which BP reduction is mediated by weight loss remains unclear. This systematic review and network meta-analysis aimed to evaluate the impact of GLP1Ra on systolic and diastolic BP across randomized controlled trials (RCTs).

Methods: PubMed/MEDLINE, Web of Science and Ovid/Embase were searched from their inception until 31st July 2024. RCTs involving adult patients treated with GLP1Ra that reported BP and weight changes were included. Pair-wise meta-analysis and meta-regression models were utilised. Network meta-analysis was conducted. Mean difference (MD) and its 95% confidence intervals (CIs) were reported.

Results: A total of 75 RCTs, including 114352 participants, were included. Retatrutide demonstrated the greatest reduction in systolic BP (MD: −7.0 mmHg; 95% CI: −10.5 to −3.5, followed by tirzepatide (MD: −5.2 mmHg; 95% CI: −6.9 to −3.5) and semaglutide (MD: −3.4 mmHg; 95% CI: −4.7 to −2.1). For diastolic BP, tirzepatide showed the largest reduction (MD: −1.7 mmHg; 95% CI: −2.6 to −0.8), followed by semaglutide (MD: −0.8 mmHg; 95% CI: −1.4 to −0.2).

Conclusion: Retatrutide reduced systolic BP, whilst tirzepatide and semaglutide reduced both systolic and diastolic BP, when compared to placebo. The triple agonist retatrutide emerged as the most effective agent for lowering systolic BP amongst all GLP1Ra agents.

P-33 – Mystery shopper' blood pressure checks in pharmacies: the patient experience

Yeyenta Osasu

Background; The NHS Long Term Plan commits to reducing mortality and morbidity due to cardiovascular disease, tackling inequalities, and shifting towards prevention strategies[1]. Community pharmacy teams have delivered the hypertension case finding service to eligible members of the public since October 2021Click or tap here to enter text.. In 2023, the Office for National Statistics reported that Black ethnic groups have a higher prevalence of hypertension and experience higher mortality rates from hypertensive disease than other ethnic groups[3]. To gain insight into African and Caribbean people's knowledge of the community pharmacy blood pressure service. Explore the barriers and facilitators to accessing the service. To understand the experiences and outcomes of service users

Methodology: Key people from organisations representing local minority communities were identified and trained to be Community Research Link Workers (CRLW). Consenting participants were recruited by CRLW in Manchester and Sheffield. Participants visited pharmacies to request a blood pressure check after which two focus groups were held to discuss people's experiences and perceptions of the service. The focus groups were recorded and transcribed. Thematic analysis was applied to identify key themes. The study was approved by The University of Sheffield Ethics Committee.

Results: Twenty participants aged 35 years and over, from African or Caribbean heritage and without a BP check in the preceding 12 months nor prior diagnosis of hypertension participated. Key themes included experience of interaction with pharmacy teams, awareness, consultation skills, service variability and mistrust.

Conclusion: The hypertension case finding service is now well embedded within community pharmacy and supports the prevention agenda. It is imperative that people who are most at risk of hypertension are supported to gain access to the service because hypertension is a core clinical area for improving healthcare inequalities. The study shows low level of awareness of this service from those who would most benefit.

P-34 – Uptake of the national health service community pharmacy hypertension case-finding service

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Background: Globally, hypertension is the leading cause of premature death and disability. To address the burden of hypertension, the National Health Service (NHS) in England implemented a community pharmacy hypertension case-finding service in October 2021. The aim of this cross-sectional study was to evaluate the uptake of this service.

Methods: Individuals eligible for the pharmacy hypertension case-finding service included those: (i) aged 40 years or older without known hypertension; (ii) aged under 40 years with a family history of hypertension; (iii) aged between 35 and 39 years at the discretion of pharmacy staff; or (iv) adults of any age with or without a hypertension diagnosis referred by their general practitioner. Patients with pharmacy BP readings between 140/90 and 179/89 mmHg were eligible for follow-up 24-hour ambulatory blood pressure monitoring (ABPM). Pharmacies were remunerated for these services. Data describing the participating pharmacies and uptake of the service are collected by the NHS.

Results: Data were collected between October 2021 (launch of the service) and September 2024. Of approximately 10,050 pharmacies in England, an estimated 9,500 pharmacies (90%) registered for the hypertension case-finding service, and 7,970 of the registered pharmacies (84%) provided the service to individuals.

Among an estimated cohort of 16 million people potentially eligible for this service, 3,670,495 individuals (23%) had their BP screened in a pharmacy. Of these, 1,326,446 individuals (36%) had BP results between 140/90 and 179/89 mmHg and were eligible for ABPM. The uptake of ABPM follow-up was 21%.

Conclusions: Following the implementation of a community pharmacy hypertension case-finding service in England, one in five eligible individuals received a pharmacy BP check, with over one third having elevated BP, but only one in five received a follow-up ABPM check. Further research is needed to determine patient outcomes and the barriers to follow-up.

P-35 – Implementation of an Evidence-based Multidisciplinary Specialist Postpartum Hypertension Clinic in the National Health Service

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Background: Hypertensive disorders of pregnancy (HDP) affect up to 10% of pregnancies, and are associated with an increased risk of future cardiovascular disease. National guidance recommends a 6-8-week postnatal consultation with a general practitioner (GP) to check blood pressure (BP), assess proteinuria, and offer lifestyle and future pregnancy advice. Observational data show not all women receive a postnatal consultation, and BP management is not always prioritised.

Method: We established a multidisciplinary specialist postpartum hypertension clinic to improve postpartum care for women with HDP. Our novel clinic, one of the first-in-the-UK, builds on our research demonstrating that improved postnatal BP control reduces future adverse cardiovascular outcomes. Women with the most severe HDP, defined as pre-term delivery â‰¤34 weeksâ€™ gestation due to HDP or requiring â‰¥3 antihypertensive medications at hospital discharge were eligible to attend. In addition, we collected data from a comparator group who delivered between 1st January - 31st December 2022 and met the same referral criteria, had the clinic existed (n=54).

Results: Between February 2024 and April 2025, 42 women attended clinic. Of these, 39% remained hypertensive at the clinic visit, 57% required medication changes and 21% required restarting anti-hypertensives. Ambulatory BP monitoring (ABPM) detected masked hypertension in 27% of cases with normal clinic BP. All clinic patients received specialist follow-up, compared to 15% of the comparator cohort. ABPM and echocardiography were performed in 36% and 64% of clinic patients, versus 4% and 9% in the comparator cohort, respectively. In the comparator group, 9% experienced cardiovascular events within 3 years, whereas none were reported in the clinic cohort to date.

Conclusion: A multidisciplinary specialist postpartum hypertension clinic offers enhanced BP management, improved investigations, and personalised patient education. Our model demonstrates a scalable approach that could complement routine GP care and mitigate long-term cardiovascular complications in this high-risk population.

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