(50-64 compared to 65 years and older), sex, education, race/ethnicity, residence rurality, body mass index, presence of cardiovascular risk factors, perceived access to care, medication adherence scores based on economic factors (6 items, $\alpha=0.77$), and having visited the ER within the previous 12 months. Two independent logistic regression analyses were performed to identify variables associated with medication nonadherence and the frequency of ER visits. **Results:** Over half of respondents (54.8%; 317 of 578) self-reported having cardiovascular disease (CVD) risk factors and 14.5% (84 of 578) reported having a cardiovascular incident. Medication nonadherence was reported by 25.3% (146 of 578) of respondents and 20.1% (116 of 578) reported having visited the ER in the previous 12 months. Medication nonadherence was associated with being younger ($OR=0.431$, $P<0.001$), having cardiovascular disease risk factors ($OR=1.756$, $P<0.001$), and perceiving less access to healthcare ($OR=0.715$, $P<0.001$). Visiting an ER in the previous 12 months was associated with having risk factors for cardiovascular disease ($OR=1.441$, $P<0.05$). **Conclusion:** Medication nonadherence associated with economic constraints remains a problem for a small but significant group of community residing adults, which emphasizes a need for greater surveillance by the healthcare system. Even before the full implementation of Medicare Part D, persons age 65 years and older tended to adhere to medication regimens. The significance of CVD in this Medicare-eligible group as a predictor of ER visits suggests that additional self-management support and training are needed to recognize and address signs of disease exacerbation.

Keywords: Medication adherence, Healthcare utilization, Economic factors and medication use

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PS1-03:

Health Behaviors in Adults with Risk Factors for Cardiovascular Disease

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Background/Aims: Health behaviors of adults with cardiovascular disease (CVD) risk factors impact risk. We compared health behaviors of adults with diabetes, hypertension, high cholesterol, and obesity to those without. **Methods:** We conducted 30-minute random-digit-dial household telephone surveys in 2007 ($n=3607$). Over 92% of adults willing to answer questions completed surveys, representing their household. Protective behaviors included meeting fruit and vegetable (FV) recommendations (5+ servings/day), reporting "often/always" eating healthy diets, consuming low/very low dietary fat, eating breakfast 6-7 days/week, meeting walking and moderate physical activity (PA) recommendations (≥ 30 minutes 5+ days/week), and meeting vigorous PA recommendations (≥ 20 minutes 3+ days/week). Harmful behaviors included drinking soda $\geq$ once/week, drinking ≥ 12 ounces of soda at a time, and eating at fast food restaurants $\geq$ once/week. **Results:** Respondents included Whites (36.5%), Asians (28.5%), Hawaiians/part-Hawaiians (17.0%), female (65.3%), married (59.1%), college educated (54.7%), and mean age 54 ($sd=15.8$). CVD risk factors included obesity (18.5%), high cholesterol (16.4%), hypertension (15.9%), and diabetes (6.2%; 62.6% of those had Type II). For health behaviors, obese participants were less likely to obtain all seven protective health behaviors; they were more likely to engage in all three harmful nutrition behaviors. Participants with high cholesterol were less likely to do three protective behaviors, but also less likely to eat fast food. Participants with hypertension were less likely to do five protective behaviors. Diabetics were less likely to do three protective behaviors, but were also less likely to drink soda. Logistic regression indicated that obese participants were 1.69 times less likely to eat a healthy diet, a low fat diet ($OR=1.61$), or meet walking recommendations ($OR=2.19$), and were 4.02 times more likely to eat at fast food restaurants. Those with high cholesterol were 1.98 times less likely to meet FV recommendations, have a low-fat diet ($OR=2.21$), or meet vigorous PA ($OR=1.64$); but were 3.90 times more likely to eat breakfast and avoid fast food ($OR=1.9$). Those with hypertension were 2.17 times less likely to eat a healthy diet or meet vigorous PA ($OR=1.66$), but were also 2.01 times less likely to drink soda. Diabetics were 1.66 times less likely to eat a healthy diet

or meet vigorous PA ($OR=1.83$). **Conclusions:** Individuals with CVD risk factors reported worse health behaviors, especially those with obesity. Healthcare interventions should monitor disease progression while reducing harmful and increasing protective health behaviors in individuals at greatest CVD risk.

Keywords: Cardiovascular disease, Adult health behaviors, Cardiovascular disease risk factors

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PS1-04:

Home Blood Pressure Telemonitoring and Case Management to Control Hypertension: HyperLink Trial Design and Baseline Characteristics

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Background/Aims: Blood pressure (BP) is not controlled in the majority of people with hypertension (HTN) in the U.S. We describe a study of long-term hypertension outcomes that compares home BP telemonitoring and pharmacist case management vs. usual care. **Methods:** HyperLink is a cluster-randomized trial ($N=450$ patients) being conducted at HealthPartners Medical Group clinics. Sixteen clinics were randomly assigned to either the Telemonitoring Intervention (TI) or Usual Care (UC). Recruitment materials are mailed to adult primary care patients in these clinics whose last 2 BP measurements were uncontrolled in the previous 12 months ($>140/90$, or $>130/80$ if diabetes or kidney disease present). To be eligible, they are required to have uncontrolled BP confirmed at a research clinic visit. Other medical exclusion criteria are minimal: pregnancy, recent cardiovascular events, symptomatic heart failure, stage 4/5 kidney disease, and dementia. Participants in the TI group receive a home BP telemonitor that stores and transmits all BP measurements to the clinic pharmacist via a modem to a secure web site. Following one intake clinic visit with the pharmacist, participants and pharmacists communicate by telephone every 2-4 weeks for 6 months. HTN treatment is adjusted based on home BP according to an approved written protocol under a collaborative practice agreement with physicians. UC participants may visit a clinic pharmacist but do not receive telemonitoring. The primary outcome is BP control measured at the research clinic visit at 6 months. Secondary outcomes are BP control maintenance at 12 and 18 months, satisfaction and costs. **Results:** Recruitment began March 1, 2009, and is on track to be completed as predicted in September 2010. During the first 8 mo, 195 participants were recruited, of whom 47% were female, 17% were minority race/ethnicity and 53% were from TI clinics. Detailed baseline characteristics of participants recruited as of February 28, 2010 will be reported. **Conclusions:** Meaningful and sustained improvement in hypertension control will likely require fundamental changes in the current physician-centered office-visit based model of caring for hypertension. This novel intervention could be implemented widely in diverse and large patient populations based on performance in this randomized trial.

Keywords: Blood pressure control, Hypertension outcomes, Telemonitoring and blood pressure

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PS1-05:

Hyperglycemia Stimulates Intracellular Renin Expression in Both Cardiac Myocytes and Fibroblasts: Implications for Diabetic Cardiomyopathy

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Background / Aim: The upregulation of the renin-angiotensin system (RAS) represents a major pathological mechanism in diabetes. We have previously

reported that hyperglycemia preferentially increases intracellular generation of angiotensin (Ang) II. However, circulating RAS is down regulated in diabetes implying the accelerated intracellular RAS mechanism as a major contributor to diabetic cardiomyopathy. In this study, we determined expression of RAS components and their effect on cardiac cells to give us a venue to intervene. **Methods:** Diabetes was induced in Sprague-Dawley rats and C57/BL6J mice with injection of streptozotocin for 5 days and verified by sustained blood glucose levels >15 mmol/L. Control mice received buffered saline alone. One week after diabetes induction the mice hearts were removed and perfused by the Langendorff method. Myocytes were isolated with enzymatic dispersion and centrifugation. RAS proteins were determined by real-time PCR and Western analysis. These included angiotensinogen, renin, angiotensin converting enzyme, AT1, AT2, and ACE 2. Angiotensin II was purified by reverse-phase chromatography and quantified by competitive ELISA. **Results:** Among cells obtained from diabetic hearts, expression of AGT (3.5+/- 0.8 fold), renin (2.4 +/- 0.4), and AT1 (2.6+/- 0.3) was significantly increased compared to cells from control hearts (p<0.05, ANOVA). No significant change in the gene expression of ACE (1.2+/- 0.4), ACE2 (0.97+/- 0.2), and AT2 (1.2+/- 0.2), was observed. Increased expression at the protein level for AGT (2.2 +/- 0.1), renin (1.9 +/- 0.08), and AT1 (2.3+/- 0.2) was also observed by Western analysis. No significant changes in the protein levels of AT2, ACE, and ACE2 were observed. AngII levels in cardiac myocytes were determined by quantitative ELISA, which demonstrated significantly enhanced levels of AngII (140+/- 10 fmol/mg protein) synthesis in diabetic mice compared to controls (20 +/- 10 fmol/mg protein). **Conclusions:** This study suggests that local activation of the RAS in diabetes has a significant role in the development of cardiac dysfunction. Demonstration of renin expression in cardiac myocytes and enhanced expression in diabetic conditions represent a particularly significant finding. The latter suggests that locally produced, not circulating renin has a major role in cardiac Ang II generation and subsequent cardiomyopathy.

Keywords: Renin-angiotensin system, Diabetes, Cardiac dysfunction

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PS1-06:

The Impact of Treatment Intensification and Medication Adherence in Achieving Blood Pressure Control Among Coronary Artery Disease Patients

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Background and Aims: Among coronary artery disease (CAD) patients, control of hypertension reduces rates of myocardial infarction and mortality. Yet, BP control among CAD patients remains sub-optimal in clinical practice. Few prior studies have had the longitudinal data necessary to assess the role of treatment intensification and medication adherence in achieving optimal control. **Methods:** In this retrospective cohort study, we evaluated baseline and 1-year BP control rates among 15,102 HTN patients with an incident diagnosis of CAD between January 1, 2003 and December 31, 2006. Among those patients with sub-optimal baseline BP control, we assessed the contribution of treatment intensification and medication adherence to achieving 1-year BP control. Sub-optimal BP control was defined as systolic BP =140 mmHg and/or diastolic BP =90 mmHg (for those with diabetes or renal disease, sub-optimal control was defined as SBP =130mmHg and/or DBP =80mmHg). Treatment intensification was defined as an increase in BP medication dosage, the addition of another BP medication, and/or a switch of medication that resulted in a higher bioequivalent dose. Medication adherence was calculated using the proportion of days covered by medication prescription, and defined as a PDC > 80%. Logistic regression was used to determine the contribution of treatment intensification and medication adherence on achieving 1-year BP control, adjusting for baseline patient variables. **Results:** At the time of CAD diagnosis, 9,513 (65%) had sub-optimal BP control. At 1 year, 3,628(38%) of these subjects achieved BP control. Treatment intensification occurred more often among those patients who achieved 1-year BP control than those who did not (54% vs. 42%, p-value <0.0001). Medication adherence was similar between patients who

achieved 1-year BP control and those who did not (87% vs.86%, p-value 0.10) during the year post-CAD. In adjusted analyses, treatment intensification was significantly associated with 1 year BP control (OR 1.42 95%CI 1.39, 1.45). In contrast, medication adherence was not significantly associated with 1 year BP control (OR 1.02, 95%CI 0.87, 1.16). **Conclusions:** Treatment intensification, but not medication adherence, was significantly associated with 1-year BP control among a newly diagnosed CAD population. Interventions to improve treatment intensification may improve BP control and patient outcomes.

Keywords: Blood pressure, Treatment intensification, Medication adherence

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Diabetes and Obesity

C-C2-02:

The High Five for Kids Study: An Intervention to Improve Primary Care to Prevent Childhood Obesity

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Background and Aims: The preschool age group is ripe for clinically-based obesity prevention interventions. **Objective:** To assess the extent to which a primary care-based obesity prevention intervention (Ix), compared with the usual care control condition (UC), resulted in a smaller age-associated increase in body mass index (BMI) and improvement in specified obesity-related behaviors over the first year of a planned 2-year intervention. **Methods:** High Five for Kids is a cluster-randomized controlled trial in 10 primary care pediatric offices in Massachusetts. We randomly assigned 5 practices to the Ix condition and 5 to UC. Eligible children were age 2.0 - 6.9 years at baseline with BMI > 95th percentile or 85th-<95th percentile if at least one parent was overweight. The major components of the intervention were restructuring primary care based on the Chronic Care Model, stage-based motivational counseling by nurse practitioners, and stage-matched educational modules targeting TV, fast food, and sugar sweetened beverages. We enrolled 486 participants of whom 459 (94%) had primary outcomes measured at 1 year. We used intention-to-treat analysis, adjusted for baseline socio-demographic characteristics and corrected for clustering. **Results:** Mean (SD) age of participants was 4.9 (1.2) years; 29% had an annual household income < \$50K; 57% were white, 20% black, 16% Hispanic. Compared with UC, Ix participants had slightly smaller change in mean BMI from baseline to 1 year (-0.18 kg/m²; 95% CI: -0.44, 0.08). Ix participants decreased their TV viewing (-0.41 hrs/day; 95% CI: -0.68, -0.13) and fast food intake (-0.17 servings/week; 95% CI: -0.34, 0.00) more than UC, but there was no effect on sugar sweetened beverage intake (-0.20 servings/day; 95% CI: -0.51, 0.11). In post-hoc stratified analyses, the intervention had a greater effect on BMI change among participants living in households with incomes <\$50K (-0.79 kg/m²; 95% CI: -1.45, -0.13) than in higher income households (0.01 kg/m²; 95% CI: -0.34, 0.36). **Conclusions:** After a 1-year intervention period, High Five for Kids was effective in reducing TV viewing and fast food intake but did not significantly reduce BMI.

Keywords: Obesity prevention, Obesity-related behaviors, Obesity interventions

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