

control. **Methods:** Study subjects were adults with controlled hypertension at baseline based on two consecutive visits with normal BP readings (<140/90 mmHg or <130/80 mmHg for those with diabetes) at Medical Group A (MG-A; N = 12,766) and Medical Group B (MG-B; N = 9,768). We classified HT recidivism after follow-up for 4-16 months after the initial BP measures using the mean of the last two BP readings for each patient. **Results:** At baseline, the proportion of adults with HT who were at BP goals was 55% at MG-A, and 66% at MG-B. HT recidivism occurred in 19% of subjects with baseline controlled HT (based on two consecutive baseline visits) at MG-A and 13% of subjects at MG-B. At MG-A, men ($P = .008$) and those with higher BMI ($P < .001$) were more likely to have HT recidivism. At MG-B, those who were younger ($P < .001$) and with higher BMI ($P < .001$) were more likely to have BP recidivism. At both MGs, DBP was more likely to rise to uncontrolled levels in those age 50 or under compared to older age groups, while SBP was more likely to rise to uncontrolled levels in those age 65 or older compared to younger age groups. **Conclusions:** HT recidivism occurred in 13% to 19% of patients with previously controlled HT over a mean of 14 months of follow-up time. In medical groups with relatively high levels of baseline HT control, HT recidivism represents a brake on efforts to improve overall BP control. Effective strategies to minimize HT recidivism have great potential to improve overall levels of HT control on a population basis, and could improve HT-related quality measures at the medical group and individual provider level.

Keywords: Hypertension; Blood Pressure; Recidivism
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PS3-31:

Patients with Hyperuricemia and the Effect of Urate-Lowering Therapies on Renal Function in a Managed Care Organization

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Background/Aims: Preliminary data suggests that elevated serum uric acid levels (sUA) play a significant role in the development of renal disease. Few studies have evaluated urate-lowering therapies (ULT) in a population with hyperuricemia and the impact on development of renal disease. Our aim was to investigate whether initiation and maintenance of ULT, in patients with sUA ≥ 7.0 mg/dL, has a beneficial impact on renal function as measured by glomerular filter rate (GFR) reductions and adverse renal outcomes. **Methods:** Patients 18 years and older, with sUA ≥ 7 mg/dL and kidney disease stage 1, 2 or 3 from 01/01/2002 to 12/31/2010 were identified within Kaiser Permanente Southern California. Serum UA levels and GFR were collected at baseline and throughout follow-up for all patients. Patients on ULT were categorized into no-treatment, $\leq 70\%$ time on treatment, and $>70\%$ time on treatment during follow-up. Patients were followed until they had one of the following primary outcomes: new onset dialysis, a 30% reduction in their GFR level from baseline, receipt of a kidney transplant, or a GFR level <15 mL/min/1.72m². Baseline characteristics between the treatment groups were compared using descriptive statistics. A Cox proportional hazards model was used to estimate the hazard ratio (HR) and 95% confidence intervals (95% CI) associated with ULT treatment controlling for patient characteristics. **Results:** A total of 33,745 patients were identified (n = 21,481 no-treatment, n = 9,136 $\leq 70\%$ time on treatment, n = 3,128 $>70\%$ time on treatment). Overall, 3,592 patients reached a study endpoint; 2,114 patients in the no-treatment, 1,109 in the $\leq 70\%$ treatment and 369 in the $>70\%$ treatment group. Controlling for demographics and co-morbid conditions, treatment for $>70\%$ of the time was associated with a 20% reduction in events (HR = 0.8; 95% CI 0.71–0.90). Factors associated with high risk of events included age, female gender, renal disease, congestive heart failure, and diabetes. **Conclusions:** Our findings suggest that ULT may preserve renal function, and prevent or delay renal outcomes such as reductions in GFR and time to dialysis.

Keywords: Urate Lowering Therapy; Renal Outcomes
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PS3-32:

Patients with Co-Occurring Hypertension, Obesity, and Depression: Diagnosis vs. Treatment, and Is Treatment of One Condition Associated with Changes in Other Conditions?

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Background/Aims: Hypertension (HTN), overweight and/or obesity (OVRWT), and depression (DEP) frequently co-occur. Research on co-occurring chronic conditions often relies on Medicare claims data, and is subject to biases from age limits and reliance on claims-based diagnoses. We use electronic health record (EHR) data from a multispecialty practice to study the occurrence of these conditions among all adults. We assess the probability that previously untreated patients with high blood pressure (BP) receive a diagnosis and subsequently are treated with drugs, and the impact of such treatment on both the BP and body mass index (BMI) of people who also have OVRWT and/or DEP. **Methods:** EHR data for 2002-2010 were used to examine BP and BMI trajectories among adults with HTN, OVRWT, or DEP and to examine the impact of prescriptions for HTN and DEP on trends in BP and BMI, controlling for patient characteristics. We used propensity score stratification to address treatment selection bias. **Results:** Most (71%; 23,806/33,326) people with any of these 3 conditions were aged <65 . About 32% (21,166/66,552) of those with high BP were neither diagnosed nor treated for HTN. Only 53% (14,254/27,016) of obese patients had a weight-related diagnosis. Recorded depression was associated with increases over time in BP (coeff = .09, $P < .01$) and BMI (coeff = .06, $P < .01$), but hypertension was associated with slower increases in BMI (coeff = -.08, $P < .01$). With propensity score stratification, growth curve modeling revealed antihypertensive treatment to be associated with declines in both BP and BMI. Depression medications were not significantly associated with BP or BMI changes. **Conclusions:** Less than two-thirds of the patients with elevated BPs were diagnosed as having HTN. The favorable impact of HTN treatment on BMI, as well as on BP, suggests addressing missed opportunities for treatment can potentially lead to better outcomes for patients with both problems.

Keywords: Multiple Chronic Conditions; Hypertension; Obesity
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PS3-34:

Does Reporting of Estimated Glomerular Filtration Rates Affect Clinician Behavior?

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Background/Aims: The National Kidney Disease Education Project and other groups have recommended automated calculation and reporting of estimated glomerular filtration (eGFR) rates among all patients who have a serum creatinine measured. Few studies have assessed whether clinical practice patterns have changed in response to this new initiative. We conducted a time series analysis assessing the rate of nephrology referrals, visits and follow up laboratory testing before and after automated reporting was implemented. **Methods:** We conducted a retrospective cohort study of patients who had incident eGFR levels <60 measured before and after implementation of eGFR reporting at Kaiser Permanente Northwest (KPNW). We compared rates of subsequent evidence of clinical recognition including nephrology referral, repeat serum creatinine and proteinuria testing before and after implementation of eGFR reporting. Logistic models were used to compare change in clinical recognition rates controlling for baseline trends, and determine if the change in rates is related to clinician characteristics. **Results:** We found 21,612 patients who had an eGFR <60 , had been members for 2 years, were 18 years or older, and did not have a diagnosis of CKD. The number of referrals increased after the eGFR by 1.3 referrals per month ($P = .05$). However, the trend in monthly referral slowed after eGFR by .59 per month in comparison to the baseline trend ($P = .02$). Differences in the change in likelihood of referral after eGFR were found for age ($P = .01$), amount of FTE ($P = .04$), and type of practice ($P = .01$). Slope changes

in subsequent orders for other testing (i.e., proteinuria) were not significant. **Conclusions:** Following implementation of eGFR reporting, the likelihood of referral to nephrologists increased though the number of nephrology clinic visits did not. Clinicians who were younger, family medicine, and worked full time were more likely to increase referrals after eGFR.

Keywords: Chronic Kidney Disease; Laboratory Reporting; eGFR

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PS3-35:

MRI Detection of Substantia Nigra Degeneration in Parkinson's Disease: Developing a Candidate Biomarker

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Background/Aims: The substantia nigra (SN) selectively degenerates in Parkinson's disease (PD). Prior MRI studies of SN have used manual segmentation to make quantitative measurements, an approach with inherently limited accuracy. Here we used an in-house optimized neuromelanin MRI (NM-MRI) protocol, and a novel semi-automated segmentation method to investigate changes in SN associated with PD. The relationship between MRI measures and orthostatic hypotension, a phenotypic feature of PD, was also examined. **Methods:** Eight controls and 10 PD patients were scanned on a 3.0 Tesla Siemens MRI scanner using our optimized NM-MRI sequence (2D gradient echo sequence with magnetization transfer contrast preparation pulse) and processing protocol. A contrast to noise ratio (CNR) binary map was generated, identifying voxels with intensity >3 SD above the mean intensity. SN ROIs were defined on the binary map based on the location of the high intensity voxels, which defined its borders discretely. Mean CNR and number of voxels (volume) were then obtained for the SN. Statistical analysis was performed with SPSS. **Results:** Comparison of means revealed that both CNR and volume of the SN were significantly lower in the PD group than in controls (CNR: $P = 0.044$; volume: $P = 0.028$). Each of the two MRI measures were significantly correlated with the orthostatic blood pressure drop (Pearson's correlation, CNR: $r = -0.725$, $P = 0.001$; volume: $r = -0.661$, $P = 0.003$). **Conclusions:** As hypothesized, both CNR and volume of SN were significantly lower in the PD group than in controls. Since SN degenerates in PD, this NM-MRI approach appears to detect PD-associated degeneration of SN in vivo. Also as hypothesized, the MRI measures had a significant negative association with orthostatic blood pressure drop, a phenotypic characteristic of PD. These results indicate that the MRI measures presented here represent promising candidate PD biomarkers. Longitudinal studies are warranted to test this approach as part of an early diagnosis strategy and as a potential clinical trial outcome measure.

Keywords: Parkinson's Disease; Biomarkers

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PS3-36:

Testosterone Replacement Therapy Patterns for Aging Males in a Managed Care Setting

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Background/Aims: Testosterone replacement therapy is a widespread and growing practice for treating androgen deficiency. Characteristics of males receiving testosterone and treatment patterns in a managed care setting are relatively unexplored. The purpose of this study was to describe the characteristics and treatment patterns of males receiving testosterone therapy. **Methods:** We identified patients who received a testosterone prescription from January 1999 to December 2010 in Kaiser Permanente Southern California (KPSC). We excluded patients receiving testosterone therapy for indications other than androgen deficiency, including: 1) age <30, 2) genetic indications, 3) hypothalamic or pituitary dysfunction, and 4) testicular or pituitary trauma. Twelve months continuous membership prior to the index date was required for inclusion in the cohort. We investigated demographics, testosterone prescriptions, baseline diagnoses, total serum testosterone laboratory results, and physician specialty. Descriptive statistics and paired

t-test were used. **Results:** Among testosterone users (N = 10,159) the mean (SD) age was 56.8 (11.6) and 67.7% were white. On an annual basis, from 1999 to 2010, the treatment rate increased by 183% and number of prescriptions per patient increased by 22%. The most frequently prescribed testosterone products were transdermal gels (55.7%), patches (26.2%), and intramuscular injections (14.4%). The average duration of exposure was close to one year [mean (SD) days supply = 320.0 (504.2) days]. Baseline testosterone levels were obtained in 91.0% of patients and the mean (SD) serum testosterone level was 259.7 (179.5) ng/dL. Follow-up testosterone levels were drawn in 59.8% of patients within one year of the index date and the mean (SD) serum testosterone level was 395.0 (275.3) ng/dL. The mean increase from the baseline was 151.9 (95% CI = 160.5, 143.3) for transdermal gels, 118.0 (129.5, 106.5) for patches, and 200.7 (237.0, 164.3) for intramuscular injections. The most frequent diagnoses at baseline were hypertension (43.7%), hyperlipidemia (43.1%), erectile dysfunction (33.5%), testicular dysfunction (26.7%), and diabetes (20.3%). Testosterone prescriptions were most frequently written by primary care providers (family practice [36.0%] or internal medicine [20.1%]) followed by specialists (endocrinology [13.5%] and urology [6.6%]). **Conclusions:** Testosterone therapy is rapidly increasing treatment among aging males in KPSC, and most frequently prescribed by primary care physicians.

Keywords: Testosterone; Androgen Deficiency

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PS3-45:

A Randomized Controlled Trial to Improve Bone Health: A Multi-Modal Approach to Patient Recruitment

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Background/Aims: Kaiser Permanente Georgia (KPGA) is one of three sites participating in a randomized controlled trial to evaluate the effect that a direct mailing of Dual-Energy X-ray Absorptiometry (DXA) results will have on patients' bone health. This abstract describes KPGA's multi-modal approach to patient recruitment. **Methods:** Over a 24-month period, KPGA will enroll approximately 2,900 English-speaking men and women age 50 years and older who present to 1 of 5 locations to complete a bone density scan. Patients with significant mental, visual or hearing impairments will be excluded. As part of the study, participants will be asked to complete a 30-minute baseline interview in the clinic immediately following his/her DXA scan. In order to reach our enrollment goal, we have taken a multi-modal approach to patient recruitment which includes (1) proactive outreach prior to the DXA appointment, and (2) clinic-based outreach on the day of the DXA appointment. Proactive outreach includes daily review of the DXA appointment database to identify potentially eligible patients. Patients identified by this method receive an invitation letter to participate in the study as well as a follow-up phone call to determine if the patient would like to participate. Clinic-based outreach consists of flyers and posters strategically placed in high impact areas of patient waiting rooms and in-person recruitment that is initiated by the DXA technologist. **Results:** During the first 8 months of recruitment, we assessed 3,164 patients for eligibility and enrolled 1,001 patients into the study. 344 (16%) did not meet the inclusion criteria, 1,571 (50%) declined to participate, 243 (8%) were missed, and 5 (0.2%) started the baseline interview but could not complete it. Clinic workflow has not been adversely affected by the implementation of our study, and the DXA technologists have provided positive feedback on our clinic-based recruitment measures. **Conclusions:** Taking a multi-modal approach to patient recruitment may be effective in enrolling large numbers of patients in a randomized controlled trial. Our recruitment approach has been well received by both patients and clinic staff.

Keywords: Patient Recruitment; Osteoporosis; Musculoskeletal Health

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