OBJECTIVES: Limited evidence exists on the risk of falls/fractures with use of anticholinergic medications in the elderly. This study examined the risk of falls/ fractures associated with anticholinergic medication use. **METHODS:** A nested case-control design was conducted using regional Medicare Advantage Plan database. The base population included individuals aged >65 years, who survived during the entire study period (2009-2010), had at least one institutional and one outpatient claim in first 6 months (January-June 2009) and no event of falls/fractures during the first 6 months (Base Period). Cases were identified as patients who experienced incident diagnosis of falls/fractures following the base period. For each case, 4 age and sex-matched controls were selected using incidence density sampling (incidence density 1:4). The primary outcome was an event of incident falls/hip fracture, between July 1, 2009 and December 31, 2010. The primary exposure was prescription of any anticholinergic medication 30 days preceding the event date. Anticholinergic exposure was defined based on the Anticholinergic Drug Scale (ADS). Conditional logistic regression model stratified on matched case-control sets was used, with exposure to anticholinergic levels 1, 2 or 3 as the independent variable, falls/fractures as the outcome variable and other covariates associated with the outcome. **RESULTS:** The study sample consisted of 449 cases diagnosed with falls/fractures and 1,796 controls. After adjusting for other covariates, anticholinergic use was not associated with a statistically significant risk of falls/fractures (Relative Risk, RR 1.03; 95% CI, 0.82-1.31) compared to no use. The study findings remained consistent when high-level anticholinergic drugs (level 2/3) were considered (RR 1.19; 0.85-1.65). **CONCLUSIONS:** Use of anticholinergic medications was not associated with a higher risk of falls/fractures compared to no use, among patients with no history of falls/fractures. Future studies are needed to address the role of dose and concomitant use of anticholinergics to evaluate falls risk in the elderly.

PIH5

USE OF ANTICHOLINERGIC MEDICATIONS AND RISK OF ALL-CAUSE HOSPITALIZATION IN THE ELDERLY

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OBJECTIVES: Anticholinergic medications are frequently prescribed in the elderly, and have been associated with potential central and peripheral adverse events. The current study examined the risk of all-cause hospitalization associated with anticholinergic use in the elderly. **METHODS:** The study used a case-control design nested within a cohort of elderly individuals enrolled in a regional Medicare Advantage Prescription Drug Plan. The base population consisted of individuals aged >65 years, who survived during the entire study period, had at least one institutional and one outpatient claim in first 6 months (January-June 2009) and no event of hospitalization during the first 6 months (Base Period). Cases for the study experienced incident inpatient hospitalization anytime following the base period. For each case, 4 age- and sex-matched controls were selected using incidence density sampling (incidence density 1:4). The primary outcome measure was all-cause inpatient hospitalization. Prescription of any anticholinergic medication 30 days before the hospitalization date formed the primary exposure, and was defined using the Anticholinergic Drug Scale (ADS). Conditional logistic regression stratified on matched case-control sets was used to model the hospitalization risk, after controlling for additional risk factors predictive of the outcome. **RESULTS:** There were 295 cases that experienced incident hospitalization, and 1,180 age and sex-matched controls. After controlling for other covariates, use of anticholinergic medications was not associated with a significantly higher risk of hospitalization (Relative Risk, RR 0.85; 95% CI, 0.62-1.17) compared to no use. The findings remained unchanged after considering higher level (Level 2/3) anticholinergic use (RR 0.97; 0.61-1.54). **CONCLUSIONS:** The study found that anticholinergic medication use was not associated with a significantly higher risk of hospitalization compared to no use, among the elderly with no history of hospitalization. Future studies with diverse samples are required to address the role of dose and concomitant use of anticholinergic agents in the elderly.

PIH6

VITAMIN B12 STATUS IN FRAIL OLDER ADULTS ADMITTED IN A GERIATRIC ASSESSMENT UNIT: CAN THE USE OF CERTAIN DRUGS BE DETERMINANT?

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BACKGROUND: Use of proton pump inhibitors (PPIs) and metformin have emerged as potential risk factors of vitamin B12 (VB12) deficiency. Conversely, calcium supplements were shown to counteract the detrimental effect of metformin on VB12 absorption. These drugs are commonly prescribed to frail older adults in whom, VB12 deficiency is prevalent and has serious consequences. **OBJECTIVES:** To examine proportions of PPI, metformin, and calcium supplement users according to vitamin B12 status in frail older adults upon their admission to a Geriatric Assessment Unit (GAU). **METHODS:** This cross-sectional study was based on 172 medical chart reviews of patients discharged from the GAU between 2008 and 2012. VB12 status at admission was categorized as follows: ongoing treatment for VB12 deficiency, low (<148pmol/L), low-normal (148-221pmol/L), and normal (>221pmol/L) serum VB12 concentration. Use of PPIs, metformin and calcium supplements was determined from the pharmacist report. Proportions of PPI, metformin, and calcium supplement users were compared between VB12 status categories using χ^2 statistics. **RESULTS:** Most patients were women (67%), ≥75 years old (78%), and community-living (90%). Serum VB12 concentration was low and low-normal in 19% and 25% of patients, respectively; 19% had ongoing VB12 treatment. Prevalence of PPI and metformin users was 47% and 17%, respectively; these proportions did not vary significantly according to VB12 status. The use of calcium supplements was also prevalent (56%). Interestingly, proportions of calcium supplement users was found to vary significantly between categories of VB12 status (P<0.001), being of 21%, 35% and 62% in those with low, low-normal and normal status, respectively, and of 54% in those

ongoing VB12 treatment. **CONCLUSIONS:** PPI and metformin use did not appear as determinants of VB12 status in GAU patients whereas calcium supplements seem promoting better VB12 status. Whether calcium has counteracting effect on PPIs and metformin should be further examined using adjusted-analyses in a larger sample.

PIH7

ADVERSE DRUG EVENTS IN THE ELDERLY OCCURRING IN EMERGENCY, INPATIENT, AND OUTPATIENT DEPARTMENTS IN AN ADMINISTRATIVE CLAIMS DATABASE

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OBJECTIVES: Adverse drug events (ADE) in the elderly are important sequelae of drug treatment playing a role in non-adherence and increased hospitalizations and emergency visits. This study sought to describe the rate of ADEs in an elderly population and to compare the characteristics of those who experienced ADEs to those who did not. **METHODS:** This study was a retrospective cross-sectional analysis that used a 10% random sample of the IMS LifeLink Health Plans commercial claims data during the period January 1,2001 through December 31, 2009. Subjects had to be at least 65 years of age and have had at least one year of continuous medical coverage. ADEs were defined based on previously published schema using ICD-9-CM codes that mention drug therapy or "due to drug" or "drug induced". ADEs occurring in hospitalizations, emergency department visits, and outpatient physician visits are reported. Demographics, comorbidity, and health resource use were compared between persons with one or more ADEs compared to those without an ADE. **RESULTS:** 402,078 persons were eligible with 2.1% having at least one ADE. The ADE exposed group was older (77.5 vs 74.9, p<0.001), included more females (59.4% vs 54.5%, p<0.001), had higher CCI scores (2.27 vs 1.53, p<0.001and incurred nearly three times the average health care cost per person ($9,386 vs $2,962, p<0.001). The most common ADEs experienced were mental disorders (0.30%) and dermatitis (0.24%) with anticoagulants (0.15%) and chemotherapy (0.13%) being the most prevalent associated drug groups. Nearly half (48.8%) of ADEs occurred in ED departments. **CONCLUSIONS:** Approximately 2% of persons age 65 and older experienced at least one ADE. ADEs frequently required ED care underscoring the severity of many ADEs and the need to develop interventions that can reduce ADE occurences in the elderly.

PIH8

COMPARING THE EFFECT OF SEQUENTIAL THERAPY WITH TRIPLE DRUG THERAPY FOR HELICOBACTER PYLORI ERADICATION IN CHILDREN: A SYSTEMIC REVIEW AND META-ANALYSIS

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OBJECTIVES: Previous meta-analysis on adults confirmed the superiority of sequential therapy (ST) over standard triple drug therapy (STT) for *Helicobacter pylori* eradication. The evidence of demonstrating the efficacy of using ST is still lacking. The aim of this study was to conduct a systemic review and meta-analysis comparing the efficacy of ST versus STT for the treatment of *Helicobacter pylori* infection in children. **METHODS:** We used the keywords such as "*Helicobacter pylori*", "*H. pylori*", "infection","sequential therapy", "triple drug therapy" "children" and searched Cochrane library, PubMed and Google Scholar for all the relevant randomized controlled trials (RCTs), comparing the efficacy of two treatments (ST: proton pump inhibitor (PPI) + 1 antibiotic for 5 days followed by PPI + 2 antibiotics for another 5 days; STT: PPI + 2 antibiotics for 7-10 days). The eradication rates were abstracted from included RCTs and Review Manager was used to estimate the pooled risk ratio (RR). **RESULTS:** Five full text studies were included in the meta-analysis. They were published from 2005 to 2013. Three out of the five studies were of good quality (Jadad score ≥ 3).The superiority of ST over STT on the effect of *Helicobacter pylori* eradication was demonstrated, RR 1.24 (95 % CI 1.14, 1.36). No heterogeneity (I² = 0) and publication bias (funnel plot was symmetrical). In the subgroup analyses, ST remained superior to the STT regardless of the length of the STT (7 days or 10 days) (RR 1.24, RR 1.21) as well as the type of antibiotics used as a part of ST (metronidazole or tinidazole) (RR 1.24, RR 1.26). **CONCLUSIONS:** The study indicated sequential therapy is superior to standard triple drug therapy for the eradication of *Helicobacter pylori* infection in children. More large RCTs are warranted to further confirm the efficacy due to the limited number of published studies.

PIH9

FOLLOW-UP OF PSYCHOACTIVE DRUG USE IN NEWLY DIAGNOSED PATIENTS WITH AUTISM SPECTRUM DISORDER (ASD) IN QUEBEC (CANADA)

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OBJECTIVES: To characterize the temporal course of psychoactive drug utilization in a cohort of newly diagnosed autistic individuals. **METHODS:** A cohort was built using the provincial public health care insurance program (RAMQ) databases. Newly diagnosed subjects with ASD were selected (≥ 2 diagnoses (separate dates) with ICD-9 codes: 299.X, excluding 299.2) between January 1998 and December 2010. Cohort entry was the date of first diagnosis confirmed by the absence of ASD diagnosis in previous 5 years. Participants aged ≥ 26 years or those not covered by the RAMQ drug plan in the year preceding cohort entry were excluded. Demographic and clinical patient characteristics were assessed at cohort entry. Drug use profiles (anticonvulsants, antipsychotics, antidepressants, anxiolytics, ADHD drugs) were evaluated for 5 years of follow-up. Impact of age groups on drug use profiles and variations over time were analyzed using generalized estimating equations (GEE) methods. **RESULTS:** A cohort of 2,989 subjects was identified (male: 80.2%; median age: 6 years). Prior to ASD diagnosis, 35.8% received at least 1 psychoactive drug. At 1-year of follow-up, 44.9% of participants were receiving at least 1 psychoactive med-