METHODS—Compliance Studies

MEDICATION COMPLIANCE AND CONCOMITANT THERAPY
Levin RJ1, Sikka R2, Aubert RE3
1Medco Health Solutions, Franklin Lakes, NJ, USA; 2Boston City Hospital, Jamaica Plain, MA, USA

OBJECTIVES: We explore measurement of medication compliance using an adjusted medication possession ratio (aMPR) for situations of concomitant therapy with four different classes of diabetes oral medications (sulfonylureas, biguanides, alpha-glucosidase inhibitors, and thiazolidinediones). METHODS: The study evaluated pharmacy claims for diabetes oral agents for 1,051,698 continuously eligible patients enrolled with a pharmacy benefits manager. Participants were targeted using their first oral agent prescription during the period January 1, 2002, through June 30, 2002, and were followed for 360 days. We have previously demonstrated that a 75-day gap in therapy is highly predictive of diabetes medication discontinuation. Given the numerous combinations of medications in treatment regimens, we used a 75-day gap in therapy to determine whether someone is taking a medication versus whether they are switching, adding, or discontinuing one drug in a multiple-drug regimen. To determine the number of compliant days over a 360-day period, we took the sum of the supply of each medication divided by the sum of the days someone could be on a medication. This adjusted MPR (aMPR) is compared to an unadjusted MPR (MPR) that considers having any medication as compliant. RESULTS: The overall MPR was 0.77 compared to the MPR of 0.81. In this study sample, 53.5% of patients took one medication (a MPR = 0.74, MPR = 0.74); 35.3% took two medications (a MPR = 0.81, MPR = 0.86); 11.9% took three medications (a MPR = 0.83, MPR = 0.91); and 0.3% took four medications (a MPR = 0.84, MPR = 0.94). CONCLUSIONS: The aMPR considers having any medication, even if only one of two required by a treatment regimen, and can overestimate medication compliance in situations of concomitant therapy. The aMPR considers all medications in a multiple-medication regimen, with different medications contributing appropriately to compliance measurement.

ADHERENCE INDEX: A NEW AND IMPROVED APPROACH TO MEASURE MEDICATION COMPLIANCE
Chaikledkae U, Marks AS
Caremark Inc, Northbrook, IL, USA

OBJECTIVES: Medication Possession Ratio (MPR) has been extensively used to assess compliance issues. Adherence Index (AI) is a measure, which simultaneously evaluates participant level compliance and participant level persistency. This study investigates the drivers of AI for people with diabetes and the impact of an increasing AI on total health care costs compared to MPR. METHODS: Data were obtained from pharmacy and medical claims of the participants with diabetes who continuously enrolled during January 1, 2001 through December 31, 2002, yielding a total study population of 19,824. Participant level compliance and participant level persistency were calculated. Total health care costs included costs of drugs and all medical services. Participants classified into high and low compliance groups using mean AI or MPR as a cutoff point were compared. Univariate and multivariate analyses were applied.

RESULTS: Mean age for participants with diabetes was 72 years and 48% were female. The participants in high AI group (AI ≥ 0.91) had significantly lower annual total health care costs [$16,138; Standard Deviation (SD) = 37,502] compared to those in low AI group [AI < 0.91; $17,365, SD = 44,280]. However, there was no significant difference in annual total health care costs between high MPR [MPR ≥ 0.90; $16,268; SD = 38,640] and low MPR group [MPR < 0.90; $16,554; SD = 42,218]. In addition, diabetic participants with older age [Parameter Estimate (PE) = 195; p < 0.0001], male gender (PE = 2,498; p < 0.0001), hypertension (PE = 3,618; p < 0.0001), congestive heart failure (PE = 12,178; p < 0.0001), other cardiovascular diseases (PE = 2,915; p < 0.0001), chronic pain (PE = 2,470; p < 0.0001), or behavioral health diseases (PE = 8,940; p < 0.0001) had significantly lower AI. CONCLUSIONS: AI better differentiates those participants who have increased costs due to an increase in ER visits, hospitalizations, or office visits. Moreover, AI is better at assessing medication compliance issues than MPR since AI takes into account detailed participant levels of both compliance and persistency.

STUDYING COMPLIANCE WITH MEDICATION IN CHRONIC ILLNESSES USING ADMINISTRATIVE DATA: INTRACTABLE CALENDAR TRENDS?
Caro JJ1, Ishak KJ2, Huybrechts KF3, Naujoks C4
1Caro Research Institute, Concord, MA, USA; 2Caro Research Institute, Dorval, QC, Canada; 3Novartis Pharma AG, Basel, Switzerland

OBJECTIVE: Clinical trials, by their very nature, do not provide reliable compliance estimates. Naturalistic studies designed to capture “real life” dimensions of the patients’ response to treatment might be prohibitive because of the size required and difficulty in maintaining naturalistic conditions over long periods of time. Our objective was to critically evaluate the use of administrative data to compare compliance and persistence with different treatments for chronic illnesses. METHODS: Data on women with an osteoporosis diagnosis followed by a prescription for osteoporosis medication were obtained from Saskatchewan Health and Protocare Sciences (1996–2002). Each woman’s compliance profile was reconstructed using prescription claims records. Women who were not compliant at termination of their follow-up were considered non-persistent. Persistence status was analyzed using Kaplan-Meier techniques. Similar analyses in hypertension (chronic) and heart failure (acute) provided a comparison. RESULTS: In osteoporosis, a calendar effect was observed with patients entering the cohort in later years being significantly more likely to become non-persistent than those starting earlier. The discrepancy was not explained by differences in patients’ age or history (prior fractures, history of osteoporosis medication or steroids use). The same calendar trend was observed in hypertension, but not in heart failure. The effect can likely be explained by changes over time in the composition of the patient population: the proportion of prevalent cases—which is very high during the initial study year because of the somewhat artificial starting point of the observation period—gradually decreases over time, whereas the proportion of incident cases increases. Incident patients are more likely to become non-persistent due to various factors, including misdiagnosis, reluctance to take medication, and lower severity. CONCLUSION: Drug-specific compliance analyses in chronic diseases can yield biased results, with more recent regimens disadvantaged. This phenomenon has to be examined in the analyses and may prove intractable.