To assess real-world effectiveness of BUD/FM DPI versus tiotropium:

LCA represents a new method to analyze large health databases.

Conclusions: To coexist with COPD, generalized linear models were performed to estimate the differences in the prevalence of comorbidities, including 17 conditions (ORCs, emergency visits, or COPD hospitalizations; HR = 0.78 [0.62, 0.98]). Tiotropium in combination with other medications was associated with increased risk of death in COPD (RR = 0.60 [95% CI 0.45, 0.79]) compared to tiotropium plus long-acting beta-agonists. This combination was also associated with reduced death risk compared to tiotropium (HR = 0.84 [0.73, 0.97]) and COPD hospitalizations (HR = 0.78 [0.62, 0.98]).

Outcomes identified during follow-up were all-cause mortality, COPD exacerbations, and COPD hospitalizations. Exposure to COPD medication regimens was defined in a time-varying manner and Cox proportional hazards regression was employed to evaluate substantial burden of comorbidities, which the regimen of tiotropium plus inhaled corticosteroids plus long-acting beta-agonists was associated with 40% reduced risk of death (HR = 0.60 [95% CI 0.45, 0.79]) compared to inhaled corticosteroids plus long-acting beta-agonists. This combination was also associated with reduced death risk compared to tiotropium (HR = 0.84 [0.73, 0.97]) and COPD hospitalizations (HR = 0.78 [0.62, 0.98]). Tiotropium in combination with other medications was associated with increased risk of death compared to treatment with inhaled corticosteroids and long-acting beta-agonists. However, this result was not consistent in other medications regimens that included tiotropium.

Poster Session I

Classifying Patients with Metabolic Syndrome Using the Latent Class Analysis (LCA)

University of Illinois at Chicago, Chicago, IL, USA; National University of Singapore, Singapore, Singapore; Lilly and Company, Indianapolis, IN, USA

Objectives: To identify subgroups of metabolic syndrome patients who would be more homogeneous in terms of metabolic risk factors. The electronic medical record database from GE Healthcare was used for this study. The database comprises de-identified longitudinal medical records of nationally representative patients attending general practitioners. All adult patients were assessed for the presence of metabolic syndrome using the guidelines proposed by the National Cholesterol Education Program Adult Treatment Panel III (NCEP ATP III).

A latent class analysis was conducted based on the abnormality of patients’ metabolic risk factors including triglycerides (TG; ≥150 mg/dL), high-density lipoprotein cholesterol (HDL-C; men: ≥40 mg/dL; women: ≥50 mg/dL), blood pressure (BP; systolic ≥130 mmHg, diastolic ≥88 cmHg), waist circumference (WC; men: ≥102 cm; women: ≥88 cm). The final model was selected based on model fit indices including Akaike’s information criterion, Bayesian information criterion (BIC), and sample-size adjusted BIC. RESULTS: Metabolic syndrome was present in 19,251 individuals. The prevalence of high blood pressure was 96.4%. All the fit indices in the LCA modeling pointed to a 5-class solution. In addition to high blood pressure, members of Class 1 (6.5%) had abnormal TG and HDL-C; members of Class 2 (4.6%) had abnormal HDL-C and WC; members of Class 3 (19.7%) had abnormal TG and WC; and the majority had also abnormal HDL-C (probabilty: 68.7%); members of Class 4 (8.2%) had abnormal plasma glucose and WC; and members of Class 5 (61.1%) had high probability of abnormality in all metabolic risk factors (range: 79.9-100%).

CASE STUDY: The LCA method was applied for a case study of patients with metabolic syndrome. The subgroups of metabolic syndrome identified in this study need to be further studied for its usefulness in clinical and health services research.

Longitudinal Data Exploration with Stacked Cumulative Percent Plots for Categorical Data

University of Pennsylvania, Research Triangle Park, NC, USA

Longitudinal clinical trial data present analysts with the unique challenge of summarizing large trends over time without losing the detail of changes from one timepoint to the next. Analysts must find a balance between the preservation of details at one timepoint and the movement of cases in the next. Analysts must find a balance between the preservation of details at each timepoint and the movement of cases in the next. For instruments that measure outcomes using nominal or ordinal response categories, analysts may want to preserve categorical information by reporting response category frequencies over time. In this case, the frequency of change across the course of treatment or disease progression is more informative, and probably more appropriate, than mean or median change. Collapsing responses into mean or medians draws attention to overall trends, while losing the ability to detect movement from one category response to another. A novel data visualization solution, stacked cumulative percent plots, allows analysts to view the individual categorical responses and track the movement of categorical responses over time. Comparisons of stacked cumulative percent plots with mean plots illustrate the additional information that can be learned from retaining categorical information. Further, a variation of the proposed plot allows analysts to visualize the frequency of response category changes.