SMDM
Society for Medical Decision Making

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34th ANNUAL MEETING

Designing
HEALTH INFORMATION TECHNOLOGY *for*
BETTER HEALTH DECISIONS

2012

OCTOBER 17 - 20

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1:15 PM - 1:30 PM: Fri. Oct 19, 2012
Regency Ballroom C (Hyatt Regency)
Part of Session: METHODS FOR COMPARATIVE EFFECTIVENESS RESEARCH

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Purpose: To synthesize real-world evidence on outcomes among patients with type 2 diabetes mellitus (T2DM) who initiated insulin glargine via disposable pen versus vial/syringe.

Method: We performed a meta-analysis of previously reported retrospective studies conducted in 4 different databases with a common data structure framework (consistently defined study design and measures). All four studies included adult T2DM patients previously treated with oral anti-diabetes drugs and/or glucagon-like peptide-1 therapy only, who initiated insulin glargine via disposable pen (GLA-P) or vial/syringe (GLA-V) between 2007 and 2009. All patients had to have continuous health plan enrollment 6 months prior to insulin initiation (baseline), and 12 months after (follow-up). In each study, baseline differences between GLA-P and GLA-V patients were balanced using stringent 1:1 propensity score matching. Study measures defined consistently across all four studies included 1-year follow-up treatment persistence and adherence, healthcare utilization, and hypoglycemia events. Data was analyzed with random effects modeling, using a unique evidence synthesis platform (Doctor Evidence®, Santa Monica, CA), with I^2 to indicate degree of heterogeneity across studies.

Result: A total of 22,234 patients were pooled, and baseline characteristics for GLA-P (N=11,117) and GLA-V (N=11,117) patients were similar across each individual study. During 1 year follow-up, GLA-P patients were 25% more likely to be persistent (39.5% vs. 31.5%, p<0.0001, relative risk (RR) = 1.25, 95% Confidence Interval (CI) 1.15-1.37, I^2 = 85.7%) and adherent (mean difference = 0.04, 95% CI 0.03-0.05; I^2 = 10.24%), averaging an additional 30.3 days on treatment (95% CI 21.64-38.99; I^2 = 81.8%). GLA-P patients were also 24% less likely to have hypoglycemic events (6.4% vs 8.5%; RR=0.76, 95% CI 0.69-0.83; I^2 = 0%) and 15% less likely to have hospital visits (21.7% vs 25.7%; RR=0.85, 95% CI 0.81-0.89; I^2 = 22.61%), but 26% more likely to have endocrinologist visits (22% vs. 17%, RR=1.26, 95% CI 1.1-1.45; I^2 = 83.76%). Heterogeneity varied across analyses. Sensitivity analyses yielded consistent results with the primary analysis.

Conclusion: This meta-analysis supports previous findings from individual studies, suggesting improved outcomes associated with disposable pen versus vial/syringe for

T2DM patients initiating insulin glargine therapy. Additionally, application of a common data structure across studies, combined with the unique evidence synthesis platform, enables reliable pooling of retrospective database studies and facilitates synthesis of real-world evidence.

H-3. A PNEUMONIA MORTALITY MODEL BASED ON HIGHLY DETAILED ADMINISTRATIVE DATA

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Part of Session: METHODS FOR COMPARATIVE EFFECTIVENESS RESEARCH

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Purpose: Clinical prediction instruments generally incorporate clinical data, whereas models derived from administrative data make use of information coded at discharge. We constructed a mortality model derived from highly detailed administrative data acquired during the first 48 hours of admission.

Methods: Our dataset included information on all patients aged ≥18 years with a principal diagnosis of pneumonia or a secondary diagnosis of pneumonia paired with a principal diagnosis of sepsis, respiratory failure/arrest or influenza, who were admitted between 07/01/07 and 06/30/10 to 347 hospitals that participated in Premier's Perspective database. The dataset was divided into a derivation and validation set. We derived an HGLM inpatient mortality model that included patient demographics, co-morbidities, acute and chronic medications, therapies and diagnostic tests administered in the first 48 hours of admission as well as interaction effects. The final model was applied to the validation set.

Results: The dataset included 200,870 patients in the derivation cohort and 50,037 patients in the validation cohort. In the final multivariable model, 3 demographic factors, 27 comorbidities, 40 medications, 8 diagnostic tests and 10 treatments within the first 48 hours were associated with mortality. The strongest predictors of mortality were early vasopressors (OR 1.79), early non-invasive ventilation (OR 1.59), and early bicarbonate treatment (OR 1.70). The model had a c-statistic of 0.85