MedDRA Literature Commentary

Subject of commentary:

DuMouchel, W, Fram, D, Yang, X, Mahmoud, RA, Grogg, AL, Engelhart, L, and Ramaswamy, K. Antipsychotics, glycemic disorders and life-threatening diabetic events: a Bayesian data mining analysis of the FDA Adverse Event Reporting System (1968 - 2004). Annals of Clinical Psychiatry 2008; 20(1): 21 – 31

Commentary:

This article is an analysis of diabetes-related adverse events associated with seven antipsychotic drugs using MedDRA coded data in the FDA's Adverse Event Reporting System (AERS) database. The authors employed three data mining methodologies: proportional reporting ratio (PRR), Multi-Item Gamma Poisson Shrinker (MGPS), and logistic regression (LR). Fourteen MedDRA Preferred Terms (PTs) from MedDRA Version 7.1 were used to identify cases of diabetes-related events. The authors grouped the PTs into three different categories (Blood Glucose Abnormal, Diabetes Mellitus, and Diabetic Life-Threatening Events) for the purpose of analysis.

The focus of the article is on the strengths of associations of diabetes-related events to the studied antipsychotic drugs. The findings of this study more or less confirmed previous studies showing associations between atypical antipsychotic drugs and these types of events, but it also suggests that different specific drugs in this class have varying degrees of association that need to be further studied.

Although MedDRA is not central to the study findings, there are some interesting observations that should be considered and noted for future studies like this one employing MedDRA coded data:

1. The authors used diabetes-related PTs from MedDRA Version 7.1. This version was two years before the Standardised MedDRA Query (SMQ) – SMQ *Hyperglycaemia/new onset diabetes mellitus* – was added to MedDRA (Version 9.1). SMQs are currently recommended in the EU's pharmacovigilance guideline (Volume 9A) for signal detection purposes. MSSO encourages research in the area of SMQs and their application in data mining algorithm/signal detection methodology. It would be interesting to see if the findings in this present article would be confirmed by using this SMQ. The authors themselves noted the potential to augment their findings by grouping their selected PTs into three logical groupings.

   The AERS data used in this study spanned from 1968 to 2004 and therefore contained a considerable number of case reports that had initially been coded using COSTART. Studies of large MedDRA-coded

databases should indicate the method – if any – of data conversion from prior terminologies as this may impact upon the way queries are developed and possibly the approach to signal generation. For example, the AERS database was converted to MedDRA by mapping existing COSTART terms to corresponding MedDRA terms. (COSTART contained relatively "coarse" PTs numbering approximately 1200 compared to MedDRA's Version 7.1's more specific 16,559 PTs). Because there was often more specific information in the verbatim term than COSTART could accommodate, there was information lost in the process of coding to COSTART. When converting from COSTART directly to MedDRA terms without referencing the original verbatim information, the "lost" information is not recovered.

2. The method of MedDRA version updates of the coded data should also be considered when using terms or aggregated terms for retrieval and data mining methods. For example, some of the fourteen PTs selected for study in MedDRA Version 7.1 may not have been available for coding in earlier versions of MedDRA and therefore, conceptually, may be "underrepresented" in aggregate, especially if verbatim terms from an earlier time had not been recoded to the latest version of MedDRA.

Despite these issues, the MSSO is pleased to see active research in data mining approaches using MedDRA and looks forward to a continued dialogue between MedDRA users and researchers in this important field.

Summary: This article is an analysis of diabetes-related adverse events associated with seven antipsychotic drugs using a large MedDRA-coded database and employing three data mining methodologies. The findings of this study confirmed previous studies showing associations between atypical antipsychotic drugs and these types of events.

Future studies of this type could be enhanced by stating the method (if any) of data conversion from prior terminologies and the approach to MedDRA version updates as those methodologies may impact upon the results of such studies. Finally, MSSO encourages further research in this field using SMQs which aggregate together PTs related to a medical condition or area of interest.