Reducing/Preventing Hypoglycemic Risk Through Evidence-Based Practice

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Proposed Removal of Sulfonylureas From Hospital Formulary

Background:
One of the major concerns with sulfonylurea utilization in the hospital is their extremely long half-lives of 16-24 hours, resulting in prolonged hypoglycemia (Barnett, 2010). This is especially the case in patients with acute or chronic renal issues, and patients with altered nutritional intake (such as NPO and loss of appetite) (Vigovsky, 2013) (Clement, 2013).

Duenesberry CM and colleagues completed a study observing adults who took a sulfonylurea during their hospitalization. They found that 19% of patients ingesting a sulfonylurea also had one or more incidents of hypoglycemia during their stay (Duenesberry, 2012). Adrian Jennings did a similar study spanning six months in which 41 out of 203 hospital patients (20.3%) on a sulfonylurea experienced symptoms of hypoglycemia (Jennings, 1989).

It has been documented and confirmed that three other hospitals have officially removed sulfonylureas from their drug formularies to some degree. They include Memorial Sloan-Kettering Cancer Center, Spectrum Health System, and Redlands Community Hospital.

Methods:
The study was conducted in two major portions, literature reviews and data collection. The first step in the process was evaluating scholarly work that attempted to make the public mindful of the risks that are associated with sulfonylurea use in an hospital setting. Subsequently, posts made by certified diabetes educators on the American Association of Diabetes Educators website were examined, networking with educators that have removed sulfonylureas from hospital formularies, or those in the process of doing so.

The number of patients from LVHN that ingested a sulfonylurea during their inpatient stay from July 2013-March 2014 was collected. In addition, all patients that had at least one hypoglycemic event during their hospitalization from July 2013-March 2014 were also collected. The number of days and events each patient was hypoglycemic was also provided. By the use of excel one was able to match patient account numbers between the two lists. This produced data on patients that were prescribed a sulfonylurea and experienced at least one hypoglycemic event.

Sulfonylureas on Lehigh Valley Health Network Formulary

Glimepiride (Amaryl) - Glyburide micronized (Glynase)
Glyburide (Micronase/Diabeta) - Glipizide
Gliclazide ML - Glipizide/Metformin

*See handout for contraindications and precautions for each drug

Results:
The American Diabetes Association defines hypoglycemia as a blood glucose level less than 70 mg/dL (Moghissi, 2009). Both LVHN campuses, Cedar Crest and Muhlenberg, had a significantly high percent of patients with sulfonylurea induced hypoglycemia, 18.7 and 16.2 respectively. Producing data that corresponds with other sulfonylurea-induced hypoglycemic scholarly work indicates that this matter is prevalent at Lehigh Valley Health Network. Additionally, both hospitals had substantial ratios of total days and events blood glucose less than 70 mg/dL stimulated by a sulfonylurea. At the Cedar Crest campus these were 1.73 and 2.8, and 1.53 and 2.5 at Muhlenberg campus respectively.

Conclusion:
The importance of this proposal is to reduce hypoglycemic risk. Hypoglycemia can be fatal, cause brain death, lead to confusion, loss of consciousness, and result in seizures (Vigovsky, 2013). By removing and/or reducing sulfonylureas use in the hospital setting one may minimize this risk.

This research indicates that we are not maximizing the quality of care provided by keeping these drugs on formulary. Moreover, increased costs begin to become a concern when one episode of hypoglycemia increases the length of stay by 2.8 days (Turchin 2009). Consequently, two of the three “Triple Aim” aspects are not met while this drug is available for use.

An LVHN diabetes management quality improvement improvement: Reduce Hypoglycemic Rates

Campus | Cedar Crest | Campus
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Percent Patients having Sulfonylureas Induced Hypoglycemia | 18.7% | 16.2%
Total Days BG <70 mg/dL per Sulfonylurea Induced Hypoglycemia | 1.73 | 1.53
Total Events BG < 70 mg/dL per Sulfonylurea Induced Hypoglycemia | 2.85 | 2.5

Notes: -All patients had diabetes, 18 years of age or older, and were non-pregnant -Data collected was from LVHN inpatient admissions from July 2013-March 2014

Leyequin Induced Hypoglycemia Update

Hypoglycemia Algorithm Proposed Revision

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