The Pharmacist Activist

Volume 11, No. 12 • December 2016

Editorial

Peace and Good Will

The events of a period of just slightly more than two months provide a very wide range of emotions, commentary, and experiences:

- Halloween, costumes, and candy;
- The unprecedented negative rhetoric and criticisms before and following the Presidential election;
- The election of Donald Trump as President to the great surprise of most;
- Veterans Day and the emphasis on patriotism;
- Thanksgiving with its opportunities for gatherings of families and friends, for giving thanks, and serving others;
- The 75th anniversary of the attack on Pearl Harbor on December 7, 1941, with the solemn remembrance of the thousands of individuals who died or were injured, and the recognition and appreciation of the dedication and courage of those who serve in the military;
- Terroristic events throughout the world;
- Daily reports of the tragedies of the epidemic of opioid overdosages;
- The celebrations of Christmas and Hanukkah that are characterized by peace, good will, and love;
- New Year's Eve, New Year's Day, resolutions, and parades.

Issues on which there are strong differences of opinion will continue, but we can learn from each other through respectful dialogue. However, too often we become obsessed with differences of opinion, and the resultant rhetoric becomes harsh and even hateful. We would be better served by focusing on the biblical message, "Glory to God in the highest, and on earth peace, good will toward men" (Luke 2:14, King James version).

One of my favorite Christmas hymns is "O Holy Night" (text by John S. Dwight). As we sang it in church this past Sunday morning, the following section of the third verse impressed me as being very applicable to many of our current discussions and experiences:

"Truly He taught us to love one another;
His law is love and His gospel is peace.
Chains shall He break, for the slave is our brother,
And in His name all oppression shall cease.
Sweet hymns of joy in grateful chorus raise we;
Let all within us praise His holy name."

Daniel A. Hussar

Contents

Appreciation

This issue marks the completion of the eleventh year of publication of *The Pharmacist Activist*. The index for this Volume 11 is on page 4. All of the issues in Volumes 1 through 11 (2006-2016) are available on the website, www.pharmacistactivist.com.

I wish to express my continued appreciation to Jeff Zajac and Pat Polli for their expertise in preparing and distributing the issues. My deep appreciation is also extended to my friend and former student, Linda Corvari. Linda is the Founder and President of p-value communication (www.pvaluecomm.com) and has provided financial support for publication of *The Pharmacist Activist*. This support reflects her commitment to advance the profession of pharmacy through stimulation of discussion/debate on important issues and challenges, and the provision of objective evaluations of new drugs. This support makes it possible to continue to make *The Pharmacist Activist* available free-of-charge via email to any interested pharmacist or student pharmacist.

The numerous thoughtful and informative communications from readers provide the motivation to continue with this initiative to address the issues that I consider to be of greatest importance for the profession of pharmacy. Many of you are aware that I was diagnosed with acute myeloid leukemia in 2015 ("Time Out!" July 2015 issue of *The Pharmacist Activist*), and I appreciate the encouraging messages I have received. I am thankful to report that my leukemia has been in remission for more than a year, and that I have been actively participating in my teaching and other responsibilities. I am participating in a clinical trial of an investigational anti-leukemia drug in a study at Memorial Sloan Kettering Cancer Center in New York. The drug has provided encouraging results and I am tolerating it well.

Best wishes for a blessed, healthy, and enjoyable new year!

Daniel A. Hussar

New Drug Review

Lixisenatide (Adlyxin – Sanofi)

Antidiabetic Agent

New Drug Comparison Rating (NDCR) = 2 *(significant disadvantages)*
in a scale of 1 to 5 with 5 being the highest rating

Indication:

Administered subcutaneously as an adjunct to diet and exercise to improve glycemic control in adults with type 2 diabetes mellitus.

Comparable drugs:

Exenatide (Byetta), exenatide extended-release (Bydureon), liraglutide (Victoza), albiglutide (Tanzeum), dulaglutide (Trulicity).

Advantages:

- Labeling does not include boxed warning or contraindications regarding risk of thyroid C-cell tumors;
- Less likely to cause injection site reactions (compared with albiglutide).

Disadvantages:

- Does not decrease (or increase) cardiovascular risks (compared with liraglutide that has been reported to reduce the risk of cardiac death and overall heart risks);
- Is administered more frequently (once a day compared with albiglutide, dulaglutide, and exenatide extended-release that are administered once a week);
- May be more likely to cause immunogenicity.

Most important risks/adverse events:

Pancreatitis (treatment should be discontinued if

pancreatitis is suspected; other antidiabetic agents should be considered in patients with a history of pancreatitis); hypersensitivity reactions; hypoglycemia (when used concomitantly with insulin or an insulin secretagogue [e.g., a sulfonylurea]); acute kidney disease (renal function should be monitored in patients with renal impairment reporting severe adverse gastrointestinal reactions; not recommended in patients with end-stage renal disease); immunogenicity (development of antibodies may worsen glycemic control and increase risk of adverse events); slows gastric emptying (not recommended in patients with gastroparesis; may alter absorption and activity of concomitantly administered oral medications; medications such as antibiotics and acetaminophen should be administered 1 hour before lixisenatide; oral contraceptives should be administered at least 1 hour before or 11 hours after lixisenatide).

Most common adverse events:

Nausea (25%), vomiting (10%), headache (9%), diarrhea (8%), dizziness (7%).

Usual dosage:

Administered subcutaneously in the abdomen, thigh, or upper arm; initially, 10 mcg once a day within 1 hour before the first meal of the day for 14 days; on Day 15, the dosage should be increased to 20 mcg once a day; if a dose is missed, should be administered within 1 hour prior to the next meal.

Product:

Injection supplied in single-patient use pens containing 3 mL of solution; pens contain 50 mcg/mL and deliver 14 doses of 10 mcg, or 100 mcg/mL and deliver 14 doses of 20 mcg; (should be stored in a refrigerator prior to first use); (a combination product [Soliqua] that also includes insulin glargine has been subsequently approved).

Comments:

Lixisenatide is the fifth glucagon-like peptide-1 (GLP-1) receptor agonist, joining exenatide (marketed initially in an immediate-release formulation [Byetta] and subsequently in an additional extended-release formulation [Bydureon]), liraglutide, albiglutide, and dulaglutide. Its effectiveness was demonstrated in 10 clinical trials that enrolled 5,400 patients with type 2 diabetes, in which it was used as monotherapy, and in combination with other antidiabetic agents including metformin, sulfonylureas, pioglitazone, and a basal insulin. Lixisenatide provided reductions in hemoglobin A1c and fasting plasma glucose concentrations. In a placebo-controlled study, patients treated with lixisenatide experienced a reduction in A1c concentrations of 0.83% compared with a reduction of 0.18% in patients receiving placebo, representing a difference from placebo of -0.65%. In an active-controlled study, it was noninferior to exenatide (twice a day) but provided less of an A1c reduction than exenatide.

In a cardiovascular outcomes trial in patients with type 2 diabetes after a recent acute coronary syndrome event, the use of lixisenatide did not increase or decrease cardiovascular risks. The results of a recent study with liraglutide indicate a reduction in risk of cardiac death and overall heart risks. Unlike most other GLP-1 agonists, the labeling for lixisenatide does not include warnings or contraindications regarding a risk of thyroid C-cell tumors. Lixisenatide may be more likely than other GLP-1 agonists to be associated with the development of antibodies.

Daniel A. Hussar

Index for Volume 11, 2016

**All issues of The Pharmacist Activist are available without charge at www.pharmacistactivist.com*

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