Title: A Retrospective Evaluation of Glycemic Effects in Veterans with Type 2 Diabetes After Addition of SGLT2 Inhibitors or GLP-1 Receptor Agonists to Basal-Bolus Insulin Regimens

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Introduction: Literature is limited regarding the utility of sodium glucose co-transporter 2 (SGLT2) inhibitors and glucagon like peptide 1 (GLP-1) agonists when added to basal-bolus insulin regimens.

Methods: This retrospective, multi-center cohort study included adult Veterans prescribed either an SGLT2 inhibitor or GLP-1 agonist in addition to basal-bolus insulin for at least 12 months. The primary outcome was change in A1c from baseline to 12 months. Change in A1c was also assessed at 6, 18, and 24 months. Additional secondary outcomes included changes in weight, blood pressure, renal function, and insulin total daily dose (TDD).

Results: A total of 98 and 210 patients were included in the SGLT2 inhibitor and GLP-1 agonist arms, respectively. The mean change in A1c from baseline to 12 months was -0.59% [1.83%] and -0.91% [1.91%] after SGLT2 inhibitor and GLP-1 agonist initiation, respectively. Greater mean weight loss was achieved in the GLP-1 agonist group at 12 months compared to the SGLT2 inhibitor group (-10.9 [85.8] pounds vs -9.2 [72] pounds). The mean basal insulin TDD change from baseline to 12 months was -3.7 [23.8] units and -4.3 [24.4] units, and mean bolus insulin TDD change was +9.7 [79.5] units and -7.9 [63.9] units in the SGLT2 inhibitor group and GLP-1 agonist group, respectively. Changes in blood pressure and eGFR were minimal. The most common adverse event noted was retinopathy.

Conclusions: Among patients on basal-bolus insulin therapy, adding an SGLT2 inhibitor or a GLP-1 agonist improved glycemic control and reduced basal insulin doses and body weight.