



NEWS RELEASE

Media contacts:

Kaitlin Meiser
908.927.7316 office
908.938.3209 cell
kmeiser3@its.jnj.com

Investor contacts:

Louise Mehrotra
732.524.6491 office

Lesley Fishman
732.524.3922 office

First Real-World Evidence Comparing an SGLT2 Inhibitor with DPP-4 Inhibitors Shows Adults with Type 2 Diabetes Achieve Greater Blood Glucose Control with INVOKANA[®] (canagliflozin)

RARITAN, N.J., March 14, 2016 – Results of a new analysis of data from real-world clinical practice show that, in adults with type 2 diabetes, use of the once-daily oral medication INVOKANA[®] (canagliflozin) is associated with significantly greater improvements in blood glucose control compared to dipeptidyl peptidase-4 (DPP-4) inhibitors, a common class of medicines for type 2 diabetes that includes Januvia[®] (sitagliptin). The new real-world findings, the first to compare the effectiveness of a sodium glucose co-transporter 2 (SGLT2) inhibitor with DPP-4 inhibitors, were published in *Current Medical Research & Opinion*.¹

The analysis, based on data from U.S. health plans, evaluated the glycemic control of people with type 2 diabetes treated with INVOKANA[®] versus DPP-4 inhibitors over a period of nine months. Of the 1,439 people with type 2 diabetes and available A1C values included in the analysis, those treated with INVOKANA[®] had a mean reduction in A1C of 0.92 percent compared to baseline, versus a mean reduction of 0.63 percent among those treated with a DPP-4 inhibitor ($p < 0.001$). Additionally, a significantly greater percentage of patients taking INVOKANA[®] achieved treatment goals of A1C less than 8 percent and less than 7 percent. Similar results were observed in a post-hoc analysis of those treated with INVOKANA[®] versus the DPP-4 inhibitor, sitagliptin. A1C, or hemoglobin A1C, is used as a measure of average blood glucose over the past two to three months.

“This real world analysis complements findings from the pivotal trials that informed the approval of INVOKANA[®], as it provides insights to physicians on how these medicines are performing post-approval for people living with type 2 diabetes,” said study co-author Richard Aguilar, M.D.*, Medical Director of Diabetes Nation. “These new findings are important in light of the need to identify therapeutic options with the best potential for achieving treatment goals, especially since they are estimated to remain unmet for up to one-half of people with type 2 diabetes.”²

In Phase 3 clinical trials, compared to the DPP-4 inhibitor sitagliptin, INVOKANA[®] 300 mg resulted in significantly greater reductions in A1C, and also greater reductions in body weight and systolic blood pressure.^{3,4,5}

The American Diabetes Association recommends most adults with type 2 diabetes maintain A1C levels of 7 percent or less. Medicare and many health plans use an A1C level of less than 8 percent as a treatment goal.⁶

Study Details

This retrospective matched-control cohort analysis, designed and conducted jointly by Janssen Pharmaceuticals and Optum, drew from the Optum Research Database. The database included 131,474 adults with type 2 diabetes who had one or more pharmacy claims for INVOKANA[®] or a DPP-4 inhibitor between April 1, 2013 and December 31, 2013. Through propensity score matching for similar patient and treatment characteristics, researchers matched 2,766 patients prescribed INVOKANA[®] (100 mg or 300 mg daily) with an equal number of patients prescribed DPP-4 inhibitors. The observational analysis was based on patients in the two cohorts who had six months of baseline data and nine months of follow-up data after starting therapy on INVOKANA[®] or a DPP-4 inhibitor. Of the patients treated with DPP-4 inhibitors, more than half (53.2 percent) were treated with sitagliptin.

Main Outcomes

- Among the matched patients in each of the two treatment cohorts, more than 90 percent were already on one or more antihyperglycemic agents prior to initiating INVOKANA[®] or a DPP-4 inhibitor.
- Baseline and follow-up A1C values were available for 729 patients in the INVOKANA[®] cohort and 710 patients in the DPP-4 inhibitor cohort, and showed significantly greater reduction with INVOKANA[®] ($p < 0.001$):
 - A1C, INVOKANA[®] cohort: 8.62 percent at baseline and 7.70 percent at follow-up for a 0.92 percent reduction
 - A1C, DPP-4 inhibitor cohort: 8.57 percent at baseline and 7.94 percent at follow-up for a 0.63 percent reduction
- At follow-up, a significantly greater percentage of patients in the INVOKANA[®] cohort compared to the DPP-4 inhibitor cohort achieved the treatment goal of A1C less than 8 percent (66.0 percent vs. 58.6 percent, $p = 0.004$), and of A1C less than 7 percent (35.4 percent vs. 29.9 percent, $p = 0.022$).
- A post-hoc analysis showed that matched patients treated with INVOKANA[®] achieved greater reductions at follow-up in A1C compared to sitagliptin ($n = 364$): 0.93 percent vs. 0.57 percent, $p = 0.004$.

“INVOKANA[®] is the number-one prescribed SGLT2 inhibitor with more than 7 million prescriptions and growing, and our research continues exploring the performance of this medicine across diverse patients with type 2 diabetes to help physicians and patients make informed treatment decisions,” said Paul Burton, MD, PhD, Vice President, Medical Affairs, Janssen. “Coupled with results from randomized clinical trials of INVOKANA[®], real-world evidence is important to providers and payers because it demonstrates the quality outcomes that can be achieved in everyday clinical practice.”

INVOKANA[®] is used along with diet and exercise to lower blood glucose in adults with type 2 diabetes. INVOKANA[®] works with the kidneys to lower A1C. It is not indicated for weight loss or as antihypertensive treatment.

About Type 2 Diabetes

Of the approximately 29 million people who have diabetes in the United States, 90 to 95 percent of them have type 2 diabetes, which is chronic and affects the body's ability to metabolize sugar (glucose), and is characterized by the inability of pancreatic beta cell function to keep up with the body's demand for insulin.

WHAT IS INVOKANA®?

INVOKANA® is a prescription medicine used along with diet and exercise to lower blood sugar in adults with type 2 diabetes. INVOKANA® is not for people with type 1 diabetes or with diabetic ketoacidosis (increased ketones in blood or urine). It is not known if INVOKANA® is safe and effective in children under 18 years of age.

IMPORTANT SAFETY INFORMATION

INVOKANA® can cause important side effects, including:

- **Dehydration** (the loss of body water and salt), which may cause you to feel dizzy, faint, lightheaded, or weak, especially when you stand up (orthostatic hypotension). You may be at higher risk of dehydration if you have low blood pressure, take medicines to lower your blood pressure (including diuretics [water pills]), are on a low sodium (salt) diet, have kidney problems, or are 65 years of age or older
- **Vaginal yeast infection.** Women who take INVOKANA® may get vaginal yeast infections. Symptoms include: vaginal odor, white or yellowish vaginal discharge (discharge may be lumpy or look like cottage cheese), or vaginal itching
- **Yeast infection of the penis (balanitis or balanoposthitis).** Men who take INVOKANA® may get a yeast infection of the skin around the penis. Symptoms include: redness, itching, or swelling of the penis; rash of the penis; foul-smelling discharge from the penis; or pain in the skin around penis

Talk to your doctor about what to do if you get symptoms of a yeast infection of the vagina or penis.

Do not take INVOKANA® if you:

- are allergic to canagliflozin or any of the ingredients in INVOKANA®. Symptoms of allergic reaction may include: rash; raised red patches on your skin (hives); or swelling of the face, lips, tongue, and throat that may cause difficulty in breathing or swallowing
- have severe kidney problems or are on dialysis

Before you take INVOKANA®, tell your doctor if you have kidney problems; liver problems; pancreas problems; are on a low sodium (salt) diet; are going to have surgery; are eating less due to illness, surgery, or a very low calorie diet; ever had an allergic reaction to INVOKANA®; drink alcohol very often (or drink a lot of alcohol in short-term); or have other medical conditions.

Tell your doctor if you are or plan to become pregnant, are breastfeeding, or plan to breastfeed. It is not known if INVOKANA® will harm your unborn baby. It is also not known if INVOKANA® passes into your breast milk.

Tell your doctor about all the medicines you take, including prescription and non-prescription medicines, vitamins, and herbal supplements. Especially tell your doctor if you take diuretics (water pills), rifampin (used to treat or prevent tuberculosis), phenytoin or phenobarbital (used to control seizures),

ritonavir (Norvir[®], Kaletra[®] – used to treat HIV infection), or digoxin (Lanoxin[®] – used to treat heart problems).

Possible Side Effects of INVOKANA[®]

INVOKANA[®] may cause serious side effects, including:

- **Ketoacidosis** (increased ketones in your blood or urine) can happen with INVOKANA[®], even if your blood sugar is less than 250 mg/dL. **Stop taking INVOKANA[®] and call your doctor right away if you get any of the following symptoms: nausea, vomiting, stomach-area pain, tiredness, or trouble breathing**
- **Kidney problems, a high amount of potassium in your blood (hyperkalemia), or low blood sugar (hypoglycemia).** If you take INVOKANA[®] with another medicine that can cause low blood sugar, such as a sulfonylurea or insulin, your risk of getting low blood sugar is higher. The dose of your sulfonylurea medicine or insulin may need to be lowered while you take INVOKANA[®]
- **Serious Urinary Tract Infections:** may lead to hospitalization and have happened in people taking INVOKANA[®]. Tell your doctor if you have signs or symptoms of a urinary tract infection such as: burning feeling while urinating, need to urinate often or right away, pain in the lower part of your stomach (pelvis), or blood in the urine. Some people may also have high fever, back pain, nausea, or vomiting

Signs and symptoms of low blood sugar may include: headache, drowsiness, weakness, dizziness, confusion, irritability, hunger, fast heartbeat, sweating, shaking, or feeling jittery.

Serious allergic reaction. If you have any symptoms of a serious allergic reaction, stop taking INVOKANA[®] and call your doctor right away or go to the nearest hospital emergency room.

Broken Bones (fractures): Bone fractures have been seen in patients taking INVOKANA[®]. Talk to your doctor about factors that may increase your risk of bone fracture.

The most common side effects of INVOKANA[®] include: vaginal yeast infections and yeast infections of the penis; urinary tract infection; or changes in urination, including urgent need to urinate more often, in larger amounts, or at night.

Tell your doctor if you have any side effect that bothers you or that does not go away. Call your doctor for medical advice about side effects. You may report side effects to FDA at 1-800-FDA-1088. You may also report side effects to Janssen Scientific Affairs, LLC at 1-800-526-7736.

Please see full [Product Information](#) and [Medication Guide](#).

Canagliflozin is licensed from Mitsubishi Tanabe Pharma Corporation.

Trademarks are those of their respective owners.

044335-151207

About Janssen Pharmaceuticals, Inc.

At Janssen, we are dedicated to addressing and solving some of the most important unmet medical needs of our time in oncology, immunology, neuroscience, infectious diseases and vaccines, and cardiovascular and metabolic diseases. Driven by our commitment to patients, we develop innovative products, services and healthcare solutions to help people throughout the world. Janssen Pharmaceuticals, Inc. is one of the Janssen Pharmaceutical Companies of Johnson & Johnson. Please visit JanssenPharmaceuticalsInc.com for more information.

This press release contains "forward-looking statements" as defined in the Private Securities Litigation Reform Act of 1995 regarding product development and use. The reader is cautioned not to rely on these forward-looking statements. These statements are based on current expectations of future events. If underlying assumptions prove inaccurate or known or unknown risks or uncertainties materialize, actual results could vary materially from the expectations and projections of Janssen Pharmaceuticals, Inc. and/or Johnson & Johnson. Risks and uncertainties include, but are not limited to: challenges and uncertainties inherent in product research, development and commercialization, including the uncertainty of clinical success and of obtaining regulatory approvals; competition, including technological advances, new products and patents attained by competitors; challenges to patents; changes to applicable laws and regulations, including global health care reforms; and trends toward health care cost containment. A further list and description of these risks, uncertainties and other factors can be found in Johnson & Johnson's Annual Report on Form 10-K for the fiscal year ended January 3, 2016, including in Exhibit 99 thereto, and the company's subsequent filings with the Securities and Exchange Commission. Copies of these filings are available online at www.sec.gov, www.jnj.com or on request from Johnson & Johnson. None of the Janssen Pharmaceutical Companies or Johnson & Johnson undertakes to update any forward-looking statement as a result of new information or future events or developments.

**Dr. Aguilar was not associated with the INVOKANA[®] clinical trials and was not compensated for any media work. He has been a paid consultant to Janssen Pharmaceuticals, Inc.*

-
- ¹ Thayer S, Chow W, Korner S, Aguilar R. Real-world evaluation of glycemic control among patients with type 2 diabetes mellitus treated with canagliflozin versus dipeptidyl peptidase-4 inhibitors. *Curr Med Res Opin.* 2016 Mar 3:1-38. [Epub ahead of print].
 - ² Ali MK, Bullard KM, Saaddine JB, et al. Achievement of goals in U.S. diabetes care, 1999-2010. *N Engl J Med* 2013;368:1613-24.
 - ³ Lavallo-González F, Januszewicz A, Davidson J, et al. Efficacy and safety of canagliflozin compared with placebo and sitagliptin in patients with type 2 diabetes on background metformin monotherapy: a randomised trial. *Diabetologia* 2013;56:2582-92.
 - ⁴ Schernthaner G, Gross JL, Rosenstock J, et al. Canagliflozin compared with sitagliptin for patients with type 2 diabetes who do not have adequate glycemic control with metformin plus sulfonylurea. *Diabetes Care* 2013;36:2508-15.
 - ⁵ INVOKANA[®] (canagliflozin) tablets, for oral use. Prescribing information, updated 12/2015. Janssen Pharmaceuticals, Inc., Titusville, NJ, 08560.
 - ⁶ National Committee for Quality Assurance. <http://www.ncqa.org/HEDISQualityMeasurement/HEDISMeasures.aspx>. Accessed 2015 May 7.