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New Analysis from Landmark CREDENCE Study Shows the Efficacy and Safety Profiles of INVOKANA® (canagliflozin) are Consistent Across Various Levels of Kidney Function

Analysis shows consistent renal and cardiovascular benefit when treated with INVOKANA® even when patients had moderate to severe renal deficiency

INVOKANA® is the only diabetes medicine indicated to slow the progression of diabetic nephropathy (also known as DKD) and reduce the risk of hospitalization for heart failure in patients with type 2 diabetes (T2D) and DKD

Data announcement comes after recent news of the company's commercial partnership with Vifor Pharma, leader in nephrology, to jointly commercialize the INVOKANA® DKD indication in the United States

WASHINGTON, D.C., November 9, 2019 – The Janssen Pharmaceutical Companies of Johnson & Johnson announced today results of an important new analysis from the landmark Phase 3 CREDENCE study, which found that INVOKANA® (canagliflozin) consistently reduced the risk of renal and cardiovascular (CV) events in patients with various levels of kidney function, or estimated

glomerular filtration rates (eGFR^{*}). This analysis showed that INVOKANA[®] provides a strong, consistent safety profile and efficacy at all tested eGFR levels. Specifically, greater renal absolute benefits were observed in those with the most advanced renal insufficiency (eGFR <60 mL/min/1.73 m²). Results from this secondary analysis were presented today in an oral presentation at the American Society of Nephrology (ASN) Kidney Week 2019 and build on the positive primary results from the Phase 3 CREDENCE study.

“We now know that the renal and cardiovascular benefits of canagliflozin are preserved across a wide eGFR range from 90 to 30 mL/min/1.73 m². Because they were at higher risk to begin with, the absolute benefit for preventing the progression of kidney disease was greater in patients who already had renal insufficiency,” said CREDENCE study investigator Meg J. Jardine, M.B.B.S., Ph.D., Deputy Director, Renal & Metabolic Division, The George Institute for Global Health, and Associate Professor, Faculty of Medicine, University of New South Wales Sydney.[†] “Importantly, there was no difference in the safety profile as eGFR decreased, which should provide physicians with even more confidence when prescribing canagliflozin across the broadest range of eGFR levels.”

[CLICK TO TWEET:](#) New analysis from CREDENCE shows consistent results in patients with T2D and DKD across multiple levels of kidney function #eGFR #CREDENCE <https://ctt.ec/dTC2L+>

DKD affects 200 million people¹ and is the fifth fastest-growing cause of death worldwide.² By the time these type 2 diabetes patients are referred to a nephrologist, their DKD has often progressed to the point of needing dialysis. Once patients reach end-stage kidney disease (ESKD), their average five-year survival is less than 40 percent, largely due to CV-associated morbidity and mortality.³

In September 2019, [INVOKANA[®] was approved](#) by the U.S. Food & Drug Administration (FDA) to reduce the risk of ESKD, doubling of serum creatinine, CV

^{*} Estimated glomerular filtration rate (eGFR) is a test to measure function and determine the stage of kidney disease; eGFR is calculated based on results from a blood creatinine test, age, body size, and gender.

[†] Dr. Jardine was compensated for her work on the CREDENCE study.

death, and hospitalization for heart failure (HHF) in adults with T2D and DKD with a certain amount of protein in the urine. This approval was based on the [Phase 3 CREDENCE study](#), which was stopped early because it met the prespecified criteria for efficacy. In CREDENCE, INVOKANA® 100 mg demonstrated a 30 percent reduction in the relative risk of the primary composite endpoint (ESKD, doubling of serum creatinine, and renal or CV death).[‡] Results also showed INVOKANA® reduced the risk of secondary CV endpoints, including a 39 percent reduction in the relative risk of HHF. Overall, the incidence rates of adverse events and serious adverse events were lower for INVOKANA® compared to placebo.

“Kidney failure is an enormous concern for people with T2D and DKD. This analysis confirms INVOKANA® can slow its progression and have an impact on patients regardless of their level of kidney function,” said James List, M.D., Ph.D., Global Therapeutic Area Head, Cardiovascular & Metabolism, Janssen Research & Development, LLC. “INVOKANA® is the only diabetes medicine indicated to slow the progression of DKD and reduce the risk of hospitalization for heart failure in patients with T2D and DKD.”

Janssen is committed to supporting patients with T2D and DKD research and collaborations. This week, it was announced that Janssen Pharmaceuticals, Inc. entered into a commercial partnership with Vifor Pharma to jointly commercialize the INVOKANA® DKD indication in the United States.

Results of the CREDENCE Prespecified Secondary Analysis

In this prespecified secondary analysis, CREDENCE researchers investigated whether the effects of INVOKANA® on clinically important outcomes were consistent across screening eGFR levels. Of the 4,401 patients enrolled, 1,313 (30 percent) had moderately to severely decreased kidney function (eGFR 30 to <45 mL/min/1.73 m²), 1,279 (29 percent) had mildly to moderately decreased kidney function (eGFR 45 to <60 mL/min/1.73 m²) and 1,809 (41 percent) had mildly

[‡] There were too few events to evaluate the risk of renal death. INVOKANA® is not indicated to reduce the risk of renal death.

decreased kidney function (eGFR 60 to <90 mL/min/1.73 m²). The results of the analysis were consistent with the primary study findings, with the following observations:

- INVOKANA[®] consistently lowered the risk of CV and renal events in patients across all eGFR subgroups (all p-interaction >0.11). The absolute rates of CV and renal events correlated with eGFR levels, with increasingly higher event rates observed as eGFR levels declined; absolute benefits for renal and CV outcomes for INVOKANA[®] were generally greater in patients in lower eGFR subgroups (specifically eGFR 30 to <45 and eGFR 45 to <60 mL/min/1.73 m²).
 - In patients with eGFR 30 to <45 mL/min/1.73 m², treatment with INVOKANA[®] as compared to placebo reduced the primary composite endpoint by 25 percent (events occurred in 72.2 vs 95.4 participants, respectively, per 1000 patient-years; hazard ratio [HR]: 0.75; 95 percent confidence interval [CI]: 0.59-0.95) and the renal-specific composite endpoint by 29 percent (events occurred in 51.6 vs 71.7 participants, respectively, per 1000 patient-years; HR: 0.71; 95 percent CI: 0.53-0.94).
 - In particular, treatment with INVOKANA[®] as compared to placebo reduced the composite of CV death or HHF by 31 percent (events occurred in 40.7 vs 59.1 participants, respectively, per 1000 patient-years; HR: 0.69; 95 percent CI: 0.50-0.94), as well as reduced HHF alone by 30 percent (events occurred in 22.8 vs 32.3 participants, respectively, per 1000 patient-years; HR: 0.70; 95 percent CI: 0.46-1.06). Treatment with INVOKANA[®] also reduced the composite of CV death, heart attack, or stroke by 23 percent compared to placebo (events occurred in 47.2 vs 61.7 participants, respectively, per 1000 patient-years; HR: 0.77; 95 percent CI: 0.57-1.03).
- Canagliflozin led to fewer adverse events and serious adverse events overall, with consistent results across screening eGFR subgroups (p-interaction = 0.40 and 0.15, respectively). Rates of specific adverse events including fractures, amputations, and urinary tract infections were generally similar among people

randomized to canagliflozin or placebo overall, with consistent results across eGFR subgroups.

- INVOKANA® reduced A1c, blood pressure, body weight, and albuminuria (protein in the urine) compared to placebo across all eGFR subgroups.

For this analysis, at week 3, INVOKANA® resulted in an acute drop in eGFR that was significant in every eGFR subgroup (all $p < 0.001$), which is a well-established response to treatment initiation with INVOKANA®. After week 3, INVOKANA® resulted in a slower eGFR decline in every eGFR category compared to placebo (all $p < 0.001$). Researchers also examined patients who ended the study with an eGFR below 30 mL/min/1.73 m² (N=929; INVOKANA®, 417; placebo, 512). Mean follow-up to the first eGFR below 30 mL/min/1.73 m² was 12.9 months (INVOKANA®, 11.7 months; placebo, 13.8 months) while mean follow-up thereafter was 19.3 months (INVOKANA®, 20.5 months; placebo, 18.4 months).

About CREDESCENCE

CREDESCENCE (**C**anagliflozin and **R**enal **E**vents in **D**iabetes with **E**stablished **N**ephropathy **C**linical **E**valuation) is the first dedicated renal outcomes study of any SGLT2 inhibitor in patients with T2D and DKD in addition to standard of care. CREDESCENCE is a randomized, double-blind, event-driven, placebo-controlled, parallel-group, 2-arm, multicenter study, which evaluated 4,401 patients with T2D, Stage 2 or 3 DKD (defined as an eGFR of ≥ 30 to < 90 mL/min/1.73 m²), and macroalbuminuria (defined as urinary albumin-to-creatinine ratio [ACR] > 300 to $\leq 5,000$ mg/g) who were receiving standard of care, including a maximum tolerated labeled daily dose of an angiotensin-converting enzyme (ACE) inhibitor or angiotensin II receptor blocker (ARB). The primary efficacy outcome for these analyses was the composite of ESKD (dialysis, transplant, or eGFR < 15), doubling of serum creatinine, and renal death or CV death. Specified secondary outcomes included a composite of heart attack, stroke, or CV death and a composite of CV death or hospitalization for heart failure.

WHAT IS INVOKANA®?

INVOKANA[®] is a prescription medicine used:

- along with diet and exercise to lower blood sugar (glucose) in adults with type 2 diabetes
- to reduce the risk of major cardiovascular events such as heart attack, stroke, or death in adults with type 2 diabetes who have known cardiovascular disease
- to reduce the risk of end-stage kidney disease (ESKD), worsening of kidney function, cardiovascular death, and hospitalization for heart failure in adults with type 2 diabetes mellitus and diabetic kidney disease (nephropathy) with a certain amount of protein in the urine

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:

- **Amputations. INVOKANA[®] may increase your risk of lower-limb amputations. Amputations mainly involve removal of the toe or part of the foot; however, amputations involving the leg, below and above the knee, have also occurred. Some people had more than one amputation, some on both sides of the body.** You may be at a higher risk of lower-limb amputation if you: have a history of amputation, have heart disease or are at risk for heart disease, have had blocked or narrowed blood vessels (usually in leg), have damage to the nerves (neuropathy) in the leg, or have had diabetic foot ulcers or sores. **Call your doctor right away if you have new pain or tenderness, any sores, ulcers, or infections in your leg or foot.** Your doctor may decide to stop your INVOKANA[®] for a while if you have any of these signs or symptoms. Talk to your doctor about proper foot care
- **Dehydration. INVOKANA[®] can cause some people to become dehydrated (the loss of too much body water), 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, mouth, tongue, and throat that may cause difficulty in breathing or swallowing
- have severe kidney problems and are taking INVOKANA® to lower your blood sugar
- are on kidney dialysis

Before you take INVOKANA®, tell your doctor if you have a history of amputation; heart disease or are at risk for heart disease; blocked or narrowed blood vessels (usually in leg); damage to the nerves (neuropathy) of your leg; diabetic foot ulcers or sores; kidney problems; liver problems; history of urinary tract infections or problems with urination; are on a low sodium (salt) diet; are going to have surgery; are eating less due to illness, surgery, or change in diet; pancreas problems; drink alcohol very often (or drink a lot of alcohol in short-

term); ever had an allergic reaction to INVOKANA[®]; or have other medical conditions.

Tell your doctor if you are or plan to become pregnant, are breastfeeding, or plan to breastfeed. INVOKANA[®] may harm your unborn baby. If you become pregnant while taking INVOKANA[®], tell your doctor right away. INVOKANA[®] may pass into your breast milk and may harm your baby. Do not breastfeed while taking INVOKANA[®].

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). **Ketoacidosis has happened in people who have type 1 or type 2 diabetes**, during treatment with INVOKANA[®]. Ketoacidosis is a serious condition, which may need to be treated in a hospital. Ketoacidosis may lead to death. **Ketoacidosis 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.** Sudden kidney injury has happened to people taking INVOKANA[®]. Talk to your doctor right away if you: 1) reduce the amount of food or liquid you drink, if you are sick, or cannot eat or 2) you start to lose liquids from your body from vomiting, diarrhea, or being in the sun too long
- **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

- **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®. Signs and symptoms of low blood sugar may include: headache, drowsiness, weakness, dizziness, confusion, irritability, hunger, fast heartbeat, sweating, shaking, or feeling jittery
- **A rare but serious bacterial infection that destroys the tissue under the skin (necrotizing fasciitis) in the area between and around the anus and genitals (perineum).** Necrotizing fasciitis of the perineum has happened in women and men who take INVOKANA®. Necrotizing fasciitis of the perineum may lead to hospitalization, may require multiple surgeries, and may lead to death. **Seek medical attention immediately if you have fever or you are feeling very weak, tired, or uncomfortable (malaise) and you develop any of the following symptoms in the area between and around your anus and genitals:** pain or tenderness, swelling, or redness of the skin (erythema)
- **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; 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 read the full [Product Information](#), including Boxed Warning, and [Medication Guide](#) for INVOKANA®.

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About Janssen Cardiovascular & Metabolism

In Cardiovascular & Metabolism (CVM), we take on the most pervasive diseases that burden hundreds of millions of people and healthcare systems around the world. As part of this long-standing commitment and propelled by our successes in treating T2D and thrombosis, we advance highly differentiated therapies that prevent and treat life-threatening cardiovascular, metabolic and retinal diseases. Uncovering new therapies that can improve the quality of life for this large segment of the population is an important endeavor – one which Janssen CVM will continue to lead in the years to come. Our mission is global, local and personal. Together, we can reshape the future of cardiovascular, metabolic and retinal disease prevention and treatment. Please visit www.janssen.com/cardiovascular-and-metabolism.

About the Janssen Pharmaceutical Companies of Johnson & Johnson

At Janssen, we're creating a future where disease is a thing of the past. We're the Pharmaceutical Companies of Johnson & Johnson, working tirelessly to make that future a reality for patients everywhere by fighting sickness with science, improving access with ingenuity, and healing hopelessness with heart. We focus on areas of medicine where we can make the biggest difference: Cardiovascular & Metabolism, Immunology, Infectious Diseases & Vaccines, Neuroscience, Oncology, and Pulmonary Hypertension.

Learn more at www.janssen.com. Follow us at www.twitter.com/JanssenGlobal.

Janssen Research & Development, LLC and Janssen Pharmaceuticals, Inc are part of the Janssen Pharmaceutical Companies of Johnson & Johnson.

Cautions Concerning Forward-Looking Statements

This press release contains “forward-looking statements” as defined in the Private Securities Litigation Reform Act of 1995 regarding the potential benefits and further development of canagliflozin. 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 Research & Development, LLC, any of the other Janssen Pharmaceutical Companies and/or Johnson & Johnson. Risks and uncertainties include, but are not limited to: challenges and uncertainties inherent in product research and development, including the uncertainty of clinical success and of obtaining regulatory approvals; uncertainty of commercial success; manufacturing difficulties and delays; competition, including technological advances, new products and patents attained by competitors; challenges to patents; product efficacy or safety concerns resulting in product recalls or regulatory action; changes in behavior and spending patterns of purchasers of health care products and services; changes to applicable laws and regulations, including global health care reforms; and trends toward health care cost containment. A further list and descriptions 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 December 30, 2018, including in the sections captioned “Cautionary Note Regarding Forward-Looking Statements” and “Item 1A. Risk Factors,” and in the company’s most recently filed Quarterly Report on Form 10-Q, and the company’s subsequent filings with the Securities and Exchange Commission. Copies of these filings are available online at www.sec.gov, www.inj.com or on request from Johnson & Johnson. None of the Janssen Pharmaceutical Companies nor Johnson & Johnson undertakes to update any forward-looking statement as a result of new information or future events or developments.

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¹ Global facts: about kidney disease. (n.d.). https://www.kidney.org/kidneydisease/global-facts-about-kidney-disease#_ENREF_1 Accessed October 28, 2019.

² GBD 2017 Causes of Death Collaborators (2018). Global, regional, and national age-sex-specific mortality for 282 causes of death in 195 countries and territories, 1980-2017: a systematic analysis for the Global Burden of Disease Study 2017. *Lancet* (London, England), 392(10159), 1736–1788. doi:10.1016/S0140-6736(18)32203-7.

³ Palsson R et al. *Adv Chronic Kidney Dis*. 2014; 21(3):273-280.