November 10, 2025

Acurx Pharmaceuticals

Acurx Announces Publication in the Nature Communications Scientific Journal Documenting its Unique Targeting of DNA pol IIIC Gram-positive Priority Pathogens

- DNA polymerase (pol) IIIC inhibitors are an innovative new class of antibiotics, the first in more than 30 years, that target a critical enzyme of Gram-positive bacteria including *C. difficile*, MRSA, VRE and PRSP (penicillin-resistant *Streptococcus pneumonia)*
- Acurx's lead DNA pol IIIC antibiotic, ibezapolstat (IBZ), has clinically validated this bacterial target by demonstrating Phase 2 efficacy in the treatment of *C. difficile* Infection, showing 96% initial cure and no recurrence of infection, and is now Phase 3 ready in the U.S. and in the EU
- The Company's preclinical pipeline of DNA pol IIIC antibiotics includes development of an oral product candidate for treatment of ABSSSI (Acute Bacterial Skin and Skin Structure Infections) and Hospital/Ventilator-Acquired Pneumonia (HAP/VAP), upon which a development program for treatment of inhaled anthrax is being planned in parallel
- The CDC classifies *C. difficile* as an urgent threat and the other antibiotic-resistant Gram-positive bacteria as serious threats requiring new classes of antibiotics
- According to the WHO, novel antibiotics are urgently needed to combat Antimicrobial-Resistant (AMR) priority pathogens such as methicillin-resistant *Staphylococcus aureus* (MRSA) and vancomycin-resistant Enterococcus (VRE) and PRSP
- IBZ has previously been granted FDA QIDP and Fast-Track Designation and has received SME (Small and Medium-sized Enterprise) designation by the EMA

STATEN ISLAND, N.Y., Nov. 10, 2025 /PRNewswire/ -- Acurx Pharmaceuticals, Inc. (NASDAQ: ACXP) ("Acurx" or the "Company"), a late-stage biopharmaceutical company developing a new class of small molecule antibiotics for difficult-to-treat bacterial infections announced the publication of results from its scientific collaboration with Leiden University Medical Center (LUMC) demonstrating structural biology research that reveals for the first time a DNA pol IIIC inhibitor, ibezapolstat, bound to its target. The publication is entitled: *A unique inhibitor conformation selectively targets the DNA polymerase PolC of Gram-positive priority pathogens.* The senior author is Wiep Klaas Smits, PhD, Associate Professor and Principal Investigator for Pol C Inhibitors, Leiden University Medical Center, Netherlands.

According to Dr. Smits: "Results of this work provide mechanistic insights into ibezapolstat's mode-of-action and a structural explanation for its selective antibacterial spectrum". He added: "Advancement of small-molecule PolC inhibitors, a new-to-nature class of compounds, will be facilitated by these new insights into the structural determinants for inhibition laying the foundation for the rational development of an innovative class of antimicrobials against Gram-positive priority pathogens."

Acurx's Executive Chairman, Bob DeLuccia, stated: "This body of work represents an important milestone in Acurx's highly productive scientific collaboration with LUMC. It adds to their pioneering work in elucidating the molecular and structural biology of *C. difficile* with a view towards discovering and facilitating the development of novel therapeutic antibiotics active against this Extremely Drug Resistant (XDR) pathogen and other Multi-Drug Resistant (MDR) pathogens. Fully understanding the interaction of ibezapolstat with its DNA bacterial target further supports ibezapolstat development". He further stated: "Just as important, we are already using these data to advance efforts to design specific, selective, and potent new DNA polymerase IIIC inhibitor antibiotics to treat other infections caused by high-priority, multi-drug-resistant Gram-positive pathogens like MRSA and VRE and PRSP". For example, we recently reported new data on representative novel compounds from Acurx's DNA pol IIIC inhibitor preclinical pipeline providing initial evidence that microbiome-sparing properties, when compared to the comparator antibiotic, linezolid, may be a class effect. This has the potential to create a transformational paradigm shift for antibiotic treatment of serious and life-threatening infections."

The publication is available on our website: www.acruxpharmaceuticals.com

About Nature Portfolio Journals
Nature Communications is an open access, multidisciplinary journal dedicated to publishing high-quality research in all areas of the biological, health, physical, chemical, Earth, social, mathematical, applied, and engineering sciences. Papers published by the journal aim to represent important advances of significance to specialists within each field. The Communications journals sit within Nature Portfolio and have a mission to publish research that enhances and brings new insight to their subject area. The journals share a collaborative editorial model with in-house and external editors working together.

About the Research Project, Leiden University Medical Center (LUMC) and the Research Consortium
Health Holland awarded a grant of approximately $500,000 USD to Leiden University Medical Center which was co-funded by a PPP (Public Private Partnership) allowance made available by Health~Holland, Top Sector Life Sciences & Health, to stimulate public-private partnerships and to further study the mechanism of action of DNA pol IIIC inhibitors in scientific collaboration with Acurx Pharmaceuticals. https://www.health-holland.com/

This innovative research included study of 3-dimensional structures of DNA polymerases and their binding interactions with Acurx inhibitors. The antibacterial action of Acurx's pipeline of novel DNA pol IIIC inhibitors has been clinically validated by ibezapolstat's completion of a Ph2 clinical trial for treatment of *C. difficile* Infection (CDI). https://www.lumc.nl/en/research/.

The research outcome is intended to accelerate lead product candidate selection for Acurx's pre-clinical program for other WHO, CDC and FDA high-priority, multi-drug resistant Gram-positive pathogens where new classes of antibiotics are needed.

Together with Acurx Pharmaceuticals the PPP initiated the research project entitled "Bad bugs, new drugs: elucidation of the structure of DNA polymerase C of multidrug resistant bacteria in complex with novel classes of antimicrobials."

Acurx previously announced that it had received positive regulatory guidance from the EMA

during its Scientific Advice Procedure which confirmed that the clinical, non-clinical and CMC (Chemistry Manufacturing and Controls) information package submitted to EMA supports advancement of the ibezapolstat Phase 3 program and if the Phase 3 program is successful, supports the submission of a Marketing Authorization Application (MAA) for regulatory approval in Europe. The information package submitted to EMA by the Company to which agreement has been reached with EMA included details on Acurx's two planned international Phase 3 clinical trials, 1:1 randomized (designed as non-inferiority vs vancomycin), primary and secondary endpoints, sample size, statistical analysis plan and the overall registration safety database. With mutually consistent feedback from both EMA and FDA, Acurx is well positioned to commence our international Phase 3 registration program.

The primary efficacy analysis will be performed using a Modified Intent-To-Treat (mITT) population. This will result in an estimated 450 subjects in the mITT population, randomized in a 1:1 ratio to either ibezapolstat or standard- of-care vancomycin, enrolled into the initial Phase 3 trial. The trial design not only allows determination of ibezapolstat's ability to achieve Clinical Cure of CDI as measured 2 days after 10 days of oral treatment but also includes assessment of ibezapolstat's potential effect on reduction of CDI recurrence in the target population. In the event non-inferiority of ibezapolstat to vancomycin is demonstrated, further analysis will be conducted to test for superiority.

About the Ibezapolstat Phase 2 Clinical Trial
The completed multicenter, open-label single-arm segment (Phase 2a) study was followed by a double-blind, randomized, active-controlled, non-inferiority, segment (Phase 2b) at 28 US clinical trial sites which together comprise the Phase 2 clinical trial. This Phase 2 clinical trial was designed to evaluate the clinical efficacy of ibezapolstat in the treatment of CDI including pharmacokinetics and microbiome changes from baseline. from study centers in the United States. In the Phase 2a trial segment,10 patients with diarrhea caused by C. difficile were treated with ibezapolstat 450 mg orally, twice daily for 10 days. All patients were followed for recurrence for 28± 2 days. Per protocol, after 10 patients of the projected 20 Phase 2a patients completed treatment (100% cured infection at End of Treatment (10 of 10).

In the Phase 2b trial segment, 32 patients with CDI were enrolled and randomized in a 1:1 ratio to either ibezapolstat 450 mg every 12 hours or vancomycin 125 mg orally every 6 hours, in each case, for 10 days and followed for 28 ± 2 days following the end of treatment for recurrence of CDI. The two treatments were identical in appearance, dosing times, and number of capsules administered to maintain the blind. In this Phase 2b trial segment, 15 out of 16 (94%) patients in Phase 2b in the Per Protocol Population experienced Clinical Cure (CC) and all 15 of 15 (100%) remained free of C. difficile infection (CDI) recurrence through one month after EOT.

When Phase 2b results are combined with Phase 2a results, the Clinical Cure rate in patients with CDI was 96% (25 out of 26 patients), based on 10 out of 10 patients (100%) in Phase 2a in the Modified Intent to Treat Population, plus 15 out of 16 (94%) patients in Phase 2b in the Per Protocol Population, who experienced Clinical Cure during treatment with ibezapolstat. Notably, in the combined Phase 2 trial, 100% (25 of 25) ibezapolstat-treated patients) who had Clinical Cure at EOT) (End of Treatment) remained cured through one month after EOT, as compared to 86% (12 of 14) for the vancomycin patient group. Ibezapolstat was well-tolerated, with no serious adverse events assessed by the blinded

investigator to be drug- related. The Company is confident that based on the pooled Phase 2 ibezapolstat Clinical Cure rate of 96%, Sustained Clinical Cure Rate of 100% and the historical vancomycin Clinical Cure Rate range of 70% to 92% and a Sustained Clinical Cure historical range of 42% to 74%, we will demonstrate non-inferiority of ibezapolstat to vancomycin in Phase 3 trials, in accordance with the applicable FDA Guidance for Industry (October 2022), with favorable differentiation in both Clinical Cure and Sustained Clinical Cure.

In the Phase 2 clinical trial (both trial segments), the Company also evaluated pharmacokinetics (PK) and microbiome changes and test for anti-recurrence microbiome properties, including the change from baseline in alpha diversity and bacterial abundance, especially overgrowth of healthy gut microbiota Actinobacteria and Firmicute phylum species during and after therapy. Phase 2a data demonstrated complete eradication of colonic C. difficile by day three of treatment with ibezapolstat as well as the observed overgrowth of healthy gut microbiota, Actinobacteria and Firmicute phyla species, during and after therapy. Very importantly, emerging data show an increased concentration of secondary bile acids during and following ibezapolstat therapy which is known to correlate with colonization resistance against C. difficile. A decrease in primary bile acids and the favorable increase in the ratio of secondary-to-primary bile acids suggest that ibezapolstat may reduce the likelihood of CDI recurrence when compared to vancomycin. The company also reported positive extended clinical cure (ECC) data for ibezapolstat (IBZ), its lead antibiotic candidate, from the Company's recently completed Phase 2b clinical trial in patients with CDI. This exploratory endpoint showed that 5 of 5 IBZ patients followed for up to three months following Clinical Cure experienced no recurrence of infection. Furthermore, ibezapolstat-treated patients showed lower concentrations of fecal primary bile acids, and higher beneficial ratio of secondary to primary bile acids than vancomycin-treated patients.

About Ibezapolstat
Ibezapolstat is the Company's lead antibiotic candidate planning to advance to international Phase 3 clinical trials to treat patients with *C. difficile* infection. Ibezapolstat is a novel, orally administered antibiotic, being developed as a Gram-Positive Selective Spectrum (GPSS®) antibacterial. It is the first of a new class of DNA polymerase IIIC inhibitors under development by Acurx to treat bacterial infections. Ibezapolstat's unique spectrum of activity, which includes *C. difficile* but spares other Firmicutes and the important Actinobacteria phyla, appears to contribute to the maintenance of a healthy gut microbiome.

In June 2018, ibezapolstat was designated by the U.S. Food and Drug Administration (FDA) as a Qualified Infectious Disease Product (QIDP) for the treatment of patients with CDI and will be eligible to benefit from the incentives for the development of new antibiotics established under the Generating New Antibiotic Incentives Now (GAIN) Act. In 2019, FDA granted "Fast Track" designation to ibezapolstat for the treatment of patients with CDI. The CDC has designated *C. difficile* as an urgent threat highlighting the need for new antibiotics to treat CDI.

About *Clostridioides difficile* Infection
According to the 2017 Update (published February 2018) of the Clinical Practice Guidelines for *C. difficile* Infection by the Infectious Diseases Society of America (IDSA) and Society or Healthcare Epidemiology of America (SHEA), CDI remains a significant medical problem in hospitals, in long-term care facilities and in the community. *C. difficile* is one of the most

common causes of health care- associated infections in U.S. hospitals (Lessa, 2015, NEJM). Recent estimates suggest *C. difficile* approaches 500,000 infections annually in the U.S. and is associated with approximately 20,000 deaths annually. (Guh, 2020, NEJM. Based on internal estimates, the recurrence rate for the antibiotics currently used to treat CDI is between 20% and 40% among approximately 150,000 patients treated. We believe the annual incidence of CDI in the U.S. approaches 600,000 infections and a mortality rate of approximately 9.3%.

About the Microbiome in *C. difficile* Infection and Bile Acid Metabolism

C. difficile can be a normal component of the healthy gut microbiome, but when the microbiome is thrown out of balance, the *C. difficile* can thrive and cause an infection. After colonization with *C. difficile*, the organism produces and releases the main virulence factors, the two large clostridial toxins A (TcdA) and B (TcdB). (Kachrimanidou, Microorganisms 2020. TcdA and TcdB are exotoxins that bind to human intestinal epithelial cells and are responsible for inflammation, fluid and mucous secretion, as well as damage to the intestinal mucosa. Bile acids perform many functional roles in the GI tract, with one of the most important being maintenance of a healthy microbiome by inhibiting *C. difficile* growth. Primary bile acids, which are secreted by the liver into the intestines, promote germination of *C. difficile* spores and thereby increase the risk of recurrentCDI after successful treatment of an initial episode. On the other hand, secondary bile acids, which are produced by normal gut microbiota through metabolism of primary bile acids, do not induce*C. difficile* sporulation and therefore protect against recurrent disease. Since ibezapolstat treatment leads to minimal disruption of the gut microbiome, bacterial production of secondary bile acids continues which may contribute to an anti-recurrence effect. Beneficial effects of bile acids include a decrease in primary bile acids and an increase in secondary bile acids in patients with CDI, which was observed in the Company's Ph2a trial results and previously reported (Garey, CID, 2022). In the Ph2b trial,ibezapolstat-treated patients showed lower concentrations of fecal primary bile acids, and higher beneficial ratio of secondary to primary bile acids than vancomycin-treated patients.

About Acurx Pharmaceuticals, Inc.

Acurx Pharmaceuticals is a late-stage biopharmaceutical company focused on developing a new class of small molecule antibiotics for difficult-to-treat bacterial infections. The Company's approach is to develop antibiotic candidates with a Gram-positive selective spectrum (GPSS®) that blocks the active site of the Gram-positive specific bacterial enzyme DNA polymerase IIIC (pol IIIC), inhibiting DNA replication and leading to Gram-positive bacterial cell death. Its R&D pipeline includes antibiotic product candidates that target Gram-positive bacteria, including *Clostridioides difficile*, methicillin- resistant *Staphylococcus aureus* (MRSA), vancomycin resistant Enterococcus (VRE), drug- resistant Streptococcus pneumoniae (DRSP) and *B. anthracis* (anthrax; a Bioterrorism Category A Threat-Level pathogen). Acurx's lead product candidate, ibezapolstat, for the treatment of *C. difficile* Infection is Phase 3 ready with plans in progress to begin international clinical trials. The Company's preclinical pipeline includes development of an oral product candidate for treatment of ABSSSI (Acute Bacterial Skin and Skin Structure Infections), upon which a development program for treatment of inhaled anthrax is being planned in parallel.

To learn more about Acurx Pharmaceuticals and its product pipeline, please visit www.acurxpharma.com.

Forward-Looking Statements
Any statements in this press release about our future expectations, plans and prospects, including statements regarding our strategy, future operations, prospects, plans and objectives, and other statements containing the words "believes," "anticipates," "plans," "expects," and similar expressions, constitute forward-looking statements within the meaning of The Private Securities Litigation Reform Act of 1995. Actual results may differ materially from those indicated by such forward-looking statements as a result of various important factors, including: whether ibezapolstat will benefit from the QIDP designation; whether ibezapolstat will advance through the clinical trial process on a timely basis; whether the results of the clinical trials of ibezapolstat will warrant the submission of applications for marketing approval, and if so, whether ibezapolstat will receive approval from the FDA or equivalent foreign regulatory agencies where approval is sought; whether, if ibezapolstat obtains approval, it will be successfully distributed and marketed; and other risks and uncertainties described in the Company's annual report filed with the Securities and Exchange Commission on Form 10-K for the year ended December 31, 2024, and in the Company's subsequent filings with the Securities and Exchange Commission. Such forward-looking statements speak only as of the date of this press release, and Acurx disclaims any intent or obligation to update these forward-looking statements to reflect events or circumstances after the date of such statements, except as may be required by law.

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