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Issued: 21 October 2025, London UK

Positive PIVOT-PO phase III data show tebipenem HBr's potential as the first oral carbapenem antibiotic for patients with complicated urinary tract infections (cUTIs)

- Data presented at IDWeek 2025 after study stopped early for efficacy
- Primary endpoint met, demonstrating non-inferiority of oral tebipenem HBr compared to intravenous treatment¹
- A new oral option may reduce the need for cUTI treatment in hospital setting
- Data will be shared with regulatory authorities to support regulatory filings

GSK plc (LSE/NYSE: GSK) and Spero Therapeutics (Nasdaq: SPRO) today announced full results of the positive pivotal phase III PIVOT-PO trial evaluating tebipenem HBr, an investigational oral treatment for complicated urinary tract infections (cUTIs), including pyelonephritis (NCT06059846). These results were presented on 20 October 2025 in a late-breaking oral abstract session at ID Week 2025 in Atlanta, USA.

Complicated UTIs represent an important health issue, with an estimated 2.9 million cases treated annually in the US alone.² These infections are often caused by multidrug-resistant pathogens³ and carry serious risks including organ failure, sepsis, and even death.³⁻⁵ They also result in significant emergency department visits and hospitalisations, contributing to over \$6 billion per year in healthcare costs.⁶ Current standard of care includes carbapenem antibiotics in cases of sepsis or resistance to other antibiotics but they are only available for intravenous administration typically occurring in hospital setting.^{7,8}

The trial, which was stopped early for efficacy in May, demonstrated non-inferiority of tebipenem HBr compared to intravenous imipenem-cilastatin in hospitalised patients with cUTI, including pyelonephritis, based on the overall response (composite of clinical cure plus microbiological eradication of the bacteria causing the infection) at the test of cure visit. Tebipenem HBr (oral, 600 mg) achieved a 58.5% overall success rate (261/446 participants) compared to 60.2% overall success rate (291/483 participants) for imipenem-cilastatin (intravenous, 500 mg) (adjusted treatment difference: -1.3%; 95% CI: -7.5%, 4.8%). The safety profile of tebipenem HBr was generally similar to that of imipenem-cilastatin and other carbapenem antibiotics. The most frequently reported adverse events (in ≥3% of patients who received tebipenem HBr) were diarrhea and headache; these events were all mild or moderate and non-serious.

Tony Wood, Chief Scientific Officer, GSK, said: "Complicated UTIs can have serious consequences for patients, including organ failure and sepsis, and oral options for drug-resistant infections are limited. These ground-breaking data show for the first time that cUTIs, including pyelonephritis, can be treated with an oral carbapenem antibiotic as effectively as with an intravenous one. We have a long-standing commitment to delivering novel anti-infectives and are delighted to offer the potential of tebipenem HBr as an effective oral alternative that could be taken at home".

Esther Rajavelu, Chief Executive Officer, Spero Therapeutics, said: "These data presented at IDWeek represent the culmination of years of dedicated work by our team in close collaboration with GSK. We are deeply grateful to the physicians, researchers, support staff, and, most importantly, to the patients who made this study, and the ones before it, possible. Along with GSK, we are now focused on advancing tebipenem HBr toward FDA submission and bringing this important therapy to patients in need."

Dr George Sakoulas, Adjunct Professor Department of Pediatrics, UCSD School of Medicine and Chief Infectious Diseases Sharp Rees Stealy Medical Group, commented: "Increasing antibiotic resistance among

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community-acquired bacteria that cause cUTIs is greatly amplifying the burden of treatment for patients, clinicians, and payers. The therapeutic flexibility of a new oral antibiotic may reduce the need for intravenous antibiotics to treat cUTI, providing benefit to patients and improving treatment options.”

Secondary endpoints also show:

- Clinical cure (i.e. absence of symptoms) rates at test of cure visit were 93.5% in the tebipenem HBr group (417/446) compared to 95.2% in the imipenem-cilastatin group (460/483) with adjusted treatment difference: -1.6% (95% CI: -4.7%, 1.4%)
- Microbiological response rates at test of cure visit were 60.3% in the tebipenem HBr group (269/446) compared to 61.3% in the imipenem-cilastatin group (296/483) with adjusted treatment difference: -0.8% (95% CI: -6.9%, 5.3%)
- Overall, clinical and microbiological response rates at test of cure in participants with infections caused by antimicrobial-resistant Enterobacterales were consistent with the respective response rates in the primary analysis population.

GSK plans to work with US regulatory authorities to include the data as part of a filing in Q4 2025. If approved, tebipenem HBr would be the first oral carbapenem antibiotic in the US for patients who suffer from cUTIs, adding to GSK’s growing anti-infectives portfolio and helping address the challenges of antimicrobial resistance (AMR).

The development of tebipenem HBr is supported in part with federal funds from the U.S. Department of Health and Human Services; Administration for Strategic Preparedness and Response; Biomedical Advanced Research and Development Authority (BARDA), under contract number HHSO100201800015C.

About tebipenem HBr

Tebipenem pivoxil as hydrobromide salt (Tebipenem HBr) is a late-stage development asset developed in collaboration with Spero Therapeutics. Tebipenem HBr is being developed to treat cUTIs, including pyelonephritis. In September 2022, GSK entered into an exclusive license agreement with Spero Therapeutics for the development and commercialisation of tebipenem HBr in all markets, except certain Asian territories. Under this agreement GSK has sub-licensed back to Spero Therapeutics the rights and responsibility to conduct certain development work including the PIVOT-PO Phase III study, after which sponsorship of the new drug application (NDA) will be transferred to GSK from Spero Therapeutics. Tebipenem HBr has received Qualified Infectious Disease Product (QIDP) and Fast Track designations from the US FDA.

About the PIVOT-PO trial

PIVOT-PO was a global, randomised, double-blind, pivotal, non-inferiority (NI margin: -10%) Phase III clinical trial of oral tebipenem HBr compared to IV imipenem-cilastatin, in hospitalised adult patients with cUTI including pyelonephritis. Patients were randomised 1:1 to receive tebipenem pivoxil (600 mg) orally every six hours, or imipenem-cilastatin (500 mg) IV every six hours, for a total of seven to ten days. Matching placebos were used to maintain blinding. The primary efficacy endpoint was overall response (composite of clinical cure plus microbiological eradication) at the test-of-cure visit (about 17 days from first dose administration of study drug) in patients with qualifying pathogens susceptible to imipenem. The trial enrolled a total of 1,690 patients, with randomisation stratified by age, baseline diagnosis (cUTI or pyelonephritis), and the presence or absence of urinary tract instrumentation. For further details on the trial, refer to [clinicaltrials.gov](https://clinicaltrials.gov/ct2/show/study/NCT06059846) identifier NCT06059846.

About complicated urinary tract infections (cUTIs)

cUTIs are broadly described as any UTI that carries an increased risk of morbidity and mortality.³ Definitions of cUTIs are not currently uniform among international societies and regulatory agencies.^{5, 9} cUTIs encompass a heterogeneous patient population due to the wide range of host factors, comorbidities and urological abnormalities associated with cUTIs.^{5, 9} Risk factors for cUTI include indwelling catheters, ureteric stents, neurogenic bladder, obstructive uropathy, urinary retention, urinary diversion, kidney stones, diabetes mellitus, immune deficiency, urinary tract modification, and UTIs in renal transplant patients.^{3, 10-13}

GSK in infectious diseases

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GSK has pioneered innovation in infectious diseases for over 70 years, and the Company's pipeline of medicines and vaccines is one of the largest and most diverse in the industry, with a goal of developing preventive and therapeutic treatments for multiple disease areas or diseases with high unmet needs globally. Our expertise and capabilities in infectious disease strongly position us to help prevent and treat disease, and potentially mitigate the challenge of antimicrobial resistance (AMR).

About Spero Therapeutics

Spero Therapeutics, headquartered in Cambridge, Massachusetts, is a clinical-stage biopharmaceutical company focused on identifying and developing novel treatments for rare diseases and multi-drug resistant (MDR) bacterial infections with high unmet need. For more information, visit www.sperotherapeutics.com

About GSK

GSK is a global biopharma company with a purpose to unite science, technology, and talent to get ahead of disease together. Find out more at gsk.com.

GSK enquiries

Media:	Tim Foley	+44 (0) 20 8047 5502	(London)
	Simon Moore	+44 (0) 20 8047 5502	(London)
	Kathleen Quinn	+1 202 603 5003	(Washington DC)
	Alison Hunt	+1 540 742 3391	(Washington DC)
Investor Relations:	Constantin Fest	+44 (0) 7831 826525	(London)
	James Dodwell	+44 (0) 20 8047 2406	(London)
	Mick Readey	+44 (0) 7990 339653	(London)
	Steph Mountifield	+44 (0) 7796 707505	(London)
	Jeff McLaughlin	+1 215 751 7002	(Philadelphia)
	Frannie DeFranco	+1 215 751 3126	(Philadelphia)

Cautionary statement regarding forward-looking statements

GSK cautions investors that any forward-looking statements or projections made by GSK, including those made in this announcement, are subject to risks and uncertainties that may cause actual results to differ materially from those projected. Such factors include, but are not limited to, those described in the "Risk Factors" section in GSK's Annual Report on Form 20-F for 2024, and GSK's Q2 Results for 2025.

Registered in England & Wales:

No. 3888792

Registered Office:

79 New Oxford Street
London
WC1A 1DG

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