Theravance Biopharma Reports Positive New Data from Multiple Studies of VIBATIV® (telavancin) at IDWeek™ 2018

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Data from TOUR™ Observational Patient Registry Demonstrate 77.1% Clinical Response Rate for VIBATIV® (telavancin) in Patients with Monomicrobial Staphylococcus aureus Infections with Vancomycin MIC ≥ 1 µg/mL

Additional TOUR Data Demonstrate Unchanged Renal Function in 68.7% of Patients Who Received VIBATIV Treatment for More Than 21 Days and Had CrCl Measured at Baseline and End of Treatment

DUBLIN, Oct. 8, 2018 /PRNewswire/ -- Theravance Biopharma, Inc. (NASDAQ: TBPH) ("Theravance Biopharma" or the "Company") today announced that positive new data from multiple studies of VIBATIV® (telavancin) were presented at IDWeek ™2018, which was held in San Francisco, CA, on October 3 – 7, 2018. Two presentations were made reporting new data from the ongoing Telavancin Observational Use Registry (TOUR ™) study, which is designed to report how VIBATIV® (telavancin) is being used by healthcare practitioners to treat patients in real-world clinical settings. Presented findings from one study reported a positive clinical response following VIBATIV treatment in 77.1% of registry patients diagnosed with monomicrobial infections caused by *Staphylococcus aureus (S. aureus)* with vancomycin minimum inhibitory concentration (MIC) ≥ 1 µg/mL. Positive clinical response was defined as cure or improvement leading to step-down oral therapy. Results from a second study demonstrated that renal function was unchanged in 68.7% of TOUR patients who received treatment with VIBATIV for more than 21 days and had creatinine clearance (CrCl) measured at baseline and end of treatment.

Details from the two TOUR-related IDWeek presentations are as follows:

Monomicrobial *S. Aureus* Infections with Vancomycin MIC ≥ 1 µg/mL

Researchers presented data reported for 159 patients captured in the TOUR study who were diagnosed with monomicrobial *S. aureus* infections with vancomycin MIC ≥ 1 µg/mL . Of these VIBATIV was used as a second-line or greater therapy in 77.4% of patients, with 44.0% having previously been treated with vancomycin. Among the 144 patients who had an outcome assessment at end of therapy with VIBATIV, a positive clinical response was reported for 77.1%, with 9.7% failing to respond to treatment and 13.2% having an indeterminate clinical outcome. The patients' most common infection types were complicated skin and skin structure infections (45.9%), bacteremia and endocarditis (20.1%), and osteomyelitis (15.7%). The median VIBATIV daily dose and duration of treatment were 8.5 mg/kg and 8 days, respectively.

MICs are a measure used to express *in vitro* activity of an antibiotic against a pathogen, with the greater the MIC, the less activity an antibiotic possesses against the pathogen. When a pathogen demonstrates vancomycin MIC ≥ 1 µg/mL, it suggests that the pathogen has relatively poor susceptibility to vancomycin. Among the 159 patients, 65.4% of patients had vancomycin MIC = 1 µg/mL; 2.5% had vancomycin MIC = 1.5 µg/mL, and 32.1% had vancomycin MIC = 2 µg/mL.

Of the 159 patients, 17 reported an adverse event, with 12 discontinuing treatment due to an adverse event. The most commonly occurring adverse event was renal failure (4.4%), which resolved in the majority of cases. Importantly, there were no new safety signals identified in this patient subset.

"As a clinician, it is critical that I have a trusted antibiotic option with excellent *in vitro* potency to turn to when I encounter *S. aureus* infections with reduced susceptibility to vancomycin. These data from TOUR highlight that VIBATIV should be considered one of those alternative treatment options in this era of rising vancomycin MICs in order to ensure patients are getting effective therapy," said Micah A. Jacobs, M.D., an infectious disease specialist in Pittsburgh, Pennsylvania, and lead author of one of the TOUR presentations at IDWeek. "The 77.1% clinical response rate for VIBATIV in these infections in the real-world setting, coupled with the less than 10% failure rate, is all the more impressive since greater than 75% of the patients in this TOUR subgroup were being treated with telavancin as a second-line or later therapy. For patients like these, who have likely experienced an initial treatment failure, the selection of a therapy with a high likelihood of resolving their infection takes on ever greater importance."

VIBATIV Treatment for Longer than 21 Days

Researchers presented data reported for 308 patients captured in the TOUR study who received VIBATIV therapy for longer than 21 days. Infection characteristics demonstrate the significant health challenges facing this subgroup of patients, with the majority of patients presenting with bone and joint infections (55.2%), including osteomyelitis, which are notoriously difficult to treat. In addition, 39.3% of patients had infections caused by methicillin-resistant *S. aureus* (MRSA), a pathogen that is resistant to several antibiotics. Of these patients, 76.3% were treated with VIBATIV as second-line or greater therapy, with 65.6% of patients treated as outpatients prior to starting VIBATIV therapy. The median VIBATIV daily dose and duration of treatment were 8.3 mg/kg and 38 days, respectively.

Among the group of 308 patients receiving VIBATIV therapy for longer than 21 days, 134 had their CrCl measured and recorded at baseline and end of VIBATIV therapy (EOT), allowing researchers to assess the impact of this prolonged VIBATIV treatment on their renal function. In comparing baseline and EOT CrCl measurements, researchers determined that renal function was unchanged for 68.7% these patients. Additionally, CrCl comparisons suggested improved renal function for 6.7% of patients and decreased renal function for 24.6% of patients.

CrCl is a standard measure used to assess and quantify renal function. These measures are typically categorized into ranges to provide a framework for assessing changes in renal function. In this study, CrCl measures were grouped as follows: ≤ 30mL/min; > 30-50 mL/min; > 50-80 mL/min; and > 80 mL/min. When comparing baseline and EOT CrCl, TOUR researchers considered a patient's CrCL, and thus renal function, to be unchanged if it remained in the same range grouping. Those patients whose EOT CrCl moved into a higher or lower CrCl range grouping from baseline, were considered to have renal function that changed.

Of the 308 patients, 36 reported an adverse event, with 18 discontinuing treatment due to an adverse event. The most commonly occurring adverse event was renal failure (8.1%), which resolved in the majority of cases. Importantly, there were no new safety signals identified in this patient subset.

"We are encouraged to see that prolonged treatment with VIBATIV led to no change in renal function for 68.7% of these very sick patients. It is also noteworthy that only 8.1% of the entire group of 308 patients receiving VIBATIV for longer than 21 days reported a renal adverse event, the majority of which resolved on their own," said Ali Hassoun, M.D., an infectious disease specialist affiliated with Huntsville Hospital and Crestwood Medical Center in Alabama, and lead author of one of the TOUR presentations at IDWeek. "These are interesting findings which will require more examination, particularly in light of the important consideration given to impact on renal function when selecting the appropriate antibiotic for treatment."

About TOUR

TOUR is a multi-center, observational study that enrolled 1,063 patients from 45 sites in the US. As a non-interventional study, all treatment decisions were at the discretion of the patient's healthcare provider. Study patients may have treatment initiated in either hospital-based settings or out-patient infusion sites. To qualify for enrollment in TOUR, patients must have received at least one dose of VIBATIV and meet specified inclusion criteria. By broadly collecting and examining real-world data related to VIBATIV treatment patterns, clinical effectiveness and safety outcomes in medical practice, Theravance Biopharma aims to create an expansive knowledge base to guide optimal clinical use of the drug.

Theravance Biopharma believes that results from TOUR may serve several important objectives including:

- Assisting in optimizing use in patients currently being treated with VIBATIV;
- Potentially highlighting subsets of patients that may be most appropriate for treatment with VIBATIV; and
- Illustrating current healthcare practitioner's patterns of VIBATIV use.

About VIBATIV®(telavancin)

VIBATIV® was discovered internally in a research program dedicated to finding new antibiotics for serious infections due to *Staphylococcus aureus(S. aureus)* and other Gram-positive bacteria, including MRSA and MSSA. VIBATIV is a once-daily, injectable lipoglycopeptide antibiotic with *in vitro* potency, bactericidal activity within six hours, and penetration into target infection sites. The drug is approved in the U.S. for the treatment of adult patients with hospital-acquired and ventilator-associated bacterial pneumonia (HABP/VABP) caused by susceptible isolates of *S. aureus* when alternative treatments are not suitable. In addition, VIBATIV is approved in the U.S. for the treatment of adult patients with complicated skin & skin structure infections (cSSSI) caused by susceptible isolates of Gram-positive bacteria, including *S. aureus*, both methicillin-susceptible (MSSA) and methicillin-resistant (MRSA) strains. The product labeling also describes the use of VIBATIV in treating patients whose pneumonia or skin infection is complicated by concurrent bacteremia.

The product's proven efficacy against difficult-to-treat Gram-positive infections has been demonstrated in several large, multinational registrational studies, which involved one of the largest cohorts of patients with *S. aureus* infections studied to date. Importantly, these studies demonstrated significantly higher cure rates for VIBATIV as compared to vancomycin in HABP/VABP due to any single Gram-positive pathogen or *S. aureus* with vancomycin MIC ≥1 µg/mL. Additionally, there is extensive and well-documented evidence of the drug's *in vitro* potency and *in vivo* activity against a broad collection of Gram-positive bacterial pathogens, including those that are considered difficult-to-treat and multidrug-resistant.

VIBATIV is also approved for marketing in Canada, Russia and Israel. Theravance Biopharma plans to market VIBATIV outside the U.S. through a network of partners. To date, the company has secured partners for VIBATIV in the following geographies – Canada, Middle East, North Africa, Israel, Russia, China and India.

VIBATIV®(telavancin)Important Safety Information

Mortality

Patients with pre-existing moderate/severe renal impairment (CrCl ≤50 mL/min) who were treated with VIBATIV for hospital-acquired bacterial pneumonia/ventilator-associated bacterial pneumonia had increased mortality observed versus vancomycin. Use of VIBATIV in patients with pre-existing moderate/severe renal impairment (CrCl ≤50 mL/min) should be considered only when the anticipated benefit to the patient outweighs the potential risk.

Nephrotoxicity

New onset or worsening renal impairment occurred in patients who received VIBATIV. Renal adverse events were more likely to occur in patients with baseline comorbidities known to predispose patients to kidney dysfunction and in patients who received concomitant medications known to affect kidney function. Monitor renal function in all patients receiving VIBATIV prior to initiation of treatment, during treatment, and at the end of therapy. If renal function decreases, the benefit of continuing VIBATIV versus discontinuing and initiating therapy with an alternative agent should be assessed.

Fetal Risk

Women of childbearing potential should have a serum pregnancy test prior to administration of VIBATIV. Avoid use of VIBATIV during pregnancy unless the potential benefit to the patient outweighs the potential risk to the fetus. Adverse developmental outcomes observed in three animal species at clinically relevant doses raise concerns about potential adverse developmental outcomes in humans. If not already pregnant, women of childbearing potential should use effective contraception during VIBATIV treatment.

Contraindication

Intravenous unfractionated heparin sodium is contraindicated with VIBATIV administration due to artificially prolonged activated partial thromboplastin time (aPTT) test results for up to 18 hours after VIBATIV administration.

VIBATIV is contraindicated in patients with a known hypersensitivity to the drug.

Hypersensitivity Reactions

Serious and potentially fatal hypersensitivity reactions, including anaphylactic reactions, may occur after first or subsequent doses. VIBATIV should be used with caution in patients with known hypersensitivity to vancomycin.

Geriatric Use

Telavancin is substantially excreted by the kidney, and the risk of adverse reactions may be greater in patients with impaired renal function. Because elderly patients are more likely to have decreased renal function, care should be taken in dose selection in this age group.

Infusion Related Reactions

VIBATIV is a lipoglycopeptide antibacterial agent and should be administered over a period of 60 minutes to reduce the risk of infusion-related reactions. Rapid intravenous infusions of the glycopeptide class of antimicrobial agents can cause "Red-man Syndrome" like reactions including: flushing of the upper body, urticaria, pruritus, or rash.

QTc Prolongation

Caution is warranted when prescribing VIBATIV to patients taking drugs known to prolong the QT interval. In a study involving healthy volunteers, VIBATIV prolonged the QTc interval. Use of VIBATIV should be avoided in patients with congenital long QT syndrome, known prolongation of the QTc interval, uncompensated heart failure, or severe left ventricular hypertrophy.

Most Common Adverse Reactions

The most common adverse reactions (greater than or equal to 10% of patients treated with VIBATIV) were diarrhea, taste disturbance, nausea, vomiting, and foamy urine.

Full Prescribing Information, including Boxed Warning and Medication Guide in the U.S., is available at www.VIBATIV.com.

About Theravance Biopharma

Theravance Biopharma, Inc. ("Theravance Biopharma") is a diversified biopharmaceutical company with the core purpose of creating medicines that help improve the lives of patients suffering from serious illness.

In our relentless pursuit of this objective, we strive to apply insight and innovation at each stage of our business, including research, development and commercialization, and utilize both internal capabilities and those of partners around the world. Our research efforts are focused in the areas of inflammation and immunology. Our research goal is to design localized medicines that target diseased tissues, without systemic exposure, in order to maximize patient benefit and minimize risk. These efforts leverage years of experience in developing localized medicines for the lungs to treat respiratory disease. The first potential medicine to emerge from our research focus on immunology and localized treatments is an oral, intestinally restricted pan-Janus kinase (JAK) inhibitor, currently in development to treat a range of inflammatory intestinal diseases. Our pipeline of internally discovered product candidates will continue to evolve with the goal of creating transformational medicines to address the significant needs of patients.

In addition, we have an economic interest in future payments that may be made by Glaxo Group or one of its affiliates (GSK) pursuant to its agreements with Innoviva, Inc. relating to certain programs, including Trelegy Ellipta.

For more information, please visit www.theravance.com.

This press release contains certain "forward-looking" statements as that term is defined in the Private Securities Litigation Reform Act of 1995 regarding, among other things, statements relating to goals, plans, objectives, expectations and future events. Theravance Biopharma intends such forward-looking statements to be covered by the safe harbor provisions for forward-looking statements contained in Section 21E of the Securities Exchange Act of 1934 and the Private Securities Litigation Reform Act of 1995. Examples of such statements include statements relating to: the Company's strategies, plans and objectives, the Company's regulatory strategies and timing of clinical studies (including the data therefrom), the potential benefits and mechanisms of action of the Company's product and product candidates, the Company's expectations for product candidates through development, potential regulatory approval and commercialization (including their potential as components of combination therapies), product sales and the Company's expectations for its 2018 operating loss, excluding share-based compensation. These statements are based on the current estimates and assumptions of the management of Theravance Biopharma as of the date of the press release and the conference call and are subject to risks, uncertainties, changes in circumstances, assumptions and other factors that may cause the actual results of Theravance Biopharma to be materially different from those reflected in the forward-looking statements. Important factors that could cause actual results to differ materially from those indicated by such forward-looking statements include, among others, risks related to: delays or difficulties in commencing, enrolling or completing clinical studies, the potential that results from clinical or non-clinical studies indicate the Company's product candidates are unsafe or ineffective (including when our product candidates are studied in combination with other compounds), risks that product candidates do not obtain approval from regulatory authorities, the feasibility of undertaking future clinical trials for our product candidates based on policies and feedback from regulatory authorities, dependence on third parties to conduct clinical studies, delays or failure to achieve and maintain regulatory approvals for product candidates, risks of collaborating with or relying on third parties to discover, develop, manufacture and commercialize products, and risks associated with establishing and maintaining sales, marketing and distribution capabilities with appropriate technical expertise and supporting infrastructure. Other risks affecting Theravance Biopharma are described under the heading "Risk Factors" contained in Theravance Biopharma'sForm 10-Q filed with the Securities and Exchange Commission (SEC) on May 9, 2018and Theravance Biopharma's other filings with the SEC. In addition to the risks described above and in Theravance Biopharma's filings with the SEC, other unknown or unpredictable factors also could affect Theravance Biopharma's results. No forward-looking statements can be guaranteed and actual results may differ materially from such statements. Given these uncertainties, you should not place undue reliance on these forward-looking statements. Theravance Biopharma assumes no obligation to update its forward-looking statements on account of new information, future events or otherwise, except as required by law.

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