Insmed Announces Positive Open Label Data from Phase 2 Clinical Trial of ARIKAYCE for Treatment Resistant Nontuberculous Mycobacterial Lung Infections

Poster Presentation at the American Thoracic Society Annual Meeting 2014
Reports Twenty-One Culture Negative Patients at Day 168 of Study

MONMOUTH JUNCTION, N.J.--(BUSINESS WIRE)-- Insmed Incorporated (Nasdaq:INSM) today announced additional results from the Company's phase 2 clinical trial of ARIKAYCETM, or liposomal amikacin for inhalation, for the treatment of patients with treatment resistant nontuberculous mycobacterial (NTM) lung infections. The results are highlighted in a poster entitled, "A Randomized, Double-Blind, Placebo-Controlled Study of Liposomal Amikacin for Inhalation (ARIKAYCE) in Patients with Recalcitrant Nontuberculous Mycobacterial Lung Disease," that will be presented today at the American Thoracic Society's Annual Meeting 2014 in San Diego, California by Kenneth N. Olivier, M.D., M.Ph., National Institute of Allergy and Infectious Diseases and a co-Principal Investigator of the study. The poster is available on the Company's website at www.insmed.com.

At the conclusion of the 84-day double blind phase of the trial, 78 of the 80 patients agreed to receive once-daily ARIKAYCE plus standard of care treatment for an additional 84 days. Data from 68 of these patients who completed the visits during the additional open label phase were available for inclusion in the poster. These results collected from the open label phase show that 21 of these patients were culture negative for NTM at Day 168. This data reflects 10 patients who were culture negative at Day 84 as well as 5 additional patients from the ARIKAYCE arm and 6 additional patients who were on placebo, switching to ARIKAYCE during the open-label phase. The number of patients with negative cultures increased from the double blind phase of the trial in which 11 out of 44 patients treated with ARIKAYCE (added to standard of care treatment) demonstrated negative cultures by day 84 of the study as compared to 3 out of 45 patients treated with standard of care plus placebo.

"We are encouraged by these additional and durable culture conversions which we believe is the ultimate goal in the treatment of NTM lung infections," said Will Lewis, President and Chief Executive Officer of Insmed. "The patients screened for admission to this trial are recalcitrant to treatment. While the entry criteria for this trial required a minimum of 6 months on standard of care therapy, over 75% of patients entering this trial were treated with standard of care therapy for more than a year, yet remained culture positive. In addition, a majority of these patients suffer from at least one additional pulmonary co-morbidity, such as bronchiectasis or cystic fibrosis, making the hurdle quite high for showing any improvement and making these results that much more encouraging for patients suffering from this disease. We now look forward to the regulatory discussions in the United States and Europe that will guide our path forward."

In the next several months, the Company plans to incorporate the trial results into discussions with the regulatory agencies in the United States and Europe to determine next steps for ARIKAYCE in the treatment of NTM lung infections. Based upon the culture conversion results, in April 2014 the Company applied for Breakthrough Therapy Designation for ARIKAYCE in the United States. ARIKAYCE has already received Orphan Drug, Qualified Infectious Disease Product (QIDP) and Fast Track designations from the U.S. Food and Drug Administration (FDA) for the treatment of NTM lung infections and recently received Orphan Drug Designation from the European Medicines Agency (EMA).

Clinical Trial Design and Key Endpoints

The randomized, double-blind, placebo-controlled phase 2 clinical trial compared ARIKAYCE (590 mg delivered once daily for 84 days), added to standard of care treatment, versus standard of care treatment plus placebo, in 89 adult patients with treatment resistant NTM lung disease at 19 sites in North America. Eligibility for the study required patients to have been on the American Thoracic Society/Infectious Diseases Society of America (ATS/IDSA) guidelines-based therapy for at least six months prior to screening with persistently positive mycobacterial cultures. Following the randomized portion of the study, all eligible patients had the option to receive ARIKAYCE once daily for an additional 84 days in an open-label design.

The primary efficacy endpoint of the study was a semi-quantitative measurement of the change in mycobacterial density on a seven-point scale from baseline (Day 1) to the end of the randomized portion of the trial (Day 84). ARIKAYCE did not meet the pre-specified level for statistical significance although there was a positive trend ($p=0.148$) in favor of ARIKAYCE. The key secondary endpoint of culture conversion reached statistical significance in favor of ARIKAYCE.

Safety

Patients receiving ARIKAYCE experienced adverse events consistent with those seen in similar patient populations receiving inhaled antibiotics. Overall, mild to moderate upper respiratory irritation was more common in the ARIKAYCE arm compared to the placebo arm and there was no difference in severe serious adverse reactions or hemoptysis between the two arms. There was one Suspected Unexpected Serious Adverse Reaction (SUSAR) observed in the double-blind phase and one SUSAR observed in the open-label phase. Instances of hearing loss or tinnitus, a side effect more commonly associated with intravenous dosing of amikacin, were evenly balanced between the ARIKAYCE and placebo arms.

About Nontuberculous Mycobacteria (NTM)

Nontuberculous mycobacteria (NTM) are organisms found in the soil and water that can cause serious lung disease in susceptible individuals, for which there are currently limited effective treatments and no approved therapies. The prevalence of NTM disease is reported to be increasing, and according to reports from the American Thoracic Society is believed to be greater than that of tuberculosis in the U.S. According to the National Center for Biotechnology Information, epidemiological studies show that presence of NTM infection is increasing in developing countries, perhaps because of the implementation of tap water. Women with characteristic phenotype are believed to be at higher risk of acquiring NTM infection along with patients with defects on cystic fibrosis transmembrane conductance regulators.

NTM lung disease is often a chronic condition that can lead to progressive inflammation and lung damage, and is characterized by bronchiectasis and cavitary disease. NTM infections often require lengthy hospital stays for medical management. Treatment usually involves multi-drug regimens that can be poorly tolerated and have limited effectiveness, especially in patients with severe disease or in those who have failed prior treatment attempts. According to a company-sponsored patient chart study conducted by Clarity Pharma Research, approximately 50,000 patients suffering from NTM lung disease visited physician offices in the U.S. during 2011.

About ARIKAYCE™

ARIKAYCE is a form of the antibiotic amikacin, which is enclosed in nanocapsules of lipid called liposomes. This advanced pulmonary liposome technology prolongs the release of amikacin in the lungs while minimizing systemic exposure. The treatment uses biocompatible lipids endogenous to the lung that are formulated into small (0.3 micron), charge-neutral liposomes. ARIKAYCE is administered once-daily using an optimized, investigational eFlow® Nebulizer System manufactured by PARI Pharma GmbH, a novel, highly efficient and portable aerosol delivery system.

This is the first controlled clinical trial of an antibiotic in patients suffering from NTM lung infections. There are no drugs approved by the FDA for the treatment of this chronic, debilitating disease.

About eFlow® Technology and PARI Pharma

ARIKAYCE is delivered by an investigational eFlow® Nebulizer System developed by PARI Pharma and optimized specifically for ARIKAYCE. The optimized device uses eFlow Technology to enable highly efficient aerosolization of medication including liposomal formulations via a vibrating, perforated membrane that includes thousands of laser-drilled holes. Compared with other nebulization technologies, eFlow Technology produces aerosols with a very high density of active drug, a precisely defined droplet size and a high proportion of respirable droplets delivered in the shortest possible period of time. eFlow Technology is not an ultrasonic nebulizer technology and is not a general purpose electronic aerosol generator nebulizer technology. Combined with its quiet mode of operation, small size, light weight and battery use, eFlow Technology reduces the burden of taking daily, inhaled treatments.

About Insmed

Insmed Incorporated is a biopharmaceutical company dedicated to improving the lives of patients battling serious lung diseases. Insmed is focused on the development and commercialization of ARIKAYCE, or liposomal amikacin for inhalation, for at least two identified orphan patient populations: patients with nontuberculous mycobacteria (NTM) lung infections and cystic fibrosis (CF) patients with Pseudomonas aeruginosa lung infections. For more information, please visit http://www.insmed.com.

Forward-looking Statements

This release contains forward-looking statements. Words, and variations of words, such as "intend," "expect," "will," "anticipate," "believe," "continue," "propose" and similar expressions are intended to identify forward-looking statements. Investors are cautioned that such statements in this release, including statements relating to the status, results and timing of clinical trials and clinical data, the anticipated benefits of Insmed's products, the anticipated timing of regulatory submissions, and the ability to obtain required regulatory approvals, bring products to market and successfully commercialize products constitute forward-looking statements that involve risks and uncertainties that could cause actual results to differ materially from those in the forward-looking statements. Such risks and uncertainties include, without limitation, failure or delay of European, Canadian, U.S. Food and Drug Administration and other regulatory reviews and approvals, competitive developments affecting the Company's product candidates, delays in product development or clinical trials or other studies, patent disputes and other intellectual property developments relating to the Company's product candidates, unexpected regulatory actions, delays or requests, the failure of clinical trials or other studies or results of clinical trials or other studies that do not meet expectations, the

fact that subsequent analyses of clinical trial or study data may lead to different (including less favorable) interpretations of trial or study results or may identify important implications of a trial or study that are not reflected in Company's prior disclosures, and the fact that trial or study results or subsequent analyses may be subject to differing interpretations by regulatory agencies, the inability to successfully develop the Company's product candidates or receive necessary regulatory approvals, the ability to obtain Breakthrough Therapy Designation for ARIKAYCE in the U.S., the inability to make product candidates commercially successful, changes in anticipated expenses, changes in the Company's financing requirements or ability to raise additional capital, and other risks and challenges detailed in the Company's filings with the U.S. Securities and Exchange Commission, including, without limitation, its Annual Report on Form 10-K for the year ended December 31, 2013 and its subsequent quarterly reports on Form 10-Q. Investors are cautioned not to place undue reliance on any forward-looking statements that speak only as of the date of this news release. The Company undertakes no obligation to update these forward-looking statements to reflect events or circumstances or changes in its expectations.

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