



Alkermes Presents New Health Economics and Outcomes Research on Patients With Schizophrenia and Bipolar I Disorder at 2019 Psych Congress

October 7, 2019

-- Findings From Patient Surveys Underscore Need for New Antipsychotic Treatments With Reduced Side Effects --

DUBLIN, Oct. 7, 2019 /PRNewswire/ -- [Alkermes plc](#) (Nasdaq: ALKS) today announced the presentation of new health economics and outcomes research at the 32nd Annual Psych Congress (Psych Congress), which took place Oct. 3-6, 2019 in San Diego. This research reflects the company's continued commitment to improving care for, and understanding the unique needs of, people living with serious mental illness.

Alkermes presented results from two recently completed online surveys evaluating the treatment experiences of people living with schizophrenia (n=200) and bipolar I disorder (n=200), including side effects associated with oral antipsychotic medications. Key findings related to survey respondents' prior experiences with antipsychotic medications include:

- Nearly all participants (98% for both schizophrenia and bipolar I disorder) reported having experienced at least one or more treatment side effect;
- For both patient populations, dislike of side effects was the most common reason cited for non-adherence to oral antipsychotic medications;
- Weight gain was reported as the most bothersome (combining survey responses of "very bothersome" and "extremely bothersome") side effect for both patient populations;
- Respondents in both patient populations reported that side effects associated with oral antipsychotic medications had a negative impact on their social functioning, including work, social activities, relationships with friends and family, and romantic relationships.

"Oral antipsychotic medications serve as a mainstay treatment option for people living with serious mental illnesses like schizophrenia and bipolar I disorder. However, as these survey results demonstrate, treatment side effects are highly common and can have significant impacts on patients' day-to-day lives," said study investigator Dawn L. Velligan, Ph.D., Department of Psychiatry and Co-Chief of the Division of Schizophrenia and Related Disorders at UT Health San Antonio.

"These survey data offer valuable insights into the experiences and concerns of people living with schizophrenia and bipolar I disorder and underscore the need for expanded research and development of treatment options that offer clinical efficacy with a more tolerable side-effect profile," said study investigator, Martha Sajatovic, M.D., Director of the Neurological and Behavioral Outcomes Research Center at University Hospitals Cleveland Medical Center.

The surveys also sought to capture participant preferences:

- When asked to consider trade-offs between improvements in symptoms versus side effects for a hypothetical new oral antipsychotic medication, 67% of the people with schizophrenia who were surveyed selected improvement in symptoms over improvements in side effects, highlighting a desire for highly efficacious therapies;
- Respondents with bipolar I disorder ranked anxiety, weight gain and "feeling like a zombie" as the top three side effects they would most want to avoid in a potential new oral antipsychotic medication.

"Alkermes is an established leader in developing treatments for serious mental illness, and each year we look forward to the scientific exchange that

occurs at Psych Congress," said Amy O'Sullivan, Ph.D., Vice President of Health Economics and Outcomes Research at Alkermes. "The results of the patient surveys presented at this year's conference highlight the unmet needs of individuals living with schizophrenia and bipolar I disorder in real-world settings. We are excited to share this research with the clinical community and to continue to explore ways we can all work together to improve care and outcomes for people living with these complex diseases."

In addition to the patient survey results, Alkermes also presented several posters highlighting clinical data and research related to its schizophrenia portfolio, including ARISTADA[®] (aripiprazole lauroxil) and ALKS 3831 (olanzapine/samidorphan). A full list of Alkermes' presentations at Psych Congress follows:

- Poster #108: "Antipsychotic Treatment Experiences of Individuals With Schizophrenia: Findings From an Online Survey"
- Poster #107: "Antipsychotic Treatment Experiences of Individuals With Bipolar I Disorder: Findings From an Online Survey"
- Poster #123: "Olanzapine/Samidorphan for Schizophrenia: Weight Gain and Metabolic Outcomes in Phase 3 ENLIGHTEN-2 and Subsequent Long-Term, Open-Label Safety Study"
- Poster #216: "Insulin Sensitivity and Glucose Metabolism of Olanzapine and a Combination of Olanzapine and Samidorphan: A Phase 1 Exploratory Study in Healthy Volunteers"
- Poster #256: "A Randomized, Double-Blind Study Evaluating Olanzapine/Samidorphan on QT Prolongation"
- Poster #317: "A Phase 3, Multicenter Study to Assess the Long-Term Safety, Tolerability and Efficacy of a Combination of Olanzapine and Samidorphan in Subjects With Schizophrenia"
- Poster #311: "Randomized, Double-Blind, Active-Controlled Study of Starting Aripiprazole Lauroxil With 1-Day Initiation in Acutely Ill Patients With Schizophrenia"

For more information, please visit the Psych Congress website at <https://national.psychcongress.com>.

About ALKS 3831

ALKS 3831 is an investigational, novel, once-daily, oral atypical antipsychotic drug candidate for the treatment of schizophrenia and bipolar I disorder. ALKS 3831 is composed of samidorphan, a novel, new molecular entity, co-formulated with the established antipsychotic agent, olanzapine, in a single bilayer tablet.

About ARISTADA INITIO[®]

ARISTADA INITIO, in combination with a single 30 mg dose of oral aripiprazole, is indicated for the initiation of ARISTADA when used for the treatment of schizophrenia in adults and can be used to initiate patients onto any dose of ARISTADA. The first ARISTADA dose may be administered on the same day as the ARISTADA INITIO regimen or up to 10 days thereafter.

About ARISTADA[®]

ARISTADA is an injectable atypical antipsychotic approved in the U.S. in four doses and three dosing durations for the treatment of schizophrenia (441 mg, 662 mg or 882 mg monthly, 882 mg once every six weeks and 1064 mg once every two months). Once in the body, ARISTADA converts to aripiprazole.

INDICATION and IMPORTANT SAFETY INFORMATION for ARISTADA INITIO[®] (aripiprazole lauroxil) and ARISTADA[®] (aripiprazole lauroxil) extended-release injectable suspension, for intramuscular use

INDICATION

ARISTADA INITIO, in combination with oral aripiprazole, is indicated for the initiation of ARISTADA when used for the treatment of schizophrenia in adults.

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IMPORTANT SAFETY INFORMATION

WARNING: INCREASED MORTALITY IN ELDERLY PATIENTS WITH DEMENTIA-RELATED PSYCHOSIS

Elderly patients with dementia-related psychosis treated with antipsychotic drugs are at an increased risk of death. ARISTADA INITIO and ARISTADA are not approved for the treatment of patients with dementia-related psychosis.

Contraindication: Known hypersensitivity reaction to aripiprazole. Reactions have ranged from pruritus/urticaria to anaphylaxis.

Cerebrovascular Adverse Reactions, Including Stroke: Increased incidence of cerebrovascular adverse reactions (e.g., stroke, transient ischemic attack), including fatalities, have been reported in placebo-controlled trials of elderly patients with dementia-related psychosis treated with risperidone,

aripiprazole, and olanzapine. ARISTADA INITIO and ARISTADA are not approved for the treatment of patients with dementia-related psychosis.

Potential for Dosing and Medication Errors: Medication errors, including substitution and dispensing errors, between ARISTADA INITIO and ARISTADA could occur. ARISTADA INITIO is intended for single administration in contrast to ARISTADA which is administered monthly, every 6 weeks, or every 8 weeks. Do not substitute ARISTADA INITIO for ARISTADA because of differing pharmacokinetic profiles.

Neuroleptic Malignant Syndrome (NMS): A potentially fatal symptom complex may occur with administration of antipsychotic drugs, including ARISTADA INITIO and ARISTADA. Clinical manifestations of NMS include hyperpyrexia, muscle rigidity, altered mental status, and evidence of autonomic instability (irregular pulse or blood pressure, tachycardia, diaphoresis, and cardiac dysrhythmia). Additional signs may include elevated creatine phosphokinase, myoglobinuria (rhabdomyolysis), and acute renal failure. The management of NMS should include: 1) immediate discontinuation of antipsychotic drugs and other drugs not essential to concurrent therapy; 2) intensive symptomatic treatment and medical monitoring; and 3) treatment of any concomitant serious medical problems for which specific treatments are available.

Tardive Dyskinesia (TD): The risk of developing TD (a syndrome of abnormal, involuntary movements) and the potential for it to become irreversible are believed to increase as the duration of treatment and the total cumulative dose of antipsychotic increase. The syndrome can develop, although much less commonly, after relatively brief treatment periods at low doses. Prescribing antipsychotics should be consistent with the need to minimize TD. Discontinue ARISTADA if clinically appropriate. TD may remit, partially or completely, if antipsychotic treatment is withdrawn.

Metabolic Changes: Atypical antipsychotic drugs have been associated with metabolic changes that include:

- **Hyperglycemia/Diabetes Mellitus:** Hyperglycemia, in some cases extreme and associated with ketoacidosis, coma, or death, has been reported in patients treated with atypical antipsychotics. There have been reports of hyperglycemia in patients treated with oral aripiprazole. Patients with diabetes should be regularly monitored for worsening of glucose control; those with risk factors for diabetes should undergo baseline and periodic fasting blood glucose testing. Any patient treated with atypical antipsychotics should be monitored for symptoms of hyperglycemia, including polydipsia, polyuria, polyphagia, and weakness. Patients who develop symptoms of hyperglycemia should also undergo fasting blood glucose testing. In some cases, hyperglycemia has resolved when the atypical antipsychotic was discontinued; however, some patients require continuation of antidiabetic treatment despite discontinuation of the suspect drug.
- **Dyslipidemia:** Undesirable alterations in lipids have been observed in patients treated with atypical antipsychotics.
- **Weight Gain:** Weight gain has been observed with atypical antipsychotic use. Clinical monitoring of weight is recommended.

Pathological Gambling and Other Compulsive Behaviors: Compulsive or uncontrollable urges to gamble have been reported with use of aripiprazole. Other compulsive urges less frequently reported include sexual urges, shopping, binge eating and other impulsive or compulsive behaviors which may result in harm for the patient and others if not recognized. Closely monitor patients and consider dose reduction or stopping aripiprazole if a patient develops such urges.

Orthostatic Hypotension: Aripiprazole may cause orthostatic hypotension which can be associated with dizziness, lightheadedness, and tachycardia. Monitor heart rate and blood pressure, and warn patients with known cardiovascular or cerebrovascular disease and risk of dehydration and syncope.

Falls: Antipsychotics including ARISTADA INITIO and ARISTADA may cause somnolence, postural hypotension or motor and sensory instability which may lead to falls and subsequent injury. Upon initiating treatment and recurrently, complete fall risk assessments as appropriate.

Leukopenia, Neutropenia, and Agranulocytosis: Leukopenia, neutropenia and agranulocytosis have been reported with antipsychotics. Monitor complete blood count in patients with pre-existing low white blood cell count (WBC)/absolute neutrophil count or history of drug-induced leukopenia/neutropenia. Discontinue ARISTADA INITIO and/or ARISTADA at the first sign of a clinically significant decline in WBC and in severely neutropenic patients.

Seizures: Use with caution in patients with a history of seizures or with conditions that lower the seizure threshold.

Potential for Cognitive and Motor Impairment: ARISTADA INITIO and ARISTADA may impair judgment, thinking, or motor skills. Patients should be cautioned about operating hazardous machinery, including automobiles, until they are certain therapy with ARISTADA INITIO and/or ARISTADA does not affect them adversely.

Body Temperature Regulation: Disruption of the body's ability to reduce core body temperature has been attributed to antipsychotic agents. Advise patients regarding appropriate care in avoiding overheating and dehydration. Appropriate care is advised for patients who may exercise strenuously, may be exposed to extreme heat, receive concomitant medication with anticholinergic activity, or are subject to dehydration.

Dysphagia: Esophageal dysmotility and aspiration have been associated with antipsychotic drug use; use caution in patients at risk for aspiration pneumonia.

Concomitant Medication: ARISTADA INITIO is only available at a single strength as a single-dose pre-filled syringe, so dosage adjustments are not possible. Avoid use in patients who are known CYP2D6 poor metabolizers or taking strong CYP3A4 inhibitors, strong CYP2D6 inhibitors, or strong

CYP3A4 inducers, antihypertensive drugs or benzodiazepines.

Depending on the ARISTADA dose, adjustments may be recommended if patients are 1) known as CYP2D6 poor metabolizers and/or 2) taking strong CYP3A4 inhibitors, strong CYP2D6 inhibitors, or strong CYP3A4 inducers for greater than 2 weeks. Avoid use of ARISTADA 662mg, 882mg, or 1064 mg for patients taking both strong CYP3A4 inhibitors and strong CYP2D6 Inhibitors. (See Table 4 in the ARISTADA full Prescribing Information)

Commonly Observed Adverse Reactions: In pharmacokinetic studies the safety profile of ARISTADA INITIO was generally consistent with that observed for ARISTADA. The most common adverse reaction ($\geq 5\%$ incidence and at least twice the rate of placebo reported by patients treated with ARISTADA 441mg and 882 mg monthly) was akathisia.

Injection-Site Reactions: In pharmacokinetic studies evaluating ARISTADA INITIO, the incidences of injection site reactions with ARISTADA INITIO were similar to the incidence observed with ARISTADA. Injection-site reactions were reported by 4%, 5%, and 2% of patients treated with 441 mg ARISTADA (monthly), 882 mg ARISTADA (monthly), and placebo, respectively. Most of these were injection-site pain and associated with the first injection and decreased with each subsequent injection. Other injection-site reactions (induration, swelling, and redness) occurred at less than 1%.

Dystonia: Symptoms of dystonia, prolonged abnormal contractions of muscle groups, may occur in susceptible individuals during the first days of treatment and at low doses.

Pregnancy/Nursing: May cause extrapyramidal and/or withdrawal symptoms in neonates with third trimester exposure. Advise patients to notify their healthcare provider of a known or suspected pregnancy. Inform patients that there is a pregnancy exposure registry that monitors pregnancy outcomes in women exposed to ARISTADA INITIO and/or ARISTADA during pregnancy. Aripiprazole is present in human breast milk. The benefits of breastfeeding should be considered along with the mother's clinical need for ARISTADA INITIO and/or ARISTADA and any potential adverse effects on the infant from ARISTADA INITIO and/or ARISTADA or from the underlying maternal condition.

Please see full Prescribing Information, including Boxed Warning for [ARISTADA INITIO](#) and [ARISTADA](#).

About Alkermes

Alkermes plc is a fully integrated, global biopharmaceutical company developing innovative medicines for the treatment of central nervous system (CNS) diseases and oncology. The company has a diversified commercial product portfolio and a substantial clinical pipeline of product candidates for chronic diseases that include schizophrenia, depression, addiction, multiple sclerosis and cancer. Headquartered in Dublin, Ireland, Alkermes plc has an R&D center in Waltham, Massachusetts; a research and manufacturing facility in Athlone, Ireland; and a manufacturing facility in Wilmington, Ohio. For more information, please visit Alkermes' website at www.alkermes.com.

Note Regarding Forward-Looking Statements

Certain statements set forth in this press release constitute "forward-looking statements" within the meaning of the Private Securities Litigation Reform Act of 1995, as amended, including, but not limited to, statements concerning the potential therapeutic, clinical and commercial value of the company's investigational and commercial products; and the company's plans for future research and development activities. The company cautions that forward-looking statements are inherently uncertain. Although the company believes that such statements are based on reasonable assumptions within the bounds of its knowledge of its business and operations, the forward-looking statements are neither promises nor guarantees and they are necessarily subject to a high degree of uncertainty and risk. Actual performance and results may differ materially from those expressed or implied in the forward-looking statements due to various risks and uncertainties. These risks and uncertainties include, among others, those risks and uncertainties described under the heading "Risk Factors" in the company's Annual Report on Form 10-K for the year ended Dec. 31, 2018 and in subsequent filings made by the company with the U.S. Securities and Exchange Commission (SEC), which are available on the SEC's website at www.sec.gov. Existing and prospective investors are cautioned not to place undue reliance on these forward-looking statements, which speak only as of the date hereof. Except as required by law, the company disclaims any intention or responsibility for updating or revising any forward-looking statements contained in this press release.

ARISTADA[®] and ARISTADA INITIO[®] are registered trademarks of Alkermes Pharma Ireland Limited.

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