

Takeda, Lundbeck and Advocate Health Care Research Study Aims to Enhance Patient-Provider Engagement in Major Depressive Disorder Treatment using Digital Technology

Deerfield, Ill., October 24, 2017 – Takeda Pharmaceuticals U.S.A., Inc. (Takeda), Lundbeck U.S. and Advocate Health Care today announced a collaboration focusing on the use of digital technology to support people living with depression.

“Patient Management of Depression through Technology: A Study of Digitally Enabled Management,” will assess the effectiveness and feasibility of the Advocate Pathway App, a mobile health application (app) designed to improve patient-provider engagement for people diagnosed with major depressive disorder (MDD). The user-friendly app allows a patient to capture the start or change in antidepressant therapy as well as record mood symptoms, function, medication adherence and side effects.

All of the data gathered by the app can be shared with a healthcare provider to guide clinical discussions about a patient’s depression and enhance interactions between patients and their healthcare provider.

“We are enthusiastic about providing a technology solution that directly addresses existing gaps in patient-clinician engagement, as well as responds to the growing needs impacting chronic disease management,” said David Kemp, M.D., study Principal Investigator and Medical Director of the Behavioral Health Service Line, Advocate Health Care. “We are dedicated to being a catalyst for scientific discovery that can profoundly advance patient care and look forward to collaborating with Takeda and Lundbeck to drive this forward.”

Advocate Health Care’s diverse patient population, community-based approach to patient care and expertise in advancing digital technology to improve the way patients access care, make the hospital network ideal for pragmatic, evidence-based research.

“Health-related information and communication technology solutions utilizing mobile apps have the potential to expand health interventions beyond the face-to-face contacts that are the hallmark of traditional healthcare,” said Darryl Sleep, M.D., Vice President and Head, U.S. Medical Office and U.S. Medical Affairs, Takeda. “This collaboration will create technology that translates science into solution-oriented, patient-centered support, a key priority for Takeda.”

“Depression is a complex disease that affects individuals differently. At Lundbeck, we believe each patient deserves a unique approach to making sure their treatment plan is specific to their needs,” said Doug Williamson, M.D., Chief Medical Officer and Vice President, U.S. Drug Development, Lundbeck. “We’re excited about our collaborative partnership with Advocate Health Care, which we hope will advance our understanding of the impact of digital technologies for MDD patients and practitioners to help tailor treatment approaches and support the promotion of overall better health outcomes.”

Patient-provider engagement will be assessed at baseline and at 18 weeks using the Patient Activation Measure (PAM-13) and the Patient Provider Engagement Scale (PPES-7). PAM-13 is a validated scale that measures patient engagement in disease self-management in the primary care setting, and PPES-7 is an instrument developed for this study by Advocate Health Care to measure patient-provider engagement and communication. The co-primary outcomes of the study are changes in PAM-13 and PPES-7 scores from baseline to week 18.

Secondary outcomes include changes in depression severity, cognitive dysfunction in depression, switches in antidepressants and other medications, antidepressant adherence,

quality of life, employment productivity, patient and provider satisfaction with the app, and measures of healthcare utilization.

For more information on the study, please visit <https://www.clinicaltrials.gov/ct2/show/NCT03242213>.

About Takeda Pharmaceutical Company Limited

Takeda Pharmaceutical Company Limited (TSE: 4502) is a global, R&D-driven pharmaceutical company committed to bringing better health and a brighter future to patients by translating science into life-changing medicines. Takeda focuses its research efforts on oncology, gastroenterology and central nervous system therapeutic areas. It also has specific development programs in specialty cardiovascular diseases as well as late-stage candidates for vaccines. Takeda conducts R&D both internally and with partners to stay at the leading edge of innovation. New innovative products, especially in oncology and gastroenterology, as well as its presence in emerging markets, fuel the growth of Takeda. More than 30,000 Takeda employees are committed to improving quality of life for patients, working with our partners in health care in more than 70 countries. For more information, visit <http://www.takeda.com/news>

Takeda Pharmaceuticals U.S.A., Inc. is located in Deerfield, Ill., and is the U.S. marketing and sales organization of Takeda Pharmaceutical Company Limited.

Additional information about Takeda is available through its corporate website, www.takeda.com, and additional information about Takeda Pharmaceuticals U.S.A., Inc. is available through its website, www.takeda.us.

About Lundbeck

Lundbeck is a global pharmaceutical company specialized in psychiatric and neurological disorders. For more than 70 years, we have been at the forefront of research within neuroscience. Our key areas of research focus are depression, schizophrenia, Parkinson's disease and Alzheimer's disease.

An estimated 700 million people worldwide are living with psychiatric and neurological disorders and far too many suffer due to inadequate treatment, discrimination, a reduced number of working days, early retirement and other unnecessary consequences. Every day, we strive for improved treatment and a better life for people living with psychiatric and neurological disorders — we call this Progress in Mind.

Our approximately 5,000 employees in 55 countries are engaged in the entire value chain throughout research, development, manufacturing, marketing and sales. Our pipeline consists of several late-stage development programs and our products are available in more than 100 countries. We have production facilities in Denmark, France and Italy. Lundbeck generated revenue of DKK 15.6 billion in 2016 (EUR 2.1 billion; USD 2.2 billion).

In the U.S., Lundbeck employs nearly 1,000 people focused solely on accelerating therapies for brain disorders. With a special commitment to the lives of patients, families and caregivers, Lundbeck U.S. actively engages in hundreds of initiatives each year that support our patient communities. For additional information, we encourage you to visit our corporate site at www.lundbeckus.com and connect with us on Twitter at @LundbeckUS.

About Advocate Health Care

Advocate Health Care is the largest health system in Illinois and one of the largest health care providers in the Midwest. A national leader in population health management, Advocate is one of the largest Accountable Care Organizations in the country. Advocate operates nearly 400 sites of care and 12 hospitals, including two of the nation's 100 Top Hospitals, the state's largest integrated

children's network, five Level I trauma centers (the state's highest designation in trauma care), three Level II trauma centers, one of the area's largest home health and hospice companies and one of the region's largest medical groups. Advocate Health Care trains more primary care physicians and residents at its four teaching hospitals than any other health system in the state. As a not-for-profit, mission-based health system affiliated with the Evangelical Lutheran Church in America and the United Church of Christ, Advocate contributed \$692 million in charitable care and services to communities across Chicagoland and Central Illinois in 2016.

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