Medtronic News

Medtronic PulseSelect PFA System demonstrates impressive results in landmark PULSED AF global IDE trial

ACC.23/WCC late-breaking data: PULSED AF, one of the most rigorously executed PFA clinical studies to date, exceeds safety and efficacy performance goals in the treatment of paroxysmal and persistent atrial fibrillation

DUBLIN and NEW ORLEANS, March 6, 2023 /PRNewswire/ -- Medtronic plc (NYSE: MDT), a global leader in healthcare technology, today announced that its PulseSelect™ Pulsed Field Ablation (PFA) System exceeded its safety performance goal, with an adverse event rate of 0.7%, one of the lowest adverse event rates of any prior U.S. FDA Investigational Device Exemption (IDE) trial for atrial fibrillation (AF) ablation or any multi-center PFA study. PULSED AF exceeded the threshold for its efficacy performance goal and further, clinical success, freedom from recurrence of any symptomatic atrial arrhythmias, was at least 80% for each patient cohort. Findings from the PULSED AF Pivotal Trial were presented as a late-breaking trial today at the American College of Cardiology's Annual Scientific Session Together with World Congress of Cardiology (ACC.23/WCC) and simultaneously published in *Circulation.*

PULSED AF is the first and only completed, global, and multi-center clinical study with IDE approval to evaluate the safety and effectiveness of PFA technology for AF ablation. PFA is a breakthrough ablation technology that uses pulsed electric fields to efficiently isolate the pulmonary veins for the treatment of patients with paroxysmal or persistent AF.

PULSED AF is designed to evaluate the safety and efficacy of the PulseSelect System for the treatment of AF in adult patients with a history of drug refractory, recurrent and symptomatic paroxysmal or persistent AF. The trial is a prospective, single arm, multi-center clinical trial that treated 300 patients (150 with paroxysmal AF and 150 with persistent AF). Patients were enrolled across 41 sites in nine countries with 67 operators throughout the United States, Canada, Europe, Australia, and Japan.

Study Results: Safety

The study exceeded its performance goal of freedom from a composite of serious procedure and device-related adverse events with a 0.7% (p=0.002) rate of primary adverse events in both patient cohorts. There were no esophageal events, instances of pulmonary vein stenosis, or phrenic nerve injury.

"Uniquely, these results represent the first prospective, global, large-scale study with two different, rigorously monitored patient populations that demonstrates an impressively low adverse event rate of 0.7%," said Atul Verma, M.D., electrophysiologist and director, Division of Cardiology, McGill University Health Centre in Montreal and principal investigator (PI) for the PULSED AF study. "The results of PFA trials have been highly anticipated among the EP community to help us treat the growing number of AF patients around the world. The high rate of 80% or more in clinical success and the promising safety and efficiency results from PULSED AF will help establish PFA as an exciting new option for patients."

Study Results: Efficacy

PULSED AF exceeded the threshold for efficacy performance at 66% efficacy in paroxysmal AF patients and 55% in persistent AF patients (p<0.001), based on the pre-specified performance goals of >50% (paroxysmal) and >40% (persistent) at 12 months. The PULSED AF primary effectiveness endpoint included a composite of measures based on efficacy endpoints across multiple studies of radiofrequency (RF) and cryoablation energy sources. The composite endpoint included freedom from acute procedural failure, arrhythmia recurrence, repeat ablation, direct current cardioversion, left atrial surgery, or antiarrhythmic escalation through twelve months, excluding a 3-month blanking period.

Freedom from atrial arrhythmia recurrence at 12 months was 70% in the paroxysmal cohort and 62% in the persistent. Additionally, clinical success, freedom from recurrence of any symptomatic atrial arrhythmias, was 80% for paroxysmal and 81%

for the persistent cohort.

"Today's findings demonstrate a critical achievement in the decade-long commitment we have made to researching PFA and underscores our confidence in the PulseSelect System," said Rebecca Seidel, president, Cardiac Ablation Solutions business, which is part of the Cardiovascular Portfolio at Medtronic. "We are taking the same comprehensive approach to PFA that we took with the introduction of the single-shot Arctic Front Advance™ cryoballoon, and that involves building a deep, extensive body of clinical evidence and strong collaboration with clinicians globally. The single-shot PulseSelect System, together with the focal Affera Sphere-9™ mapping and ablation catheter, will allow us to offer a complementary suite of PFA technologies to help treat patients with AF and other arrhythmias."

About Patient Monitoring Strategies

Published PFA studies utilize different monitoring frequency and endpoints. For PULSED AF, patients underwent rigorous arrhythmia monitoring with assessments at three, six, and 12 months, and weekly symptomatic trans-telephonic monitoring. 96% (287) of patients completed the 12-month follow up. PFA study results cannot be directly compared; however, to show the impact of how monitoring differences affect outcome measurements, Medtronic analyzed its own data using the monitoring frequency and endpoints used in other PFA studies[9] and found the PULSED AF outcomes to be higher when using those metrics.

The single-shot PulseSelect System delivers pulsed electric fields through an ablation catheter designed specifically to interrupt irregular electrical pathways in the heart that trigger AF. However, unlike traditional methods of ablation that heat (radiofrequency ablation) or cool (cryoablation) the atrial tissue, the PulseSelect System uses a non-thermal approach and preferentially targets heart tissue with the goal of avoiding unwanted injury to surrounding structures, a risk of current ablation technologies. Worldwide, the PulseSelect System is investigational and not approved for sale or distribution. For more information on PULSED AF, visit Medtronic.com/PFA.

AF is one of the most common and undertreated heart rhythm disorders, affecting more than 60 million people worldwide[1]. AF is a progressive disease meaning it can become worse over time and can increase the risk of serious complications including heart failure, stroke and increased risk of death[2-5]. Antiarrhythmic drug (AAD) therapy has been the current standard first-line treatment, however, AAD therapy is ineffective at controlling AF in approximately half of patients treated with drug therapy.[6-8]

Any forward-looking statements are subject to risks and uncertainties such as those described in Medtronic's periodic reports on file with the Securities and Exchange Commission. Actual results may differ materially from anticipated results.

About Medtronic

Bold thinking. Bolder actions. We are Medtronic. Medtronic plc, headquartered in Dublin, Ireland, is the leading global healthcare technology company that boldly attacks the most challenging health problems facing humanity by searching out and finding solutions. Our Mission — to alleviate pain, restore health, and extend life — unites a global team of 90,000+ passionate people across 150 countries. Our technologies and therapies treat 70 health conditions and include cardiac devices, surgical robotics, insulin pumps, surgical tools, patient monitoring systems, and more. Powered by our diverse knowledge, insatiable curiosity, and desire to help all those who need it, we deliver innovative technologies that transform the lives of two people every second, every hour, every day. Expect more from us as we empower insight-driven care, experiences that put people first, and better outcomes for our world. In everything we do, we are engineering the extraordinary. For more information on Medtronic (NYSE:MDT), visit www.Medtronic.com and follow @Medtronic on Twitter and LinkedIn.

1. Roth GA, Mensah GA, Johnson CO et al. Global Burden of Cardiovascular Diseases and Risk Factors, 1990-2019:

Update From the GBD 2019 Study. J Am Coll Cardiol 2020;76:2982-3021.
2. Miyasaka Y, Barnes ME, Bailey KR, et al. Mortality trends in patients diagnosed with first atrial fibrillation: a 21-year community-based study. J Am Coll Cardiol 2007;49:986-92.
3. Hindricks G, Potpara T, Dagres N, et al. 2020 ESC Guidelines for the diagnosis and management of atrial fibrillation developed in collaboration with the European Association of Cardio-Thoracic Surgery (EACTS). Eur Heart J 2020.
4. Wolf PA, Abbott RD, Kannel WB. Atrial fibrillation as an independent risk factor for stroke: the Framingham Study. Stroke 1991;22:983-8.
5. Lubitz SA, Moser C, Sullivan L, et al. Atrial fibrillation patterns and risks of subsequent stroke, heart failure, or death in the community. J Am Heart Assoc 2013;2:e000126
6. Wazni OM, Dandamudi G, Sood N, et al. Cryoballoon Ablation as Initial Therapy for Atrial Fibrillation. N Engl J Med. January 28, 2021;384(4):316-324.
7. Kuniss M, Pavlovic N, Velagic V, et al. Cryoballoon ablation vs. antiarrhythmic drugs: first-line therapy for patients with paroxysmal atrial fibrillation. Europace. March 17, 2021:euab029.
8. Andrade JG, Wells GA, Deyell MW, et al. Cryoablation or Drug Therapy for Initial Treatment of Atrial Fibrillation. N Engl J Med. January 28, 2021;384(4):305-315.
9. Medtronic data on file March 2023. Post-hoc Medtronic analysis efficacy of 70.9% and 91.3% for the paroxysmal cohort using inspIRE and MANIFEST monitoring protocol and endpoints, respectively, and 86.3% in the persistent cohort using the MANIFEST monitoring protocol and endpoints. The analysis is based on publicly available published or presented monitoring methods from Biosense Webster inspIRE and Boston Scientific FARAPULSE MANIFEST-PF Survey. These outcome rates should not be used to compare the Pulsed AF results to other trial results, as the results have not been adjusted for patient characteristics.

Contacts:

Allison Kyriagis	Ryan Weispfenning
Public Relations	Investor Relations
+1-612-750-6061	+1-763-505-4626

SOURCE Medtronic plc

Additional assets available online: Photos (1)

https://news.medtronic.com/2023-03-06-Medtronic-PulseSelect-PFA-System-demonstrates-impressive-results-in-landmark-PULSED-AF-global-IDE-trial