

# THE VALUE OF CARTO SMARTTOUCH™ TECHNOLOGY



CARTO SMARTTOUCH™ Technology helps to improve ablation efficacy and predictability of patient outcomes through procedure reproducibility and standardization.

**<2 HOURS PROCEDURE DURATION<sup>1-4</sup>**

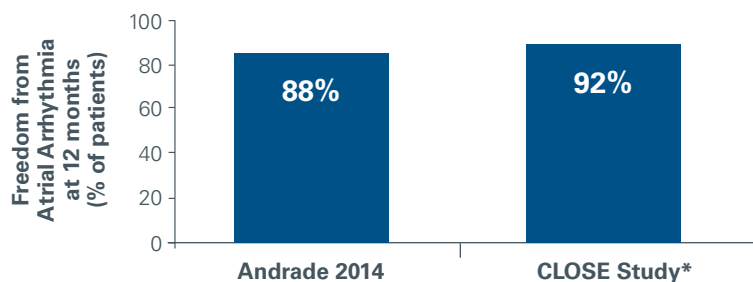
**SINGLE PROCEDURE**

**92% SUCCESS RATE AT 1 YEAR<sup>\*, 5</sup>**

## Ablation with CARTO SMARTTOUCH™ Technology is highly effective

With a **single procedure**, CARTO SMARTTOUCH™ Technology shows **high freedom of atrial fibrillation (AF)** at 1-year follow-up.<sup>5, 6</sup>

**UPTO 92%<sup>§</sup> SUCCESS RATE AT 1-YEAR FOLLOW-UP<sup>\*, 5</sup>**



<sup>§</sup> 88% without Ablation Index and 92% with Ablation Index.

## CARTO SMARTTOUCH™ Technology allows for improved outcomes

Integrating **Ablation Index** into a sequence of standard steps or workflow enables a **successful AF ablation strategy to be reproduced while standardizing and simplifying the procedure.**<sup>1; 5; 7; 8</sup>

**CONTRIBUTES TO IMPROVE PROCEDURE REPRODUCIBILITY AND STANDARDIZATION**

The CARTO® System with contact force and VISITAG™ Module helps operators standardize and reproduce their successful ablation strategy.<sup>1; 5-9</sup>

**INCREASES PREDICTABILITY OF PATIENT OUTCOMES**

Use of the CARTO® System with contact force and VISITAG™ Module with Ablation Index enables comparable single-procedure success across operators, increasing the predictability of patient outcomes.<sup>5</sup>

**LESS THAN 2 HOUR PROCEDURE DURATION**

In several studies, mean procedure time was <2 hours with CARTO SMARTTOUCH™ Technology (96-115 min).<sup>1-4</sup>

**POTENTIAL FOR A REDUCTION IN REDO RATES**

Ablation with CARTO SMARTTOUCH™ Technology improves pulmonary vein isolation after first encirclement, potentially reducing the need for repeat ablation.<sup>1; 2; 5-10</sup>

\* Statement is based on a single-center study.

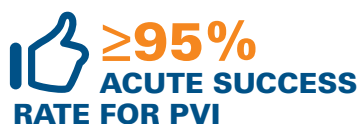
## The CARTO SMARTTOUCH™ Technology provides substantial improvement in 12-month success rate



**IMPROVEMENT IN 12-MONTH FREEDOM FROM ATRIAL ARRHYTHMIAS WITH ABLATION INDEX**

Non-randomized, comparative studies of the CARTO SMARTTOUCH™ Technology with Ablation Index have shown up to **32% improvement in 12-month freedom from atrial arrhythmia** compared to no use of Ablation Index.<sup>7; 10</sup>

## The CARTO SMARTTOUCH™ Technology has a high acute success rate for pulmonary vein isolation



Prospective, non-randomized trials of the CARTO SMARTTOUCH™ Technology with Ablation Index have shown **≥95% acute success rates for pulmonary vein isolation**.<sup>1-3; 5; 7-10</sup>

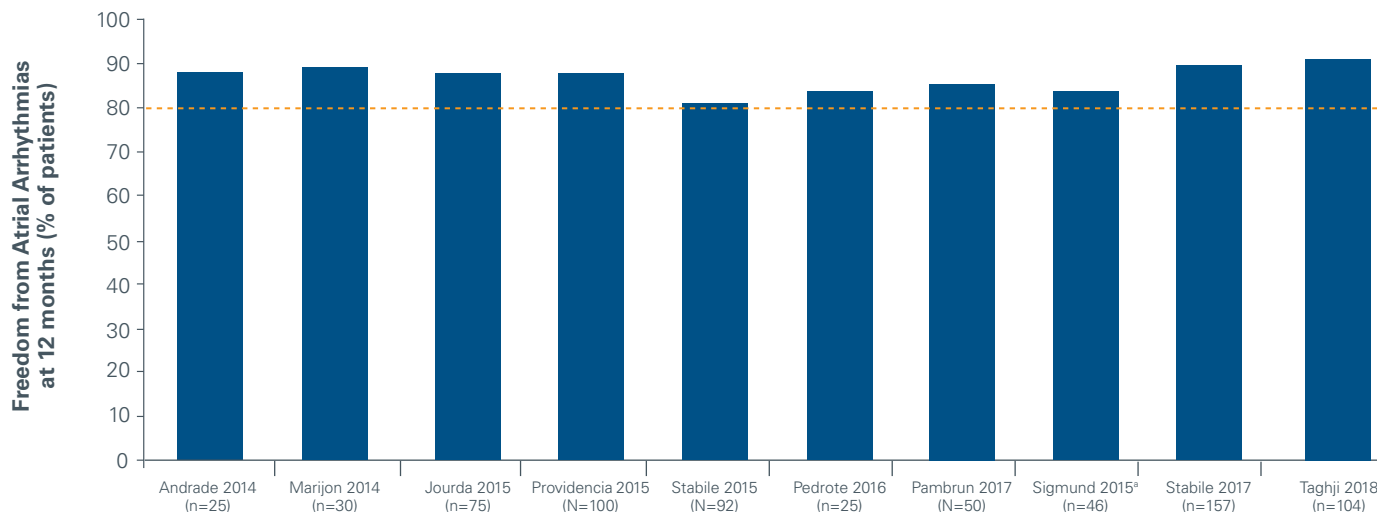


In a recent meta-analysis\*, contact force catheters provided a **significant 55% reduction in the relative risk** for acute PV reconnections compared to non-contact force catheters.<sup>12</sup>

\* Meta-analysis includes 19 randomized controlled trials or non-randomized observational studies comparing AF ablation using contact force catheters (all brands and models of contact force catheters) to non-contact force catheters (all brands and models of non-contact force catheters).



Numerous studies\* show that ablation with the THERMOCOOL SMARTTOUCH® Catheter can achieve a 12-month success rate of **over 80% after a single procedure and off anti-arrhythmic drugs**.<sup>5; 6; 11; 13-19</sup>



\* Prospective comparative or single-arm studies enrolling patients with paroxysmal AF.

<sup>a</sup> Imputed using the proportion of patients receiving first ablation and the proportion of patients with paroxysmal AF.

## REFERENCES



1. Pontoppidan J, Sandgaard NCF, Riemann M, Djurhuus S, Dalhoej J et al. (2018) Introducing a rigorous atrial fibrillation ablation strategy with ablation index and point-by-point ablation is feasible and safe. (#P909) EHRA EUROPACE - CARDIOSTIM 2017. Vienna, Italy.
2. De Potter T, Hunter TD, Boo LM, Chatzikiyriakou S, Strisciuglio T et al. (2017) Ablation Efficiency with Contact Force Stability and Ablation Index in Paroxysmal Atrial Fibrillation. (#PO02-88) Heart Rhythm Society's 38th Annual Scientific Sessions (HRS). Chicago, IL.
3. Riemann M, Sandgaard NCF, Dalhoj J, Djurhuus S, Johansen JB et al. (2018) Ablation index in atrial fibrillation ablation, initial experience with a novel endpoint in point-by-point ablation in pulmonary vein isolation. (#P914) EHRA EUROPACE - CARDIOSTIM 2017. Vienna, Italy.
4. Weberndorfer V, Toggweiler S, Schefer T, Russi I, Brinkert M et al. (2018) Early experience with ablation index-guided pulmonary vein isolation compared with force-time integral-guided ablation using surround flow catheter tip irrigation for ablation of atrial fibrillation. (#1160) EHRA EUROPACE - CARDIOSTIM 2017. Vienna, Italy.
5. Taghji P, El Haddad M, Philips T, Wolf M, Knecht S et al. (2018) Evaluation of a Strategy Aiming to Enclose the Pulmonary Veins With Contiguous and Optimized Radiofrequency Lesions in Paroxysmal Atrial Fibrillation: A Pilot Study. JACC Clin Electrophysiol 4 (1): 99-108.
6. Andrade JG, Monir G, Pollak SJ, Khairy P, Dubuc M et al. (2014) Pulmonary vein isolation using "contact force" ablation: the effect on dormant conduction and long-term freedom from recurrent atrial fibrillation—a prospective study. Heart Rhythm 11 (11): 1919-1924.
7. El Haddad M, Taghji P, Philips T, Wolf M, Demolder A et al. (2017) Determinants of Acute and Late Pulmonary Vein Reconnection in Contact Force-Guided Pulmonary Vein Isolation: Identifying the Weakest Link in the Ablation Chain. Circ Arrhythm Electrophysiol 10 (4).
8. De Ruvo E, Solimene F, Zucchelli G, Sciarra L, Soldati E et al. (2018) Contact-force with quality lesion assessment may reduce procedural burden in AF ablation. (#P358) EHRA EUROPACE - CARDIOSTIM 2017. Vienna, Italy.
9. Hussein A, Das M, Chaturvedi V, Asfour IK, Daryanani N et al. (2017) Prospective use of Ablation Index targets improves clinical outcomes following ablation for atrial fibrillation. J Cardiovasc Electrophysiol 28 (9): 1037-1047.
10. Philips T, Taghji P, El Haddad M, Wolf M, Knecht S et al. (2018) Improving procedural and one-year outcome after contact force-guided pulmonary vein isolation: the role of interlesion distance, ablation index, and contact force variability in the 'CLOSE'-protocol. Europace. 11. Marijon E, Faza S, Narayanan K, Guy-Moyat B, Bouzeman A et al. (2014) Real-time contact force sensing for pulmonary vein isolation in the setting of paroxysmal atrial fibrillation: procedural and 1-year results. J Cardiovasc Electrophysiol 25 (2): 130-137.
12. Zhou X, Lv W, Zhang W, Ye Y, Li Y et al. (2017) Impact of contact force technology on reducing the recurrence and major complications of atrial fibrillation ablation: A systematic review and meta-analysis. Anatol J Cardiol 17 (2): 82-91.
13. Jourda F, Providencia R, Marijon E, Bouzeman A, Hireche H et al. (2015) Contact-force guided radiofrequency vs. second-generation balloon cryotherapy for pulmonary vein isolation in patients with paroxysmal atrial fibrillation—a prospective evaluation. Europace 17 (2): 225-231.
14. Providencia R, Marijon E, Combes S, Bouzeman A, Jourda F et al. (2015) Higher contact-force values associated with better mid-term outcome of paroxysmal atrial fibrillation ablation using the SmartTouch catheter. Europace 17 (1): 56-63.
15. Stabile G, Solimene F, Calo L, Anselmino M, Castro A et al. (2015) Catheter-tissue contact force values do not impact mid-term clinical outcome following pulmonary vein isolation in patients with paroxysmal atrial fibrillation. J Interv Card Electrophysiol 42 (1): 21-26.
16. Pedrote A, Arana-Rueda E, Arce-Leon A, Acosta J, Gomez-Pulido F et al. (2016) Impact of Contact Force Monitoring in Acute Pulmonary Vein Isolation Using an Anatomic Approach. A Randomized Study. Pacing Clin Electrophysiol 39 (4): 361-369.
17. Pambrun T, Combes S, Sousa P, Bloa ML, El Bouazzaoui R et al. (2017) Contact-force guided single-catheter approach for pulmonary vein isolation: Feasibility, outcomes, and cost-effectiveness. Heart Rhythm 14 (3): 331-338.
18. Sigmund E, Puererfellner H, Derndorfer M et al. (2015). Optimizing Radiofrequency Ablation of Paroxysmal and Persistent Atrial Fibrillation by Direct Catheter Force Measurement—A Case-Matched Comparison in 198 Patients. Pacing Clin Electrophysiol 38 (2): 201-208.
19. Stabile G, Di Donna P, Schillaci V, Di Monaco A, Iuliano A, et al. (2017) Safety and efficacy of pulmonary vein isolation using a surround flow catheter with contact force measurement capabilities: a multicenter registry. J Cardiovasc Electrophysiol 28(7):762-7.

EC Representative | Biosense Webster  
 A Division of Johnson & Johnson Medical NV/SA  
 Leonardo da Vincilaan 15 | 1831 Diegem, Belgium  
 Tel: +32-2-7463-401 | Fax: +32-2-7463-403

Manufacturer | Biosense Webster  
 33 Technology Drive, Irvine | California 92618, USA  
 Tel: +1-909-839-8500 | Tel: +1-800-729-9010 | Fax: +1-909-468-2905

[www.biosensewebster.com](http://www.biosensewebster.com)