# INVEST IN A COMPETITIVE ADVANTAGE



### ESTABLISHING A COMPETITIVE ADVANTAGE FOR LONG-TERM GROWTH

Healthcare consumers are more informed than ever before. As soon as a diagnosis is made, the patient will often do their own research into the available treatment options, and will self-refer to the centers that are positioned as offering minimally invasive, safe and effective therapeutic alternatives. It's what patients have come to expect, especially given the ever growing number of advanced medical technologies coming into the marketplace.

For hospitals, staying current with technology and knowing where to make an investment are real challenges in an uncertain healthcare economy. New quality improvement and growing pay-for-performance initiatives make it more difficult to manage a high fixed cost operation. Revenue and profitability are constant, major concerns of administrators and clinicians alike. What can help a hospital in these circumstances? A program that is aligned with major trends in disease, and can establish a competitive advantage through improved patient outcomes, safety and quality, and relationships with physicians. Such a program attracts patients because it meets their expectations, and therefore drives procedure volume.

Hospitals across the globe have built robust programs around their Stereotaxis technology by leveraging these simple facts: As the population ages, the number of people who suffer with complex cardiac arrhythmias is expected to grow to more than 6.5 million by 2013. Catheter ablation has been shown to be a more definitive treatment than drugs and quite clearly less invasive than open heart surgery. Within catheter ablation, Stereotaxis' safety record is exceptional: major adverse cardiac events have occurred in fewer than 0.1 percent of tens of thousands of cases performed. Electrophysiology very clearly addresses an area of pressing medical need, and therefore has high growth and profitability potential. A hospital that adopts a Stereotaxis program can improve patient outcomes, safety and quality of care, and can therefore position itself to take advantage of this growth and profitability over the long term.

The purpose of this document is give you a deeper knowledge of how establishing a successful Stereotaxis program can help you build a competitive advantage and address these growing needs - and help to assure that the arrhythmic patient who goes searching for treatment finds their solution at your hospital.

### WHY STEREOTAXIS?

The first Stereotaxis System was installed in 2003. Since that time a growing number of world class centers have installed Stereotaxis Systems and built programs around the technology to gain competitive advantage and maintain their leadership positions. These centers understand that significant investments in patient care can be reconciled with the new healthcare economics when the investments proactively address the following challenges:



The adoption of the Stereotaxis System provides enhancements that support best clinical practice and lead to clinical and operational efficiencies. Clinical experience with the Stereotaxis System in the areas of cardiac ablation and coronary intervention has been extensively documented. The evidence clearly shows that the Stereotaxis System delivers the excellent outcomes that patients expect with an unsurpassed safety record. Other benefits of the Stereotaxis System have been reported in terms of fast recovery times, and – as it provides a broad clinical platform for expanded use - the enabling of new procedures.

"Acquiring the latest technology, creating innovative health programs. and building new facilities has helped make us the only full-service, acutecare facility in East El Paso. We made the decision to invest in a Stereotaxis program because it supports our commitment to the care and improvement of human life that makes us a healthcare destination of choice."





Placements (Cumulative)



Safety vs. Clinical Utility

2004

2005

2006

2007

2008

2009

Safety



Jacob Cintron **Chief Executive Officer** HCA Del Sol Medical Center. El Paso, Texas,



## FOCUSED ON IMPROVING PATIENT OUTCOMES

### IN THIS SECTION: - Atrial arrhythmia growth - Treating arrhythmias - Challenges of pediatric

- heart defects
- Stereotaxis success rates

### medical technology is its ability to deliver consistent, reliable, and improved outcomes for patients. Improved outcomes clearly reflect an enhanced quality of care. In interventional medicine, a growing number of hospitals have enhanced care with Stereotaxis, particularly in the electrophysiology lab. With tens of thousands of procedures performed worldwide, Stereotaxis has proven to be an effective and safe enabler for cardiac arrhythmias occurring in all four chambers of the heart, and for a growing body of other cardiovascular interventions. These excellent results are clearly documented in a large and growing body of

Central to the decision to adopt any advanced

#### COMPLEX LEFT ATRIAL ABLATION

peer-reviewed journal articles.

Patients with complex left atrial arrhythmias are one of the most rapidly growing clinical populations in the world. Publications using US Census Bureau population methods estimate that more than eight million people in the United States alone will be diagnosed with a left atrial arrhythmia by 2050.<sup>1</sup> Stereotaxis' safety, precision and automation uniquely position it to assist in the treatment of these difficult arrhythmias.

For instance, in a published case, Mehta and colleagues<sup>2</sup> treated a very difficult arrhythmia - a left atrial tachycardia that occurred after a previous atrial arrhythmia ablation. Using Stereotaxis' advanced navigation and mapping techniques, the physicians were able to pinpoint the origin of the arrhythmia and successfully treat it with only one radiofrequency ablation lesion. The patient was symptom free at his six month follow-up visit.

### **VENTRICULAR TACHYCARDIA**

Patients with ventricular arrhythmias are faced with a life-threatening condition. Finding and treating the arrhythmia is time consuming, can require multiple procedures and may still be unsuccessful. With Stereotaxis, physicians can precisely control the catheter tip, delivering the lesions needed to provide complete and successful therapy.



Dr. Arash Arya and his colleagues at the University of Leipzig Heart Center were able to obtain a 100% acute success rate in a group of patients with very difficult arrhythmias who presented with incessant ventricular tachycardia "storm." In addition to this excellent success rate, Dr. Arya noted a 67% reduction in patient fluoroscopy exposure when compared to similar patients treated without the Stereotaxis system.<sup>3</sup>



### PEDIATRIC AND CONGENITAL **APPLICATIONS**

Arguably one of the most challenging populations facing the interventionalist are pediatric patients with congenital heart defects. The difficult nature of these complex cases often require open heart surgery.

The combination of small, delicate anatomy and structural abnormalities makes this special patient group particularly well-suited for treatment with Stereotaxis' advanced tools.



"Because we could manipulate the catheter with ease, even in a very small heart, average procedure time was significantly shorter, which resulted in far less x-ray exposure, which you definitely want to limit in pediatric cases."

Tamas Zsili-Torok, MD, Ph.D Clinical Head, Electrophysiology Thoraxcenter, Erasmus Medical Center Rotterdam, the Netherlands



"I feel happy that my problem is solved and now other people's problems can be solved, too, with this device."

- Nicole Milzarski, Stereotaxis patient



Dr. Tamas Szili-Torok and colleagues from the Erasmus Medical Center in Rotterdam used the Stereotaxis system to achieve a 100% acute success rate in 11 pediatric arrhythmia patients and a 92% success rate in adult arrhythmia patients who had undergone surgery for congenital heart defect as children. They concluded that the advanced Stereotaxis navigation tools made these cases very similar to those completed in adults with normal hearts.<sup>4</sup>

#### Percent Acute Success in Pediatrics and Congenital



## SAFETY AND QUALITY

IN THIS SECTION: - Reducing major adverse events - Reducing radiation exposure - Increased catheter stability - Reducing catheter size



*"Having already gone through major* thoracic surgery previously in my *life, I took great care in deciding* what heart procedure would be best for me. The safety and quality of Stereotaxis led me to choose catheter ablation for my irregular heartbeat, allowing me to get back to *my intense endurance sports training* soon after the procedure. I was completely satisfied with my results."

- Dan Drissell, Stereotaxis patient

Patients want effective treatments but always balance their desire for a "cure" with concerns about procedural safety. In interventional medicine, safety is defined by several key metrics, including radiation exposure, rates of perforation and other major complications.

### REDUCED RADIATION

Patients and staff alike are highly concerned about the amount of ionizing radiation associated with diagnostic and interventional medical procedures. Excessive radiation exposure is associated with a myriad of costly, long term health issues, including an increased risk of cancer, burns to the skin, and a greater risk for developing cataracts. Stereotaxis can reduce the amount of radiation exposure to patients and staff in a wide variety of applications.

Data from a Stereotaxis clinical trial demonstrates how a physician can expect 90% less radiation over the course of his or her career by using Stereotaxis.<sup>5</sup> This prospective randomized comparison study published by Dr. Mark Wood from the Medical College of Virginia showed a 44% reduction in radiation exposure for patients undergoing ablation of supraventricular tachycardias.

Catheter ablation in the left atrium carries with it an inherent risk for serious and expensive complications, including perforation of the cardiac wall. The reported rate of major cardiac adverse events using the Stereotaxis system is less than 0.1%. Recent published surveys report major cardiac adverse event rates as high as 2.8% in manual procedures,<sup>6</sup> 28 times the risk for major complications versus Stereotaxis. Costs associated with a single EP perforation can exceed one-hundred thousand dollars.

"A cardiac perforation is an extremely costly complication. In addition to the severe risk and suffering borne by the patient, the hospital can expect up to \$100,000 in costs driven by additional procedures, increased length of stay, potential legal and added liability expense. And going forward, hospitals are less and less likely to recoup any of these costs from payers if the complication is shown to be avoidable."

- David Benfer, CEO (retired) Saint Raphael Healthcare System



Reduced Fluoroscopy Time in SVT Ablation<sup>5</sup>

### IMPROVED CATHETER STABILITY

Pushing the tip of a manual catheter against the wall of a beating heart can lead to unstable catheter movement. In these conditions, the physician risks ablating the wrong location in the patient's cardiac anatomy. This can result in permanent reliance on a pacemaker. Stereotaxis' magnetic catheter is firmly held in place with a magnetic field. It "rides" the wall of the beating heart without imparting excessive force to the tissue. In a study of 14 atrial ablation patients, Dr. Michael Orlov from St. Elizabeth's Hospital in Boston used a measure of EKG stability to demonstrate that magnetic catheters<sup>7</sup> are more stable than conventional catheters. This increase in stability gives physicians the confidence to safely treat arrhythmias that may originate near the heart's vital conduction system, where unstable catheter movement might cause a dangerous complication.





"In my experience this system has an excellent safety record. I've heard of perforations with other technologies, and perforation risk is always present with manual techniques. I have never had a perforation using the Stereotaxis System."

Peter Chapman, MD Electrophysiologist Wheaton Franciscan Medical Group -Heart and Vascular Physicians Milwaukee, Wisconsin



### VASCULAR INJURY

Significant vascular access injury requiring surgical correction is a serious and costly complication of interventional procedures. Published studies have shown that these complications can occur in as many as 3.4% of patients.<sup>8</sup> Using the smallest possible catheters minimizes trauma on the vascular access site. Stereotaxis uses catheters that are 74% smaller in diameter than those of other remote manipulation systems.

### Major Adverse Event Rate



## ATTRACTING PATIENTS

#### **INCREMENTAL CASE VOLUME**

Attracting new, incremental patients is critical

to the success of a hospital's electrophysiology

program. Along with the aging of the general

population comes an increase in both the

incidence and prevalence of complex atrial

arrhythmias. While almost all of these patients

are initially treated with anti-arrhythmic drugs,

the limited efficacy and sometimes dangerous

side effects of these medications ultimately lead

many to seek definitive treatment with catheter

ablation. Studies have shown that demand

for complex left atrial arrhythmia ablation

procedures is growing as fast as 21% per year.

Patients are more self referring than ever before

due to information available on the internet.

Success with Stereotaxis can increase a

center's visibility, and prospective patients

will seek out and travel to the centers that

demonstrate the excellent clinical outcomes

and potential benefits of increased safety that

Hospitals that aim to stay abreast of these

trends build clinical and marketing programs

around their Stereotaxis System that create a

competitive advantage, capture market share

and help fulfill their institution's mission to be

the community's leading provider of solutions

Simply acquiring Stereotaxis is not enough.

The hospitals that see procedure volume

grow most quickly are the hospitals that take

a proactive approach to training their clinicians

and marketing the Stereotaxis System by

executing an integrated Stereotaxis Program.

is achievable with a Stereotaxis program.

BEST PRACTICES

for cardiovascular health.

IN THIS SECTION: - Growth in complex procedures - Patient demand - Creating a competitive advantage - Reducing procedure times



*"I have better control over the* catheter so I can be more confident when I'm ablating in a tight spot. This added precision and control allows me to do ablations in patients that I would have previously held off on for fear of inadvertent heart block."

- Joseph Dell'Orfano, MD Attending Electrophysiologist Arrhythmia Consultants of Connecticut St. Francis Hospital and Medical Center, Hartford CT

### INCREASING CASE VOLUMES

These following examples represent the patient drawing power of a comprehensive Stereotaxis Program.





cases rapidly grow sixfold over three quarters



#### Academic Hospital - The Czech Republic



A medium size metropolitan hospital increased its Stereotaxis volume by 300%

## IMPROVING EFFICIENCY

Standard interventional labs are an array of expensive, complex, disparate and often competing technologies. Stereotaxis fully integrates and automates the lab to orchestrate the most efficient treatment for the patient while minimizing clutter and confusion for the lab staff.

### SIMPLIFYING COMPLEX CASES

The large growth in the number of patients with left atrial and ventricular arrhythmias combined with the improved survival of patients after congenital heart procedures will increase the number of complex cases referred to the EP lab. As physicians gain expertise with these conditions they demand the cutting-edge technology required to treat them safely and effectively. Stereotaxis integrates multiple data and imaging sources, automates catheter movement, and enables real time communication. With this advanced organization, a case that is extremely complex may become more routine, benefitting physician and patient alike.

### OPTIMIZING PROCEDURAL WORKFLOWS

As patient conditions become more complex, the workflows needed to address these problems can also gain complexity. Variability in workflow can add significantly to procedure time, thus reducing lab efficiency. Stereotaxis, through its advanced software solutions, anticipates the needs of the physician and provides tools that walk the physician through the workflow required to treat the patient's condition. This precise workflow is enabled by the ability of the magnetic navigation system to precisely move a catheter in increments as small as 1mm.





### REDUCE PROCEDURE TIME VARIABILITY

One of the most frustrating aspects of interventional medicine is the inability to reliably predict procedure time. With complex ablation cases often exceeding 8 hours, this unpredictability can be frustrating to both administrators and staff and can be a driver of excessive procedure-related costs. Studies have demonstrated that Stereotaxis can reduce the variability of procedure times when compared to similar procedures completed using manual techniques.<sup>9</sup>

#### **Reduced Case Time Variability**



Number of Procedures

"Stereotaxis' Odyssey has improved the ergonomics of our busy lab by providing the most important information for each step of the procedure just when I need it, allowing me to concentrate more on the patient."

- Raul Weiss, MD Associate Professor of Medicine, The Ohio State University, Electrophysiologist, Ross Heart Hospital, Columbus, Ohio





## PHYSICIAN-HOSPITAL ALIGN MENT

#### PHYSICIAN SAFETY

IN THIS SECTION: - Long-term health concerns - Demand for qualified clinicians - Future of remote technology

Interventional physicians work in an environment that is particularly damaging to their long-term health. As interventional medicine continues to grow and mature as a specialty, more is being learned about the potential dangers associated with its procedures for the physicians. The dangers of long-term exposure to radiation, for instance, are well established and of major concern to interventionalists. Using data from a Stereotaxis clinical trial, a reduction in radiation of more than 90% can be projected over the course of an average physician's career.<sup>5</sup>





*"I now conduct most of my* procedures from the control room outside the x-ray field. This has enabled me to reduce my exposure to radiation by more than 80%, which I anticipate will add many years to my ability to practice."

Robert Schweikert, MD Chief of Cardiology Akron General Medical Center Akron, OH

Keeping the physician out of the x-ray field also eliminates the necessity to wear lead aprons during these procedures, which can cause serious orthopedic injury. A published survey showed that more than half of interventional cardiologists have been treated for back or neck pain, resulting in a significant increase in lost work days.<sup>10</sup> The Stereotaxis system allows for a relaxed, seated user to protect his or her own health while focusing completely on the needs of the patient.

### INTERVENTIONALISTS

A recent survey by the American College of Cardiology<sup>11</sup> found that hospitals have the greatest difficulty filling positions in electrophysiology, pediatric cardiology and interventional peripheral cardiology, compared with all other cardiac specialties. With demand for these specialties expected to grow, competition among hospitals for the most gualified clinicians will become more intense. Clinicians are drawn to facilities that are equipped to provide the best patient outcomes. And with such a high expectation for access to magnetic navigation technology, it is clear that Stereotaxis can distinguish programs from others that have not adopted the technology, and therefore be in a significantly better position to attract and retain the best clinicians.



### THE FUTURE OF INTERVENTIONAL MEDICINE

As magnetic navigation becomes increasingly mainstream, interventional physicians will demand and expect Stereotaxis' advanced technologies. At the Heart Rhythm Society annual meeting in May 2009, a formal debate was held to argue the relative merits and value of remote technologies for the ablation of complex left atrial arrhythmias. At the end of this session, the moderator asked the audience to vote by show of hands if they believed that remote technology would become standard for complex ablation. Nearly 100% of the audience voted "yes" to this question. It is clear that the adoption of Stereotaxis technology is consistent with the current and future thinking of the electrophysiology community.

Hospitals with Accredited Fellowship Programs that have a Stereotaxis Program



- Sabine Ernst, MD **Consultant Cardiologist Research Lead Electrophysiology** Royal Brompton and Harefield Hospital London, England



### ADDITIONAL REVENUE FROM COMPLEX ABLATION PATIENTS

By developing a complex arrhythmia ablation program, a hospital gains not only the revenue from the procedure itself but also additional revenue from other procedures that are required during the patient's visit. For example, many electrophysiologists now employ advanced imaging techniques such as CT and MRI scans as well as other diagnostic and follow up tests in their treatment paradigm for complex arrhythmias. So an increase in ablation procedure volume can clearly drive an increase in hospital revenues related to additional procedures.

### "The Royal Brompton's commitment to build a Stereotaxis program was central to my decision to join the hospital."



### SUMMARY OF STEREOTAXIS PROGRAM BENEFITS

### CHALLENGE



### SOLUTION: STEREOTAXIS PROGRAM

Stereotaxis offers the potential benefits of a minimally invasive procedure to treat complex rhythm disorders, with excellent outcomes and fast recovery, in all areas of the heart.



Stereotaxis has been proven to significantly reduce radiation exposure and maintains an excellent record for minimizing major cardiac adverse events.



A Stereotaxis program has been proven to attract more patients – increasing case volume and grow concomitant revenue.

Improving Efficiency



Stereotaxis has proven the ability to shorten procedure time and reduce case time variability, as well as improving lab workflow and staff proficiency.

Physician -Hospital Alignment



Adopting Disruptive Technology -Implementing a successfu Stereotaxis program



A commitment to executing a Stereotaxis program, while developing a strong partnership with the company is the key to success.

### REFERENCES

- 1. Naccarelli, et al. Am J Cardiol 2009;104(11):1534-1539.
- 2. Mehta, et al. Europace 2008;10(1):280-283.
- 3. Arya, et al. J Cardiovasc Electrophysiol 2009;8:935-939.
- 4. Schwagten, et al. PACE 2009;32:S198-S201.
- 5. Wood, et al. PACE 2008;331(10):1313-1321.
- 6. Ellis, et al. Heart Rhythm 2009;6:1267-1273.
- 7. Tahir, et al. JICE 2008;21(1):209-213.
- 8. Prudente, et al. J Interv Card Electrophysiol 2009;26(1):59-64.
- 9. Pappone, et al. J Am Coll Cardiol 2006;47(7):1390-1400.
- 10. Ross, AM, et al. Am J Cardiol 1997;79(1): 68-70.
- 11. http://www.acc.org/



59-64.





For more information about Stereotaxis products and services, please visit our web site www.stereotaxis.com or contact one of our office locations.

### www.stereotaxis.com www.odysseyexperience.com

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