LivaNova

Investor Day 2021

December 7, 2021

Safe Harbor

Certain statements in this presentation, other than purely historical information, are “forward-looking statements” within the meaning of the Private Securities Litigation Reform Act of 1995, Section 27A of the Securities Act and Section 21E of the Securities Exchange Act of 1934, as amended (the “Exchange Act”). These statements include, but are not limited to, LivaNova’s plans, objectives, strategies, financial performance and outlook, trends, the amount and timing of future cash distributions, prospects or future events and involve known and unknown risks that are difficult to predict. As a result, our actual financial results, performance, achievements or prospects may differ materially from those expressed or implied by these forward-looking statements. In some cases, you can identify forward-looking statements by the use of words such as “may,” “could,” “seek,” “guidance,” “predict,” “potential,” “likely,” “believe,” “will,” “should,” “expect,” “anticipate,” “estimate,” “plan,” “intend,” “forecast,” “foresee” or variations of these terms and similar expressions, or the negative of these terms or similar expressions. Such forward-looking statements are necessarily based on estimates and assumptions that, while considered reasonable by LivaNova and its management based on their knowledge and understanding of the business and industry, are inherently uncertain. These statements are not guarantees of future performance, and stockholders should not place undue reliance on forward-looking statements. There are a number of risks, uncertainties and other important factors, many of which are beyond our control, that could cause our actual results to differ materially from the forward-looking statements contained in this presentation, including the risks relating to the COVID-19 pandemic such as effects from the Delta and Omicron variants, supply chain disruptions or labor shortages, and litigation as well as those described in the “Risk Factors” section of Annual Reports on Form 10-K, Quarterly Reports on Form 10-Q, Current Reports on Form 8-K and other documents filed from time to time with the United States Securities and Exchange Commission by LivaNova. All information in this presentation is as of the date of its release. The Company does not undertake or assume any obligation to update publicly any of the forward-looking statements in this presentation to reflect actual results, new information or future events, changes in assumptions or changes in other factors affecting forward-looking statements, except to the extent required by applicable law. If we update one or more forward-looking statements, no inference should be drawn that we will make additional updates with respect to those or other forward-looking statements. We caution you not to place undue reliance on any forward-looking statements, which are made only as of the date of this presentation.

1. In this presentation, “LivaNova,” “the Company,” “we,” “us” and “our” refer to LivaNova PLC and its consolidated subsidiaries.

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Intellectual Property

This report may contain references to our proprietary intellectual property, including among others:

Trademarks for our Neuromodulation systems, the VNS Therapy® System, the VITARIA® System and our proprietary pulse generator products: Model 102 (Pulse®), Model 102R (Pulse Duo®), Model 103 (Demipulse®), Model 104 (Demipulse Duo®), Model 106 (AspireSR®), Model 1000 (SenTiva®), Model 1000-D (SenTiva®Duo), Model 7103 (VITARIA® and VITARIA TitrationAssist ™) and Model 8103 (Symmetry®).

Trademarks for our Cardiopulmonary products and systems: Essenz™ heart-lung machine, S5® heart-lung machine, S3® heart-lung machine, S5 PRO™ heart-lung machine, B-Capta®, Inspire®, Heartlink®, XTRA® Autotransfusion System, 3T Heater-Cooler®, Connect™ and Revolution®.

Trademarks for our extracorporeal life support systems: TandemLife®, TandemHeart®, TandemLung®, ProtekDuo®, and LifeSPARC®.

Trademarks for our obstructive sleep apnea system: ImThera® and Aura6000®.

These trademarks and tradenames are the property of LivaNova or the property of our consolidated subsidiaries and are protected under applicable intellectual property laws. Solely for convenience, our trademarks and tradenames referred to in this presentation may appear without the ® or ™ symbols, but such references are not intended to indicate in any way that we will not assert, to the fullest extent under applicable law, our rights to these trademarks and tradenames.

GAAP to Non-GAAP Reconciliations

The financial tables within this presentation reconcile the most comparable U.S. Generally Accepted Accounting Principles (GAAP) measures to the non-GAAP financial and operating measures.

Unless otherwise noted, all sales growth rates in this presentation reflect comparable, constant-currency growth. Management believes that referring to comparable, constant-currency growth is the most useful way to evaluate the sales performance of LivaNova and to compare the sales performance of current periods to prior periods on a consistent basis. Constant-currency growth, a non-GAAP financial measure, measures the change in sales between current and prior-year periods using average exchange rates in effect during the applicable prior-year period.

LivaNova calculates forward-looking non-GAAP financial measures based on internal forecasts that omit certain amounts that would be included in GAAP financial measures. For example, forward-looking net sales growth projections are estimated on a constant-currency basis and exclude the impact of foreign currency fluctuations. Forward-looking non-GAAP adjusted tax rate and adjusted diluted earnings per share guidance exclude other items such as, but not limited to, changes in fair value of contingent consideration arrangements, asset impairment charges and product remediation costs that would be included in comparable GAAP financial measures. The most directly comparable GAAP measure for constant-currency net sales, non-GAAP adjusted tax rate and adjusted diluted earnings per share are net sales, the effective tax rate and earnings per share, respectively. However, non-GAAP financial adjustments on a forward-looking basis are subject to uncertainty and variability as they are dependent on many factors, including but not limited to, the effect of foreign currency exchange fluctuations, impacts from potential acquisitions or divestitures, gains or losses on the potential sale of businesses or other assets, restructuring costs, merger and integration activities, changes in fair value of contingent consideration arrangements, product remediation costs, asset impairment charges and the tax impact of the aforementioned items, tax law changes or other tax matters. Accordingly, reconciliations to the most directly comparable forward-looking GAAP financial measures are not available without unreasonable effort.

The Company also believes adjusted financial measures such as adjusted gross profit; adjusted selling, general and administrative expense; adjusted research and development expense; adjusted other operating expenses; adjusted operating income from continued operations; adjusted income tax expense; adjusted net income from continuing operations; adjusted free cash flow; and adjusted diluted earnings per share, are measures by which LivaNova generally uses to facilitate management review of the operational performance of the company, to serve as a basis for strategic planning, and to assist in the design of compensation incentive plans. Furthermore, adjusted financial measures allow investors to evaluate the Company's core performance for different periods on a more comparable and consistent basis, and with other entities in the medical technology industry by adjusting for items that are not related to the ongoing operations of the Company or incurred in the ordinary course of business.

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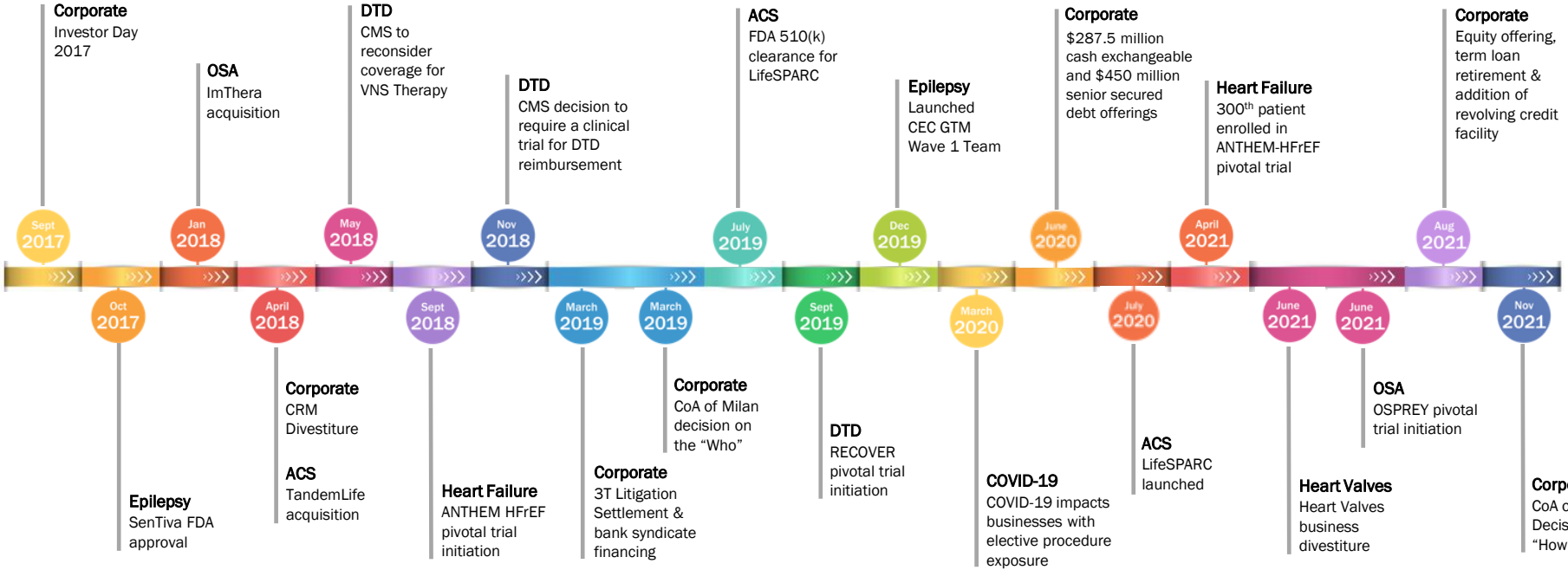
Opening Remarks

Damien McDonald
Chief Executive Officer

Key Events Since LivaNova Investor Day 2017



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LivaNova at a Glance

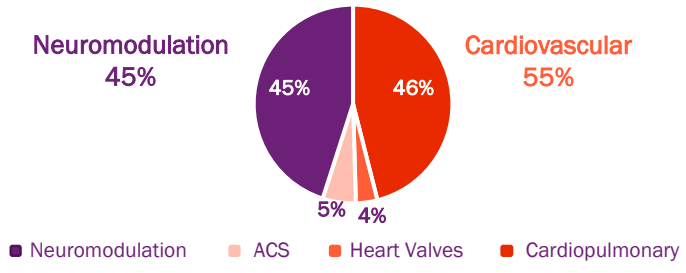
Business Overview

- **$1.0B** focused medical innovator
- Design, develop and manufacture devices for cardiovascular procedures and neuromodulation across **100+** countries
- Currently employs **~3,000** employees worldwide; **10%** of whom are engineers, scientists and medical professionals
- Formed as a merger of Sorin (Italy) and Cyberonics (U.S.) in 2015
- Headquartered in London (U.K.) and listed on the NASDAQ

Market Cap[1]	$4.5B
Enterprise Value[1]	$4.5B
2021E Sales	$1.0B

2021 Revenue Distribution

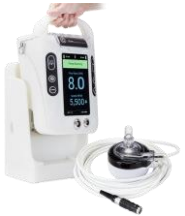
By Business



By Geography

1. Market Capitalization and Enterprise Value per FactSet as of December 3, 2021
2. 2021E Sales reflect midpoint of guidance range
3. Completed Heart Valves business divestiture and deconsolidated related financial results effective June 1, 2021.
4. ACS: Advanced Circulatory Support

Portfolio Focused on “Head & Heart”

	Neuromodulation				Cardiopulmonary	Advanced Circulatory Support
	Creator, Leader of VNS Therapy 				Market-leading positions 	Advanced temporary support solutions 
	Strategic Portfolio Initiatives (SPIs) *Clinical Pipeline Targeting High Unmet Needs*			Core		
Disease States	Difficult-to-Treat Depression	Obstructive Sleep Apnea	Heart Failure	Drug-Resistant Epilepsy	Coronary Artery Disease Congenital Heart Defect Atrial Fibrillation Valvular Disease	Cardiogenic Shock Cardiac Arrest Left and Right Ventricle Failure ARDS/COPD
2021E Net Sales[1]	~$10M	–	–	$434-452M	$465-480M	$55M+
Market Size[2]	~$10M	~$220M	~$15M	~$505M	~$2B	$1.5B
Market Growth[2]	N/A	30%+	20%+	10%+	0-3%	10%+

(1) 2021E represents guidance issued on November 3, 2021.
(2) Management estimates for full-year 2021.

LivaNova

Our Strategic Priorities

Consistently deliver growth, pipeline and profitability

Core Growth

Focus on portfolio optimization to support leadership positions in underserved markets

- Expand the go-to-market initiative for U.S. Epilepsy
- Forecast over 30% ACS growth in 2021

Pipeline Execution

Multiple existing and pipeline initiatives to accelerate growth

- Achieve key study milestones in RECOVER, ANTHEM HFrEF and OSPREY
- Continued progress on next-generation heart-lung machine, Essenz

Operational Excellence

Drive margin expansion and cash generation

- Expand operating margin through cost discipline
- Drive improvement in free cash flow generation

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Core Growth Drivers

EPILEPSY

SenTiva

Fewer seizures. Shorter seizures. Better recovery.
Features that offer treatment & therapy personalization

125,000+
patients treated with VNS Therapy worldwide

ADVANCED CIRCULATORY SUPPORT (ACS)

LifeSPARC

Life Support Simplified.
For more patients, in more places

$1.5 billion
opportunity advancing the standard of care

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Cardiopulmonary: Return On Capital

BROAD PORTFOLIO OF OFFERINGS

S5 HLM
Advanced heart-lung machine

45+
years of perfusion know-how and world leadership

INSPIRE OXYGENATOR
personalized perfusion – safe, easy and flexible for all adult patient sizes

Nearly 500K
patients treated per year

XTRA ATS
lowers the transfusion rates during and after cardiac surgery[1,2]

Over 500K
patients treated per year

1 Vonk et al. Intraoperative cell salvage is associated with reduced postoperative blood loss and transfusion requirements in cardiac surgery: a cohort study. Transfusion. 2013 Nov,53(11):2782-9
2 Cote et al. Efficacy of intraoperative cell salvage in decreasing perioperative blood transfusion rates in first-time cardiac surgery patients: a retrospective study. Can J Surg 2016 Sept; 59(5):330-6

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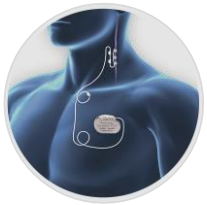
Differentiated Clinical Pipeline

Targeting Medical Conditions with High Unmet Needs

Difficult-to-Treat Depression (DTD)
RECOVER CMS CLINICAL STUDY

VNS Therapy may provide better outcomes and symptom improvement for those who have failed other treatments



FDA APPROVED

Depression is the leading cause of disability worldwide

U.S. Prevalence: >26 million[1]

Heart Failure (HF)
ANTHEM-HFrEF CLINICAL TRIAL

Novel delivery of Autonomic Regulation Therapy (ART) may improve regulation of cardiovascular function

HF is the leading cause of morbidity and mortality

WW Prevalence: >25 million[2]

Obstructive Sleep Apnea (OSA)
OSPREY CLINICAL TRIAL

Implantable pulse generator (IPG) opens the airway during sleep

OSA is a contributing factor to several chronic illnesses

WW Prevalence: >1 billion[3]

1. Hasin DS et al, Epidemiology of Adult DSM-5 Major Depressive Disorder and Its Specifiers in the United States. JAMA Psychiatry 2018;75(4):336.
2. Card Fail Rev. 2017 Apr; 3(1): 7–11. 3 World Health Organization. Globe surveillance, prevention and control of Chronic Respiratory Diseases. A comprehensive approach, 2007.
3. Benjafield et al., Global Prevalence of Obstructive Sleep Apnea in Adults: Estimation Using Currently Available Data, 2018.

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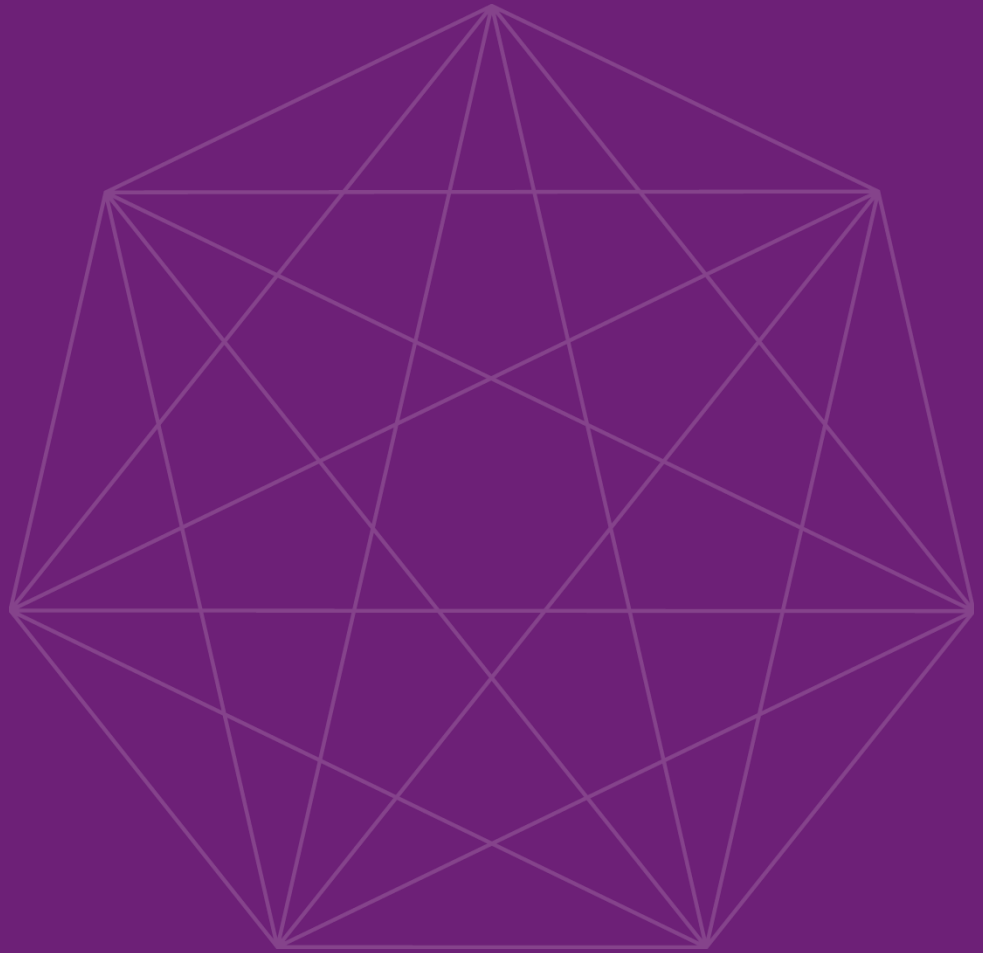
2021 Investor Day Agenda

Time (approx.)		
9:00am– 9:10amET	Opening Remarks	Damien McDonald
Core Businesses		
9:10am– 9:35amET	Epilepsy	Chris Hartman
9:35am– 9:55amET	Cardiopulmonary	Rich Wintersteller
9:55am– 10:20amET	Advanced Circulatory Support	Travis Deschamps
10:20am– 10:35amET	Q&A	Damien McDonald, Chris Hartman, Rich Wintersteller, Travis Deschamps
10:35am– 10:45amET	Break	
Strategic Pipeline Initiatives		
10:45am– 11:15amET	Difficult-to-Treat Depression	Jonathan Walker
11:15am–11:35amET	Heart Failure	Larry DiCarlo
11:35am–11:45amET	Obstructive Sleep Apnea	John Webb
11:45am–12:00pmET	Q&A	Damien McDonald, Jonathan Walker, Larry DiCarlo, John Webb
Financials and Conclusion		
12:00pm-12:15pmET	Financial Remarks	Alex Shvartsburg
12:15pm–12:30pmET	Q&A	Damien McDonald, Alex Shvartsburg, Matthew Dodds



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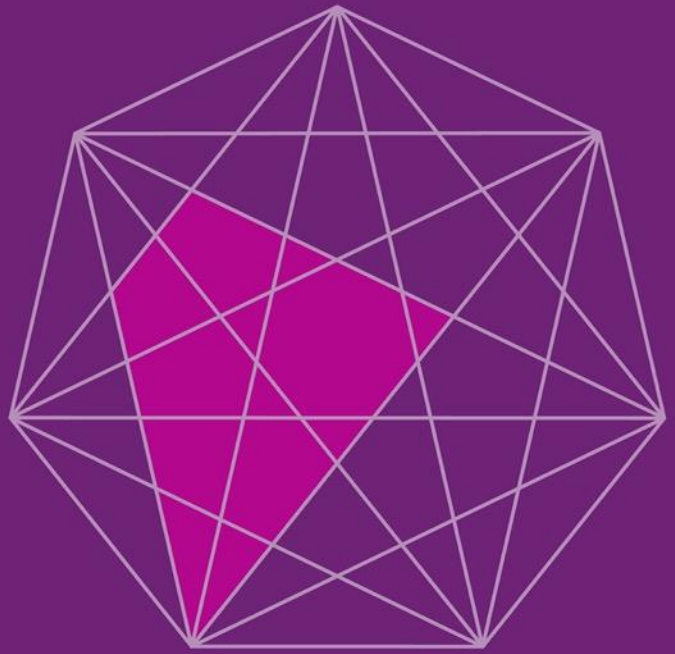

Epilepsy

Chris Hartman, General Manager
Sales & Marketing, North America

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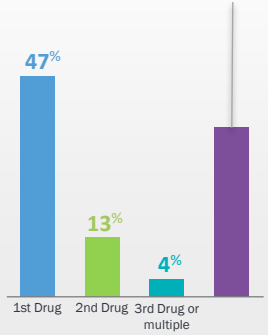
Epilepsy

Prevalence of DRE

Unchanged by new ASM introductions

Minimum 1 year of seizure freedom on unchanged treatment regimen

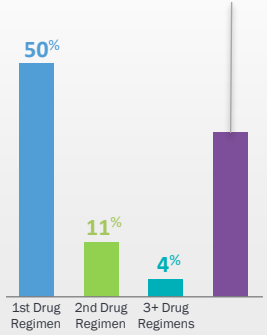
36% did not achieve seizure-freedom[1]



N=470

1984

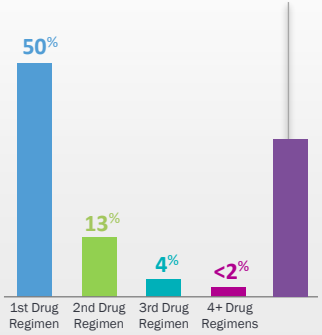
35% did not achieve seizure-freedom[2]



N=780

1994

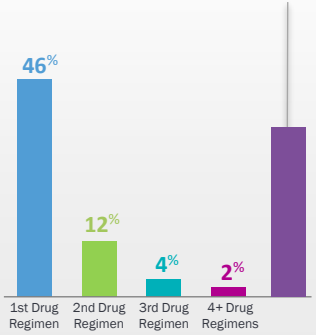
32% did not achieve seizure-freedom[3]



N=1098

2001

36% did not achieve seizure-freedom[4]



N=1795

2006

2014

Over a period of 30 years, despite the addition of many new ASMs (some with novel MOAs), **seizure freedom rates** in newly diagnosed epilepsy **have not improved.**

1. Kwan P, et al. N Engl J Med 2000;342:314-9.
2. Mohanraj R et al. Eur J Neurology. 2006; 13:277-282.
3. Brodie, MJ, et al. Neurology. 2012; 78:1548-1554. 4.
4. Chen Z, et al. JAMA Neurol 2018 Mar 1;75(3):279-286.

LivaNova

LivaNova VNS Therapy® for DRE

Uniquely positioned for Global Growth

LivaNova VNS Therapy

- Indicated for both adult and pediatric patients[1]
- 1-2 hour outpatient procedure
- Proven safe, effective and reliable over 25-year history
- Available in over 80 countries

Strategic Advantages

- Inter-connected Technology Roadmap
- Established Global Commercial Footprint
- Digital Patient Education and Advocacy Expertise
- Pediatric Indication

[1]The VNS Therapy System is indicated for use as an adjunctive therapy in reducing the frequency of seizures in patients 4 years of age and older with partial onset seizures that are refractory to antiepileptic medications

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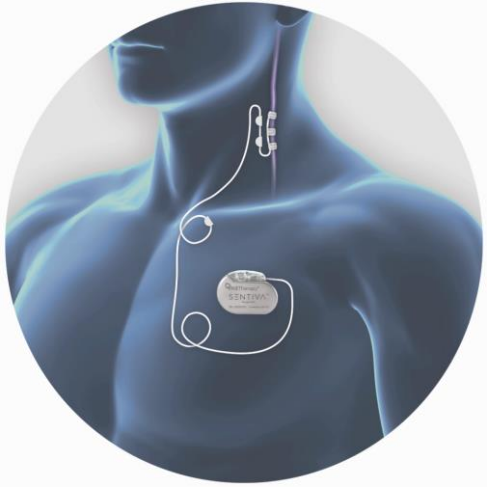
LivaNova VNS Therapy®

A compelling solution for Drug Resistant Epilepsy (DRE) patients and physicians



1-2 hour outpatient procedure in CEC ***or*** Community Health System

- Seizure reduction that continues to improve over time[1]
- Quality of life improvements, independent of seizure control[2]
- Decreased healthcare utilization and costs[3]
- Decreased seizure severity/postictal period[4,5]
- Nonpharmacological side effects that typically diminish over time[6,7]
- Decrease in the number of depressive episodes[8]
- Positive Impact on SUDEP rates[9]
- Pediatric patients increased cognitive function[10]
- Maximal adherence

1. Elliott RE, et al. Epilepsy Behav 2011;20(3):478-483. 2.Klinkenberg S, et al. Clin Neurol Neurosurg 2012;114(4):336-340. 3. Helmers SL, et al. Epilepsy Behav 2011;22(2):370-375.
4. Tubbs RS, et al. J Neurosurg 2005;102(Suppl 2):213-217. 5. Vonck K, et al. Epilepsy Behav 2010;19(2):182-185. 6. Morris GL III, Mueller WM. Neurology 1999;53(7):1731- 1735.
7. Ben-Menachem E. J Clin Neurophysiol 2001;18(5):415-418. 8. Schmidt D., The clinical impact of new antiepileptic drugs after a decade of use in epilepsy. EPILEPSY_RES, 2002, 50(1-2).
9. Annegers JF, et al. Epilepsia 2000;41:549-553. 2. Morris GL, et al. Neurology 2013;81:1453-9.

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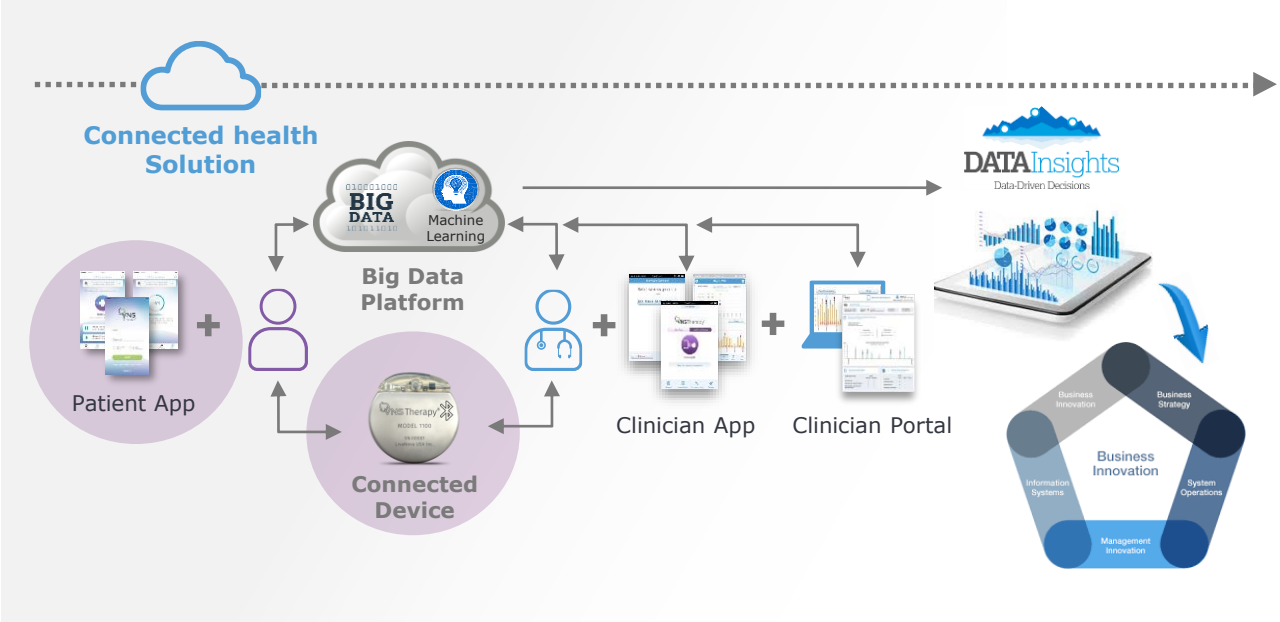
Technology Roadmap

Creating a Connected VNS Therapy® Network for improved outcomes



- **Digital Foundation:** Simple user interface with remote data uploads & software updates via secure network
- **Connected Device:** Remote patient care with enhanced scheduled titration/dosing capabilities
- **Patient Specific Therapies:** Personalized, automated and optimized patient treatment solutions

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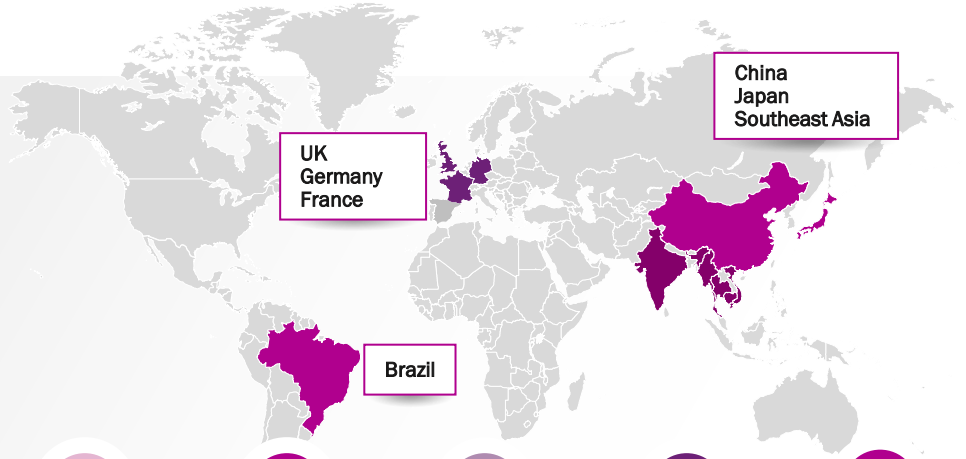
International Strategy

Driving performance with a proven penetration model in strategic growth markets

Total International DRE Population ~12.5MM



1. Identify High Potential Markets and Accounts
2. Align Field Resources
3. Build KOL Advocacy with Clinical Data and Support
4. Develop efficient care delivery pathways
5. Educate and Motivate Patients using Digital Tools

*UK, Benelux, Nordics, France, DACH, Italy, Russia, Saudi Arabia, Turkey, Japan, China, ANZ
**UK, Germany, France, China, Japan, Southeast Asia, Brazil

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U.S. Drug-Resistant Epilepsy

Significant opportunity in underserved market

Epilepsy U.S. Prevalence[1]	~4.0MM	~2.7MM successfully treated by drugs[2]
Treatment Gap: Drug-Resistant Epilepsy (DRE)	~1.3MM	~0.2MM successful surgical resection or device implanted[3]
Treatment Gap: Untreated DRE	~1.1MM	~0.5MM VNS not indicated[4]
Treatment Gap: VNS Indicated DRE	~0.6MM	LivaNova opportunity in the US

Large unmet adult and pediatric patient need

Finn, on VNS Therapy

1. 2015 value is DRG RWD claims data, NCHS and Clarivate IPD average; US Census Bureau used to grow population for 2020; CDC ~1.2% of US population has Epilepsy
2. Epilepsy.com ~1/3 of patients is intractable Epilepsy
3. National Association of Epilepsy Centers (Gumnit, Labiner, et al.) for 70% RS success rate, 0.4% of DRE receive RS; Guidepoint data and Neuropace S1 Filing; LivaNova QAD data; DRG RWD claims data for PNES
4. Epilepsia (Helmers, Thurman, et al.), ~0.03%, DRG RWD claims data - 51.5% indicated for VNS

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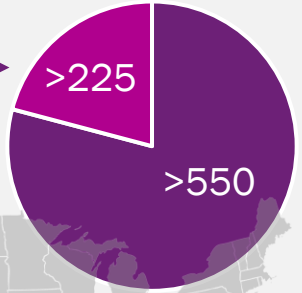
Health Systems and Clinicians

Building VNS Therapy Pathways in Community Health Systems and Comprehensive Epilepsy Centers (CECs)

VNS Site-of-Care Distribution
(Number of Centers)

Level 3 & 4 CECs
(Revenue share = 50%)



Community Health Systems
(Revenue share = 50%)

>100 Field Sales Professionals
(expansion budgeted in 2022)

LivaNova CEC Team

Case Manager
"The Coordinator"

Key Account Manager
"The Quarterback"

Medical Science Liaison
"The Scientist"

Clinical Nurse Education Specialist
"The Trainer"

12 GTM Teams in place today (+50% over 2020)
4 new Teams to deploy in 2022

As of April 2021, there were >250 Level 3 (~50) and Level 4 (~200) Comprehensive Epilepsy Centers in the U.S. of which LivaNova has an active presence in >225.

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Patients and Caregivers

Creating a unique experience throughout the VNS Therapy® Journey

Geo-targeted DTC Strategy

CEC Targets & VNS Hotspots

Digital Health

Platform for Epilepsy Community

- >120,000 people have already discovered Epsy
- Millions of epilepsy events actively logged by Epsy users
- Experiencing strong growth, engagement and retention

AWARENESS | UNDERSTANDING | IMPLANT | RETENTION

Therapy Awareness
Paid, Earned & Advocacy Groups

VNS Understanding
VNSTherapy.com, Community Education

Pre-Implant Patient Navigation
Case Management Support

Post-Implant Optimization
Patient Specific Programming & Dosing

Create VNS Therapy Loyalty
Exceptional Care Experience and Outcome

LivaNova VNS Therapy® re-implant rate of 75%

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Pediatric DRE patients are underserved

Early intervention with VNS Therapy can have a lifelong impact on patients and caregivers

1 in 4
of all newly diagnosed cases of epilepsy Worldwide are
Children[1]

470,000
Children & their families are impacted by Epilepsy in the US[2]

30 Children
per day develop
DRE [3-6]

Children with uncontrolled seizures could experience developmental limitations that **impact cognitive and social function**[7]

5.2x

Pediatric patients who do not achieve seizure freedom for 5 years were at a **5.2x greater risk of SUDEP**[8]

Poorly controlled seizures have **serious cognitive consequences** in the developing brain[7]

1. Neubauer BA, Gross S, Hahn A. Epilepsy in childhood and adolescence. Dtsch Arztebl Int. 2008;105(17):319-328
2. CD1. CDC MMWR, Vol 66, No 31, August 2017. Incidence data adapted from US Census 2016 Population Estimate
3. Census 2016 Population Estimate. 4. Institute of Medicine Committee, NIH, 2012. 5. Brodie MJ et al. Neurology 2012; 78:1548-1554.
6. Wirrell EC et al. Epilepsy Res 2011 June; 95 (1-2):110-118.
7. Berg AT, Zelko FA, Levy SR, et al. Neurology. 2012;79:1384-139 8. Sillanpää M, Shinnar S. N Engl J Med. 2010;363(26):2522-2529.

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LivaNova VNS Therapy®

Key Opinion Leader Insights

PHOENIX CHILDREN'S

BEST CHILDREN'S HOSPITALS U.S.News & WORLD REPORT NEUROLOGY & NEUROSURGERY 2021-22

Angus A Wilfong, MD, FRCPC, FAES

Professor and Chief, Pediatric Neurology

Barrow Neurological Institute at Phoenix Children's Hospital

Professor, Child Health and Neurology

University of Arizona College of Medicine – Phoenix.

[1]The VNS Therapy System is indicated for use as an adjunctive therapy in reducing the frequency of seizures in patients 4 years of age and older with partial onset seizures that are refractory to antiepileptic medications

LivaNova

LivaNova VNS Therapy® for DRE

Uniquely positioned for Global Growth

- Drug-Resistant Epilepsy is a Global Challenge for Millions of Adult and Pediatric Patients
- LivaNova is the Global Leader in neuromodulation therapy for Drug Resistant Epilepsy with ~9 of every 10 U.S. implants being VNS Therapy
- We have a strategic plan that will deliver 7-9% CAGR by:
  - Delivering Technology Focused on an Interconnected Device Network
  - Strengthening Global Leadership with Deeper Penetration of Key Customers and Markets
  - Creating a Unique Patient and Caregiver Experience with Digital Outreach and Engagement
  - Increasing Awareness and Earlier Adoption of VNS Therapy with Pediatric DRE Patients

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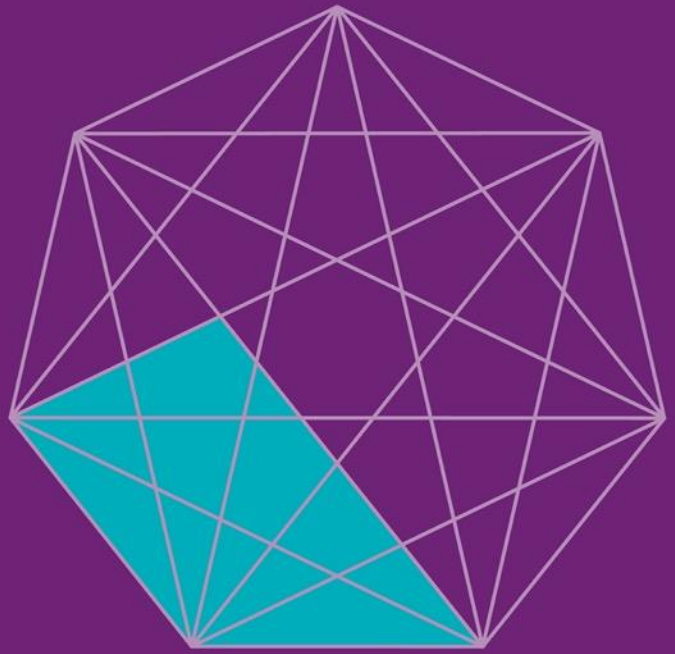

Cardiopulmonary

Rich Wintersteller, VP and General Manager of Cardiovascular, North America

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LivaNova

Cardiopulmonary

Comprehensive Portfolio of Differentiated Offerings

LivaNova uniquely provides a complete cardiopulmonary solution including a platform of differentiated offerings

#1 Global Share in Cardiopulmonary

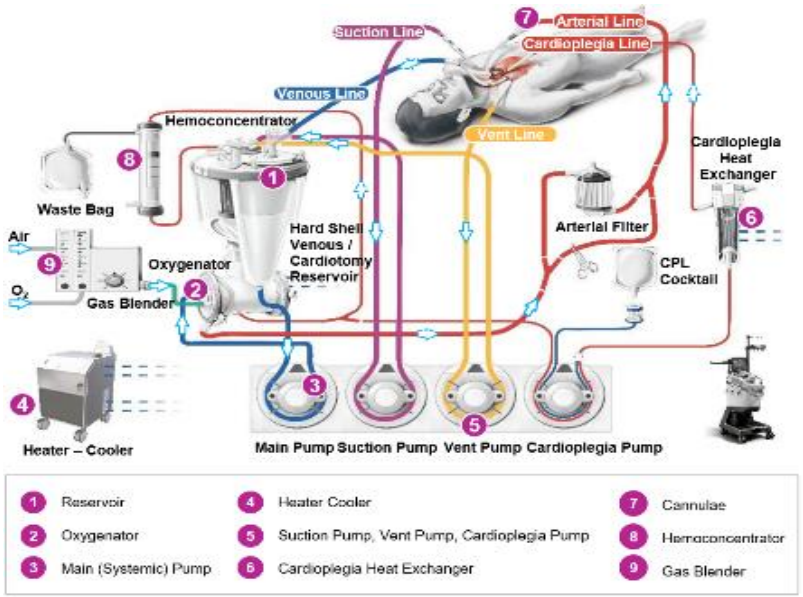
Heart-Lung Machine (HLM)	Oxygenator (Oxy)	Autotransfusion System (ATS)	Other Offerings
S5	*Inspire Dual*	*XTRA*	*Technical Service*
			Cannulae
			Perfusion Tubing Sets

LivaNova

Perfusion & Cardiopulmonary Bypass (CPB) Defined

Critical system that takes over function of heart and lungs during surgery

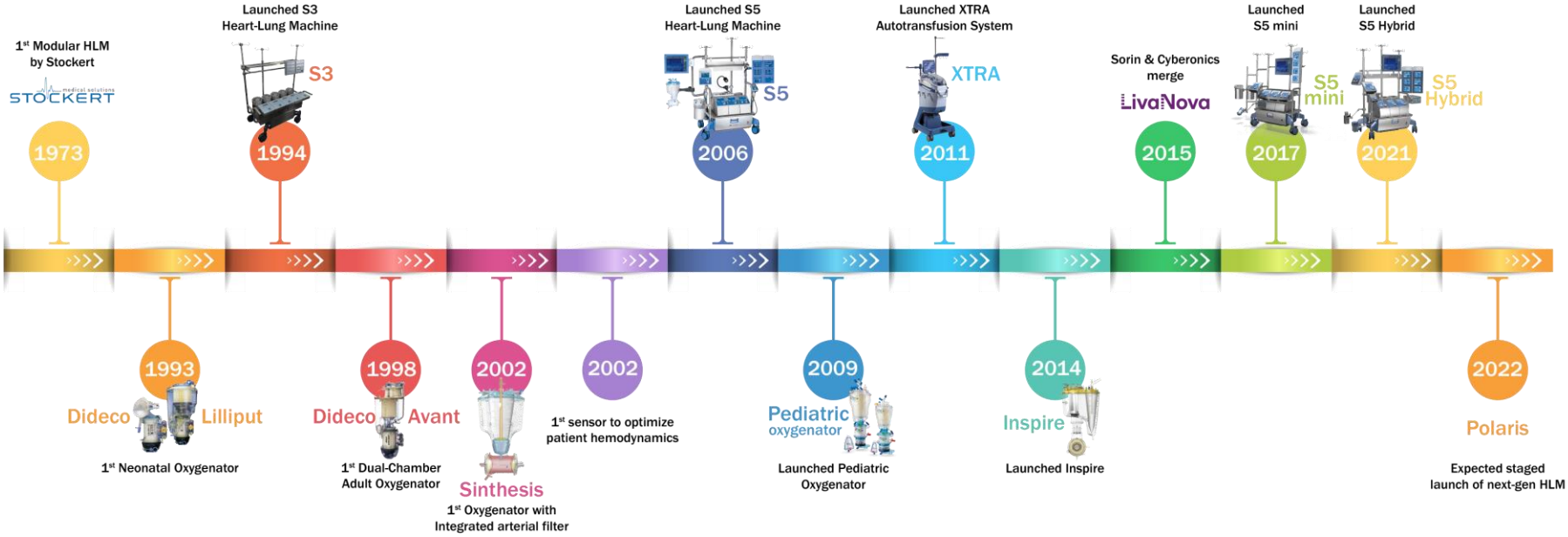
ECC Circuit for CPB



LivaNova

Innovation Leader

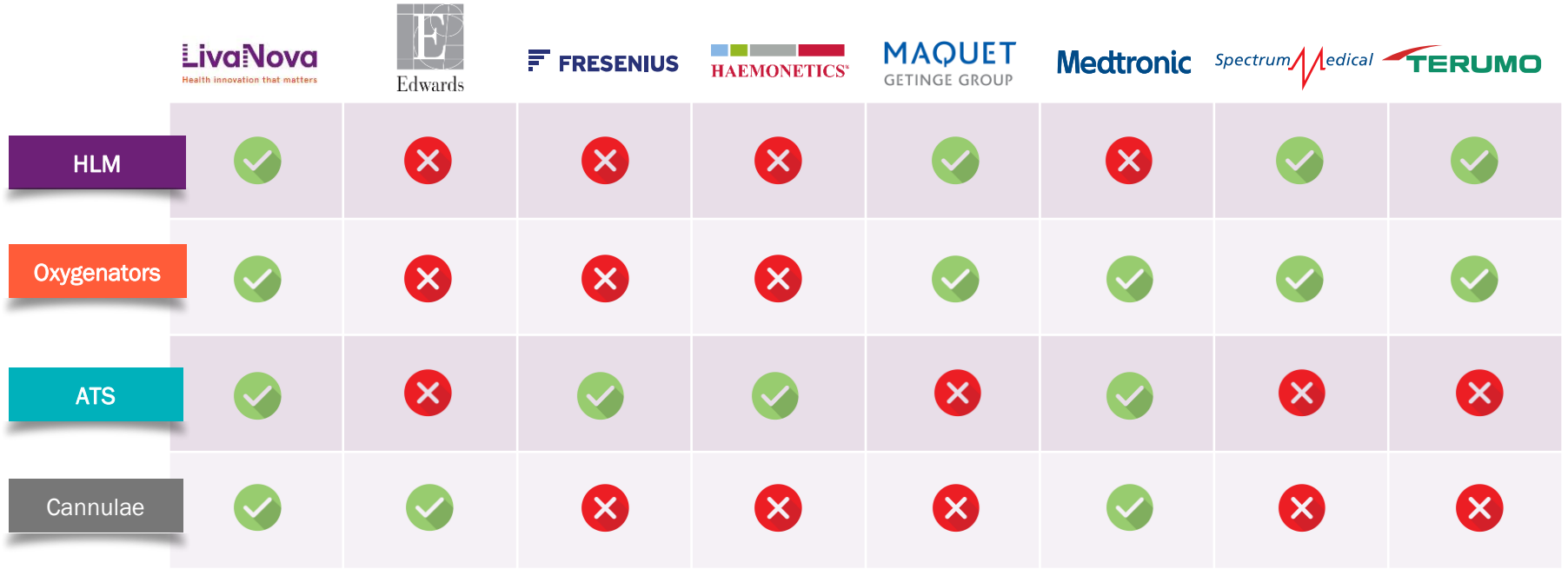
Nearly half a century of life-sustaining technology leadership



Demonstrated R&D capabilities and culture of innovation

Cardiopulmonary Portfolio Offerings

LivaNova uniquely provides a complete cardiopulmonary solution and platform



LivaNova

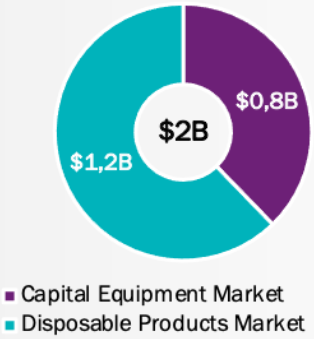
Procedure and Market Opportunity

1.8 million heart procedures performed annually; $2 billion total addressable segment

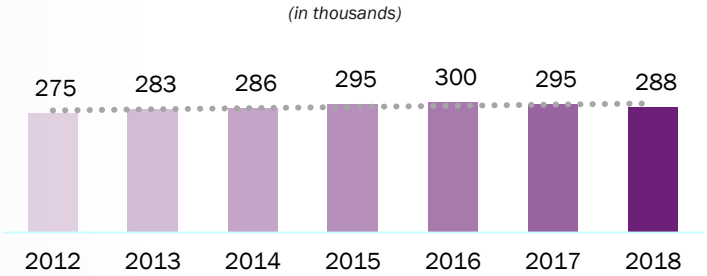
Global Cardiac Surgery Procedures [1]

- 1.8 mm heart surgeries performed annually
- On-pump procedures represent ~85% of total
- U.S., EU and China: 3 largest markets
- Estimate overall procedure growth in the low single digits with flat to declining volumes in the developed markets and growth in emerging markets

Large, Durable and Growing Market [2]



Total U.S. Cardiac Procedures 2012-2018 [3]



1. *Based on LivaNova 2021E estimates.*
2. *Based on LivaNova estimates of the total addressable segment revenue opportunity.*
3. *Based on data from the STS Adult Cardiac Surgery Database.*

LivaNova

Cardiopulmonary At-A-Glance

Leading
carpiopulmonary franchise

Global presence in
>100 countries

~ $ 500mm
revenue
>50%
gross marginns

> $ 2bn
total addressable segment opportunity

7,000+
global HLM installed base

>60%
recurring revenue

>600
granted patents & patent applications

>500k
patients treated annually with oxys

LivaNova

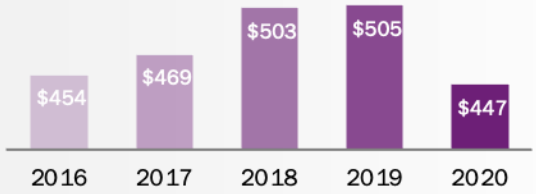
Cardiopulmonary Financial Profile

Highlights

- Durable and growing platform with stable revenues
  - >60% recurring, consumable revenue
- 50%+ gross margins & mid-teens operating margins
  - Ability to drive incremental operating leverage
- Limited CapEx requirements (~$13 - $15mm per year)
- Strong return on capital and cash generation
- Near-term HLM upgrade cycle to support next leg of growth
- Future platform opportunities

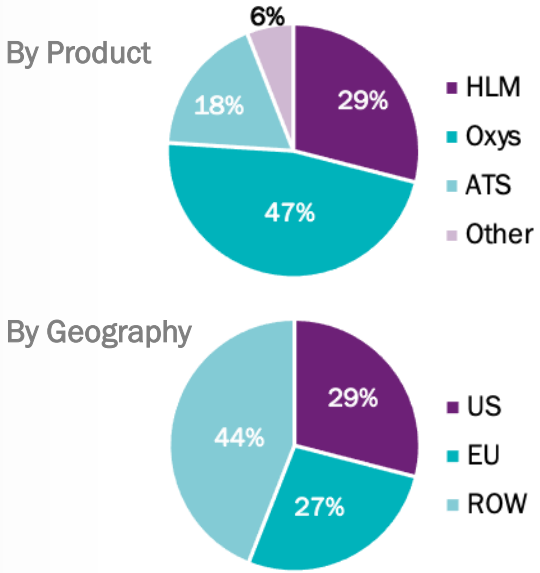
Revenue

($ in millions)



Revenue Profile

For the Year Ended December 31, 2020



1. For comparative purposes, revenues for 2016, 2017 and 2018 exclude $20M, $28M and $33M, respectively, related to exiting a Canadian distribution agreement on January 1, 2019.

LivaNova

Introducing the Essenz Perfusion System

- Relentless commitment to patient safety and reliability
- Paving the way in patient-tailored clinical perfusion management
- Complete offer for a seamless and intuitive perfusion experience
- Cutting edge technology to meet current and future needs

Built on LivaNova's 40-year legacy of safety and reliability, Essenz is the innovative perfusion system that reaches beyond products, to truly foster tailored patient care strategies and allow the entire heart team to continously improve the quality of clinical practice

LivaNova

Customer Feedback

"It's modern and slicker without going too advanced too soon."
EU Perfusionist

"Having everything centrally located on the cockpit is a huge advantage!"-
U.S. perfusionist

"You've done it well from a perfusionist's perspective, and I like what I see."
Kelly Hedlund (U.S.)

"It's Evolutionary, not revolutionary. It's rooted in the strengths of the S5."
U.S. Perfusionist

"It's really exciting to see where this next generation is actually going."
Joshua Oliver (UK)

"I'm excited to see the finished product I really am and I think it's gonna be really well received."
Kelly Hedlund (U.S.)

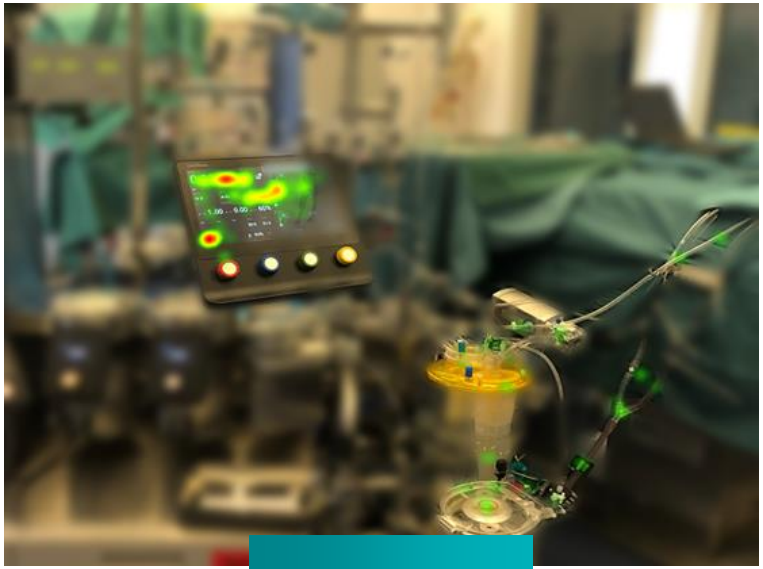
"You want to show you're better, I think you've accomplished this."
Mark Martin (U.S.)

"It all is a great advancement, a lot of thought has gone into it."
Jason Robson (UK)

LivaNova

Recent evaluation example

S5



ESSENZ

LivaNova

HLM Upgrade Cycle

1. Large Installed Base of S5 HLMs
2. Price Premium
3. Opportunity for service contracts
4. Fleet vs Individual Unit Replacements
5. Significant portion already past useful life of 10 years

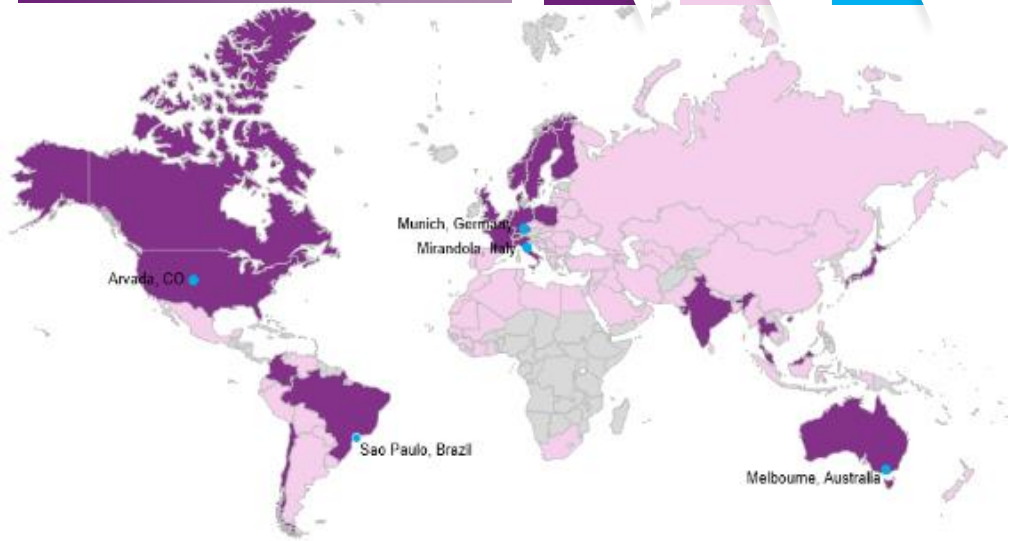
LivaNova

Global Commercial Reach & Go-to-Market Structure

Strong global commercial capabilities & reach into >100 countries

Global Commercial Footprint

Direct | Indirect | Facilities



Highlights

- Direct sales presence in all major markets including US, Canada, Western Europe and Japan
- Global sales & marketing, R&D and manufacturing operations
- Tenured sales reps in all regions (Average tenure of nearly 10 years)
- Strong existing relationships and innovative heritage/reputation provide unique market access
- Unmatched direct global field-based service & support offering

Manufacturing/R&D

- Mirandola, Italy
- Munich, Germany
- Arvada, Colorado (Manufacturing only)

Distribution/Assembly

- Mirandola, Italy
- Melbourne, Australia
- São Paulo, Brazil
- Arvada, Colorado

Extensive commercial infrastructure, supported by robust manufacturing and assembly capabilities to serve customized preferences in all geographies

LivaNova

Growth Plan & Strategic Priorities

Four key strategic pillars of focus for driving growth

Next Generation Product Launches

- Innovate 15-year-old technology building upon safe, reliable platform
- Launch innovative, customer-centric design approach
- Drive market share gain and pricing power
- Increase speed of replacement cycle leveraging installed base

Comprehensive Customer Solution

- Capitalize on strong operating margins for a comprehensive solution
- Create optionality in product and offering to suit all customer needs
- Expand software technology for better patient care

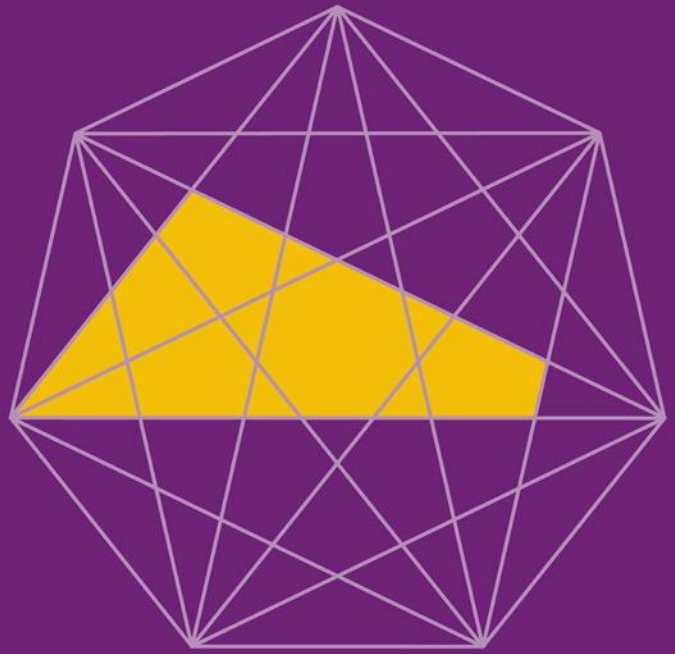
Drive Market Share Growth

- Achieve higher penetration in existing geographic markets
- Enhance margins
- Execute additional go-to-market model enhancements
- Capitalize on consumables growth in emerging markets

Robust Pipeline for Long-Term Growth

- Continue dedication to product innovation
- Focus on satisfying customers' needs
- Strengthen competitive positioning
- Address key industry trends
- Demonstrated history industry firsts
- Increase technical service revenues primarily in developed markets

LivaNova



Advanced Circulatory Support

Travis Deschamps, VP and General Manager

Intended for Investor Use Only | Not Intended for Use by Patients or HCPs

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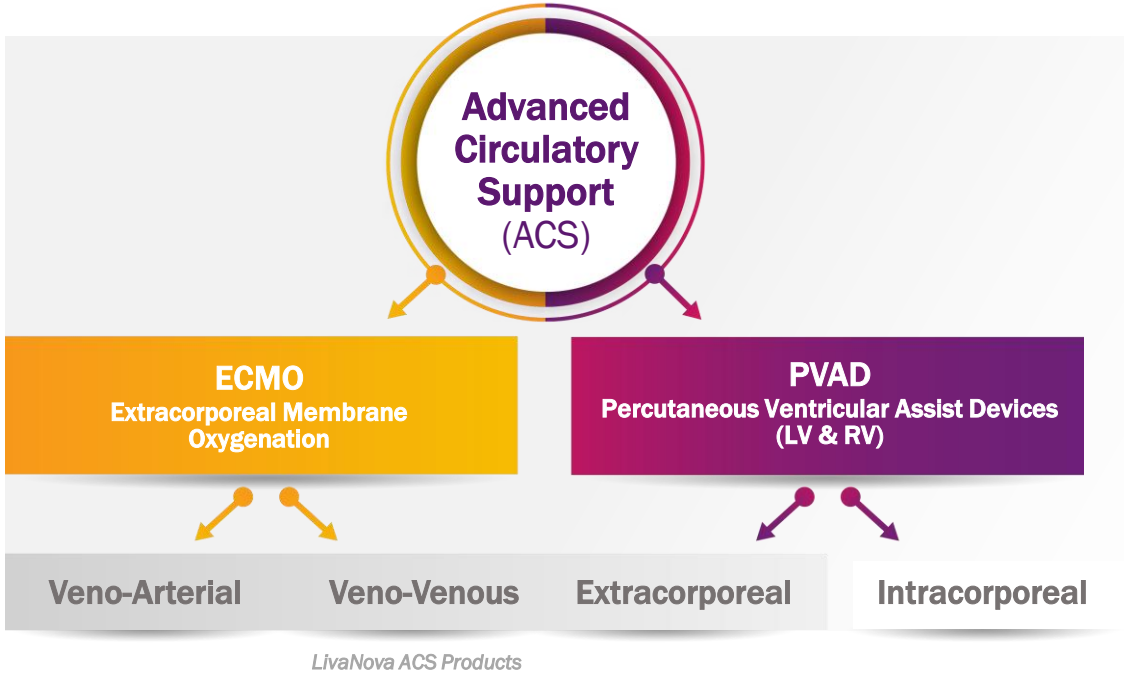
Advanced Circulatory Support

Defining Advanced Circulatory Support (ACS)

ACS encompasses a variety of short-term mechanical circulatory support device categories that offer more support than the standard of care



LivaNova ACS Products

- With **Oxygenation** or without
- **Intracorporeal** (pump inside the body) or **Extracorporeal** (pump outside the body)
- Various **Cannulation** sites to withdraw and return blood for specific patient needs

*LivaNova ACS products are temporarily indicated for ECMO therapy greater than 6 hours. See Indications for use for more information. LivaNova is currently pursuing 510(k) clearance for ECMO therapy greater than 6 hours.

LivaNova

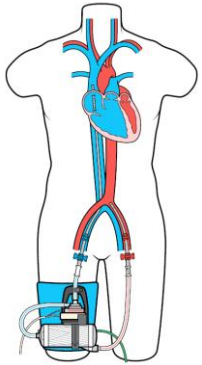
LifeSPARC is a new circulatory support platform designed to simplify hospital programs

- LifeSPARC is a single operating system for simple but powerful circulatory support capabilities across departments & indications
  - LifeSPARC pump offers **40% more pumping power** than the legacy ACS platform
  - **Magnetic bearing system** replaces the complex TandemHeart fluid-bearing system
  - Small, fully-sterilized pump enables **rapid & repeatable deployment** in the sterile field
  - LifeSPARC controller **1/3 the size & weight with removable handheld controller**
  - **Streamlined user interface** minimizes the learning curve and ongoing training requirements for nursing staff and other patient caregivers

LivaNova

LifeSPARC Platform: Four Modes of Circulatory Support

LifeSPARC



TANDEMLIFE

Veno-Arterial (VA) ECMO

Key Components:

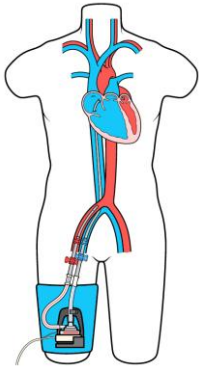
- Sterile, on-patient centrifugal pump
- Oxygenator (pre-connected)
- 24 Fr venous drainage cannula
- 15 or 17 Fr arterial cannula

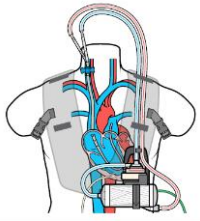
TANDEMHEART

Percutaneous LA-FA Bypass

Key Components:

- Sterile, on-patient centrifugal pump
- 21 Fr transseptal cannula (62/72 cm)
- 15 or 17 Fr arterial cannula





TANDEMLUNG

Veno-Venous (VV) ECMO

Key Components:

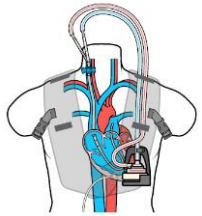
- Sterile, on-patient centrifugal pump
- Oxygenator (pre-connected)
- 29 or 31 Fr dual-lumen cannula
- Venous dilator set

PROTEKDUO

Percutaneous RA-PA Bypass

Key Components:

- Sterile, on-patient centrifugal pump
- 29 or 31 Fr dual-lumen cannula
- Venous dilator set



LivaNova ACS products are not currently indicated for Cardiogenic Shock, RV Failure, or Cardiac Arrest. LivaNova ACS products are temporarily indicated for ECMO therapy greater than 6 hours. See Indications for Use for more information. LivaNova is currently pursuing PMA approval for a Right Ventricular Failure indication and 510(k) clearance for ECMO therapy greater than 6 hours.

LivaNova

Competing circulatory support platforms provide a limited subset of options

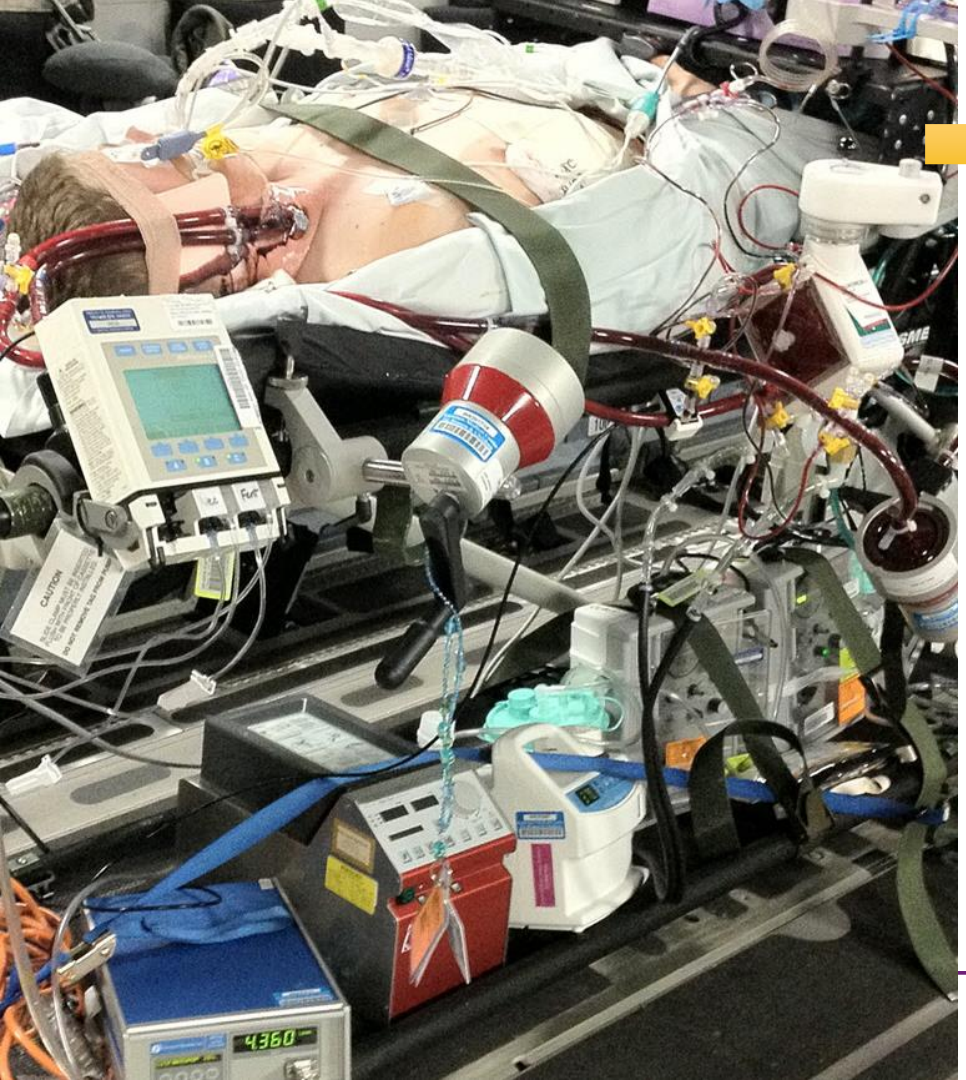
Company	Brand	VA-ECMO	VV-ECMO	PVAD (L)	PVAD (R)
LivaNova	LifeSPARC	✓	✓	✓	✓
ABIOMED	Impella	✗	✗	✓	✓
	Breethe	✓	✓	✗	✗
MAQUET GETINGE GROUP	CardioHelp	✓	✓	✗	✗
Abbott	CentriMag*	✓	✓	✗	✗
	PHP**	✗	✗	✓	✗

LifeSPARC includes an integrated and sterilized extracorporeal pump motor for placement within the sterile field, designed to minimize hemodilution, reduced circuit volume, and offer exclusive cannulation options in each support category:

- ProtekDuo Dual Lumen: Unique RA-to-PA cannulation via a single RIJ access point
- ProtekSolo Transseptal: Direct LV pre-load reduction via left atrial cannulation
- ProtekSolo Arterial: Advanced cannula securement features

* CentriMag is a centrifugal pump only; additional technology (oxygenator and cannulae) are required to complete the circuit
** PHP currently investigational device only; not available for sale in the U.S.

LivaNova



We reduce complexity so hospital caregivers can focus on the patient not the circuit.

LivaNova

COVID-19 has shined a light on the lack of widespread ACS respiratory support options in the U.S.

Severe COVID treated with invasive ventilation **@40-50% survival vs. 72% survival with ACS**

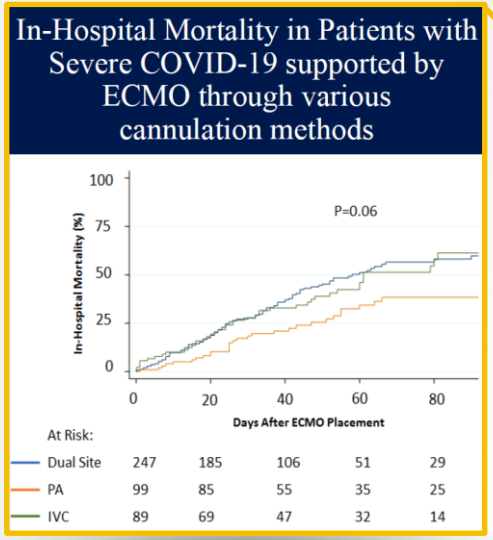
Only ~250 Adult ECMO Centers (4.8%)

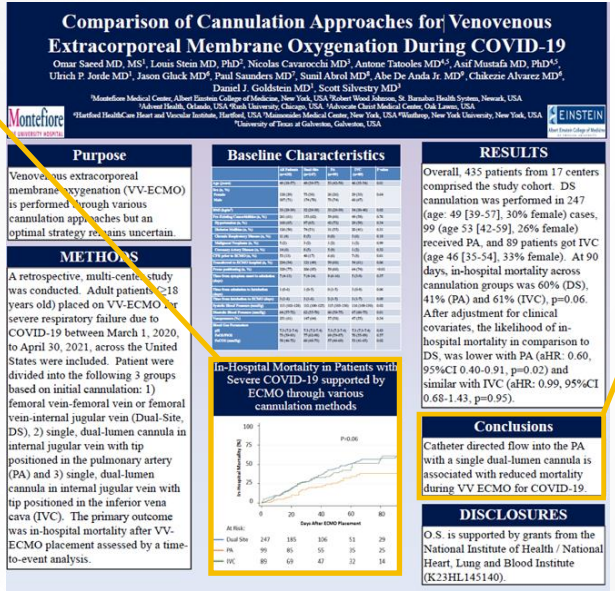
Placeholder for references.

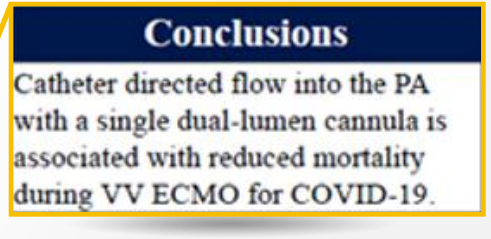
LivaNova

BREAKING NEWS:

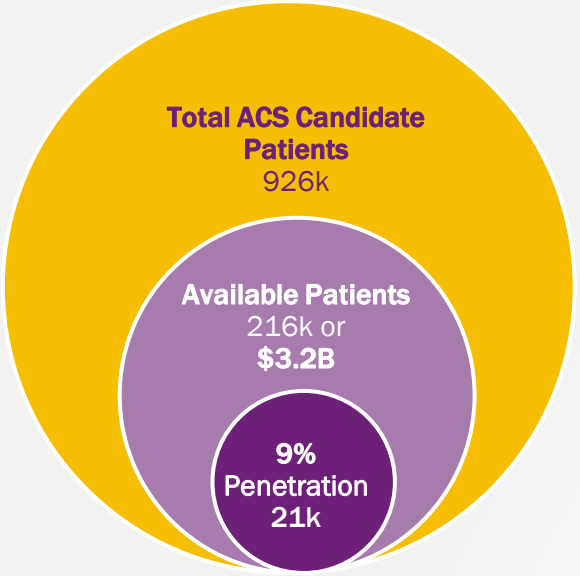
17 center, 435 patient study suggests positive results through the use of ProtekDuo cannula







Significant market opportunities in multiple underpenetrated patient populations



Patients	Total	Available	$ TAM	Penetration
Cardiogenic Shock[1] *Available: Includes STEMI and without predominant RV infarction or mechanical complications*	49k	30k	**$450M**	~50%
RV Failure[2] *Available: at hospitals with MCS capability*	36k	10k	**$150M**	~20%
Respiratory Failure[3] *Available: severe ARDS or AE-COPD patients on invasive mechanical ventilation*	202k	98k	**$1.5B**	~2%
Cardiac Arrest[4] *Available: IHCA at hospitals with eCPR capability*	639k	78k	**$1.2B**	~1%
High Risk PCI	121k	46k	*Not a primary focus of LivaNova*	

Source: 1. Thom et al. Heart disease and stroke statistics—2006 update: a report from the American Heart Association Statistics Committee and Stroke Statistics Subcommittee. Circulation. 2006; 113: e85–e151. Assumption: slight decline (0.5%) in annual patient population for cardiogenic shock. 2. Gerges 2014. "Right ventricle in acute and chronic pulmonary embolism (2013 Grover Conference series)". https://www.ncbi.nlm.nih.gov/pmc/articles/PMC4278597. Peacock AJ, Murphy NF, McMurray JJV, et al. An epidemiological study of pulmonary arterial hypertension. Eur Respir J 2007;30:104–9. 3. Lindenaur, P. Hospital patterns of Mechanical Ventilation for Patients with Exacerbations of COPD. Ann Am Thorac Soc Vol 12, No 3, pp 402-409, Mar 2015. The ARDS Definition Task Force, "Acute Respiratory Distress Syndrome, the Berlin Definition of ARDS" JAMA 2012,301(23):2526-25338. 4. US Average annual incidence in adults. AHA, Circulation, "Annual Incidence of Adult and Pediatric In-Hospital Cardiac Arrest in the US." July 2019. Note: U.S. market only; data sources OUS limited but WW penetration also low $TAM uses ASP of $15-20K LivaNova ACS products are not currently indicated for Cardiogenic Shock, RV Failure, or Cardiac Arrest. LivaNova ACS products are temporarily indicated for ECMO therapy greater than 6 hours. See Indications for Use for more information. LivaNova is currently pursuing PMA approval for a Right Ventricular Failure indication and 510(k) clearance for ECMO therapy greater than 6 hours.

LivaNova

Key barriers must be overcome to accelerate adoption of ACS therapy into the U.S. Respiratory Market opportunity.

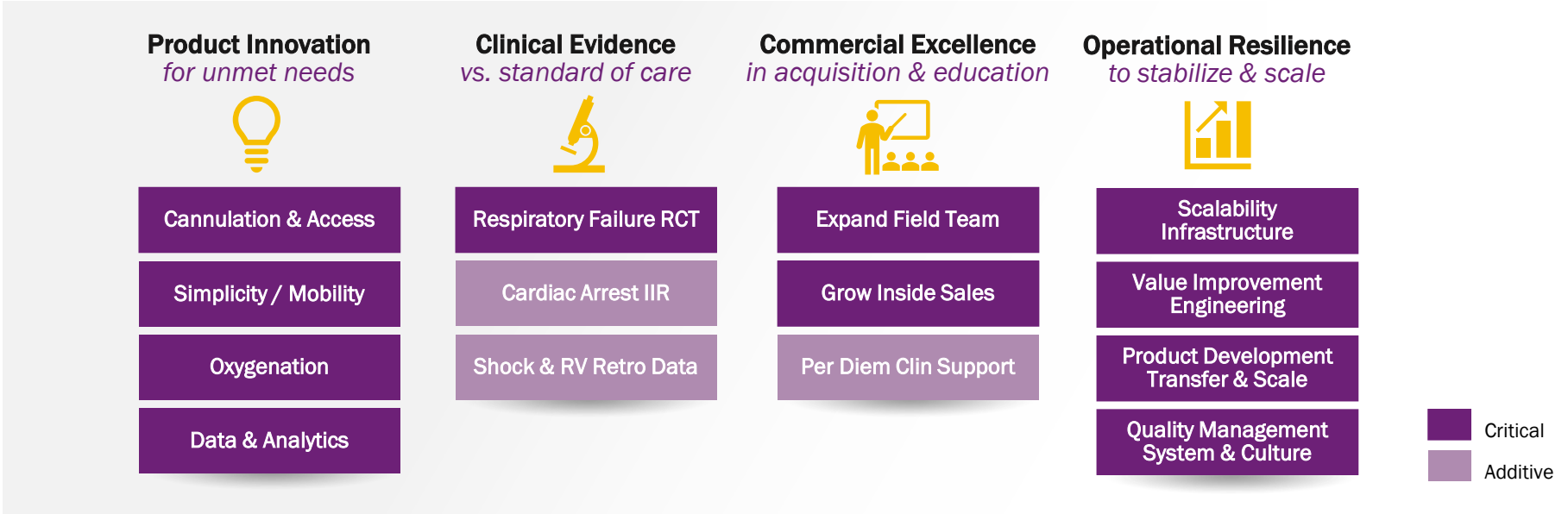
Key Barriers

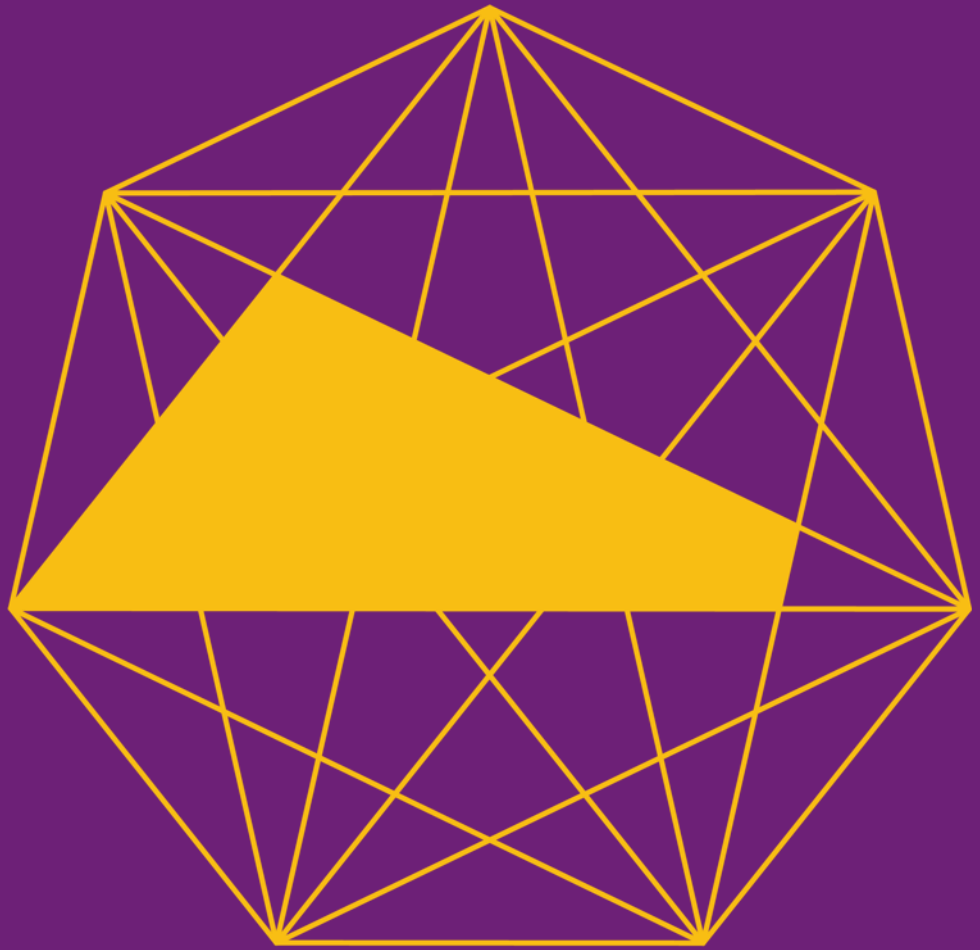
- Patients treated at hospitals who will be adopting a new therapy (ECMO) for the first time
- Different site of care (ICU vs. OR/CCL) and responsible HCPs (Intensivist/Nursing vs. IC/CTS/Perfusion)
- Unfamiliar or uncomfortable with large bore cannulation and high blood flow rates
- Relative complexity of the procedure, devices, circuits and patient management
- Clinical evidence gap to effect change in behavior away from standard of care

Investment Priorities / SPI's

- Refresh the product pipeline with focus on the application of ECMO technology to new patients by new users
- Develop compelling clinical evidence to drive utilization of ECMO procedures over the current standard of care
- Grow U.S. commercial and clinical presence to accelerate customer acquisition, training & case support

Unlocking the full market opportunity requires re-investment in product innovation, clinical evidence, commercial excellence and operational resilience.





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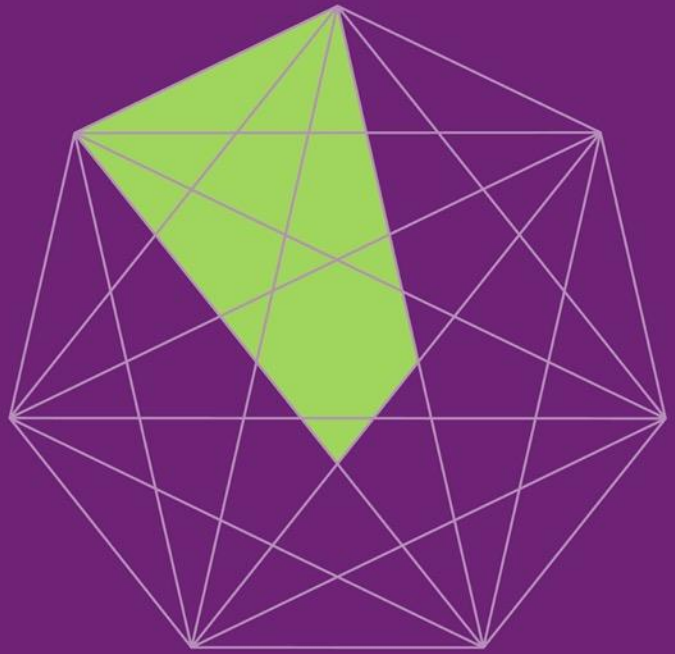

Difficult to Treat Depression

Jonathan Walker, VP & General Manager

Intended for Investor Use Only | Not Intended for Use by Patients or HCPs

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Depression

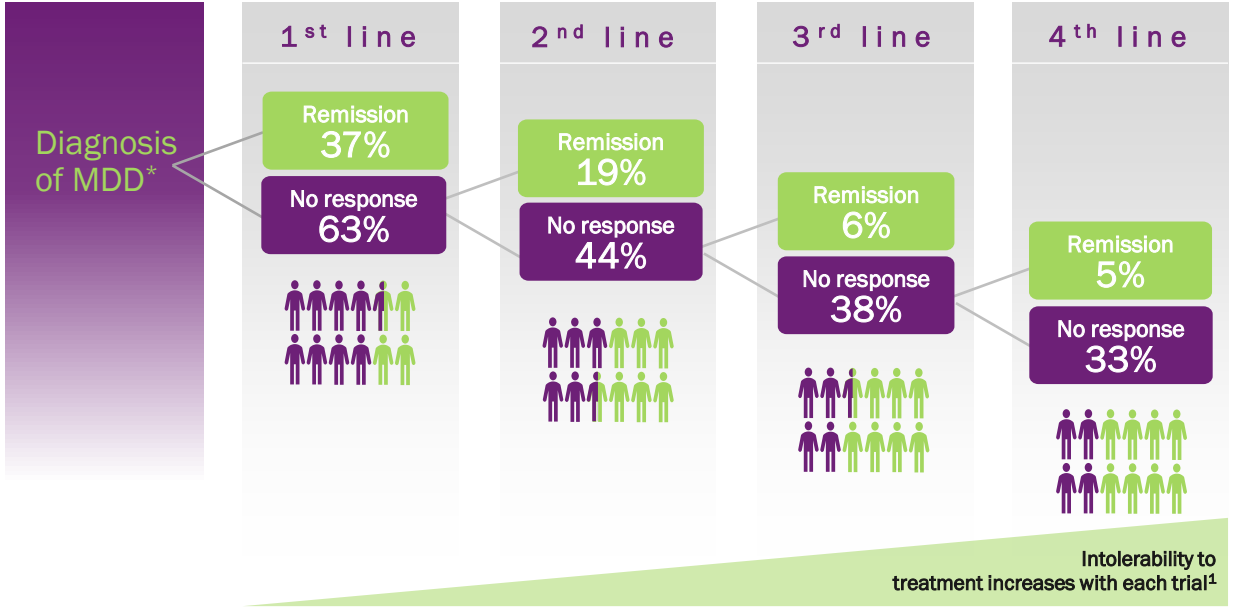
Depression is common and debilitating

26 million patients

- Depressed mood
- Low interest
- Poor sleep
- Thoughts of death
- Suicide

LivaNova

Success becomes less likely with each oral medication



Medication alone may not be enough for 1 out of 3 patients

† Number of patients who entered each step.

* Remission defined as QIDS-SR16 score ≤5 at exit from the indicated treatment step. QIDS-SR: Quick Inventory of Depressive Symptomatology–Self-Report (16-item).
*Participants were required to meet DSM-IV criteria for nonpsychotic major depressive disorder.
4. Rush AJ, Trivedi MH, Wisniewski SR, et al. Am J Psychiatry. 2006;163(11):1905–17.

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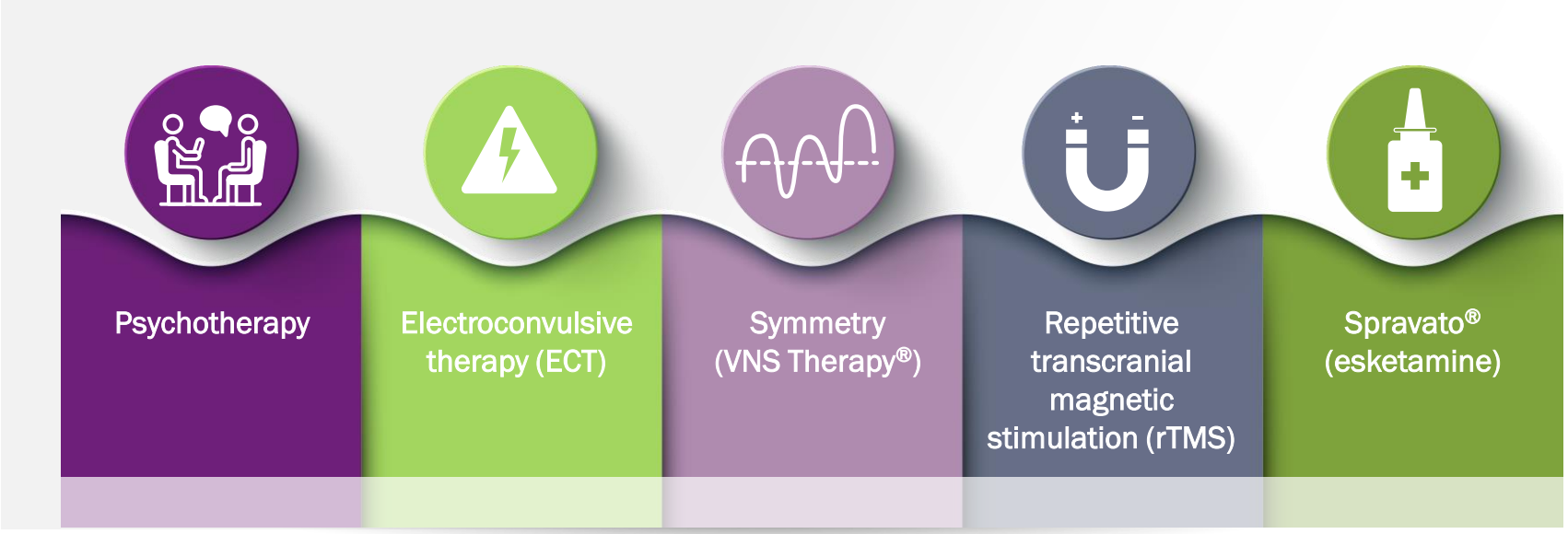
Additional therapies are explored once patients have failed traditional pharmacological therapy



Al-Harbi KS. Patient Prefer Adherence. 2012;6:369–88.
Gelenberg AJ, et al. American Psychiatric Association. 2010
*Spravato graphic: Nasal Spray by habione 404 from the Noun Project

LivaNova

Pivotal studies leading to FDA approval in 2005

Study Number	Study Design	# Patients	HAMD Response Rate	
			TAU	VNS + TAU
D-01 Pilot Study[1]	12 week open-label feasibility	60	N/A	15%
D-02 Acute Pivotal Study[2]	10 week double-blind, randomized, sham treatment-controlled	235 enrolled and implanted; 222 evaluable	10%	15% (p=0.251)
D-02 Long-Term Pivotal Study[3]	12 months open-label long-term follow up	233 entered long-term; 205 evaluable	N/A	27%
D-04 Comparative Study[4]	12 months observational study of standard-of-care therapies in TRD patient for comparison with pivotal study D02	127 enrolled; 124 evaluable	13%	N/A

1. Rush, et al. Biol Psychiatry 2000; 47:276-286, 2. Rush AJ et al. Biol Psychiatry 2005;58:347-54,
3. Rush AJ, et al. Biol Psychiatry. 2005;58:355-363, 4. George MS, et al. Biol Psychiatry. 2005;58:364-373

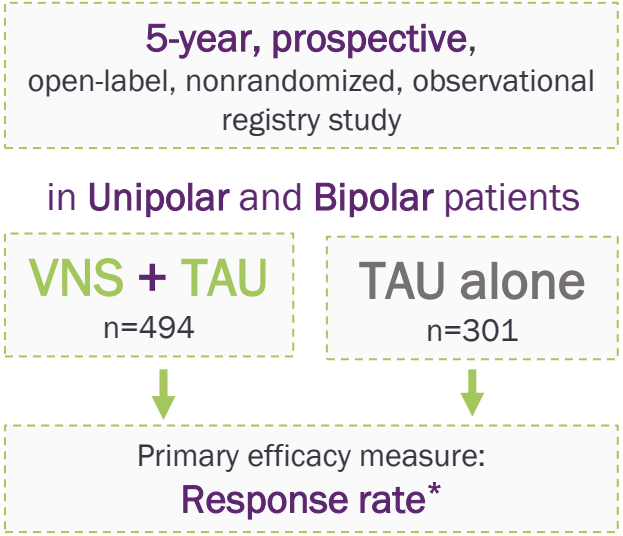
D23 5-year long-term safety and efficacy data for VNS Therapy® in TRD was published in the *American Journal of Psychiatry* [1]

ARTICLES

A 5-Year Observational Study of Patients With Treatment-Resistant Depression Treated With Vagus Nerve Stimulation or Treatment as Usual (TAU): Comparison of Response, Remission, and Suicidality

Scott T. Aaronson, M.D., Peter Sears, C.C.R.P., Francis Ruvuna, Ph.D., et al.

Treatment-as-usual (TAU) includes standard-of-care psychotropic medications and non-pharmacologic treatments, such as psychotherapy, cognitive behavioral therapy and electroconvulsive therapy (ECT)[1,2]

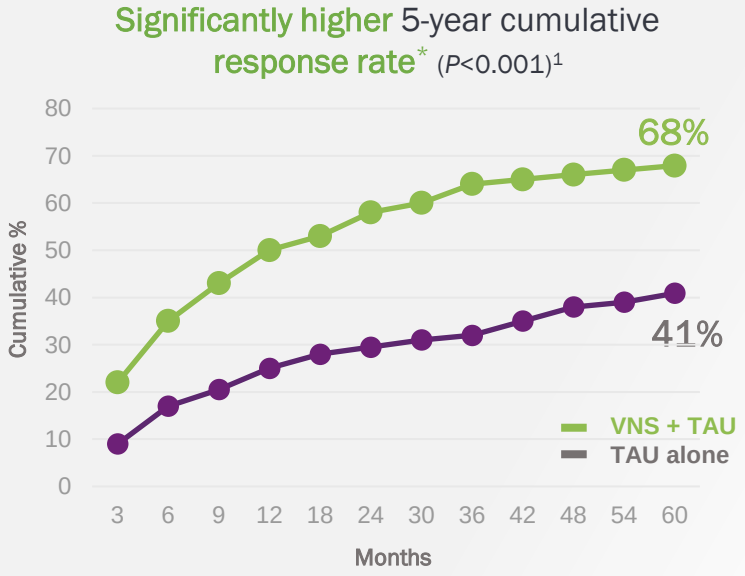


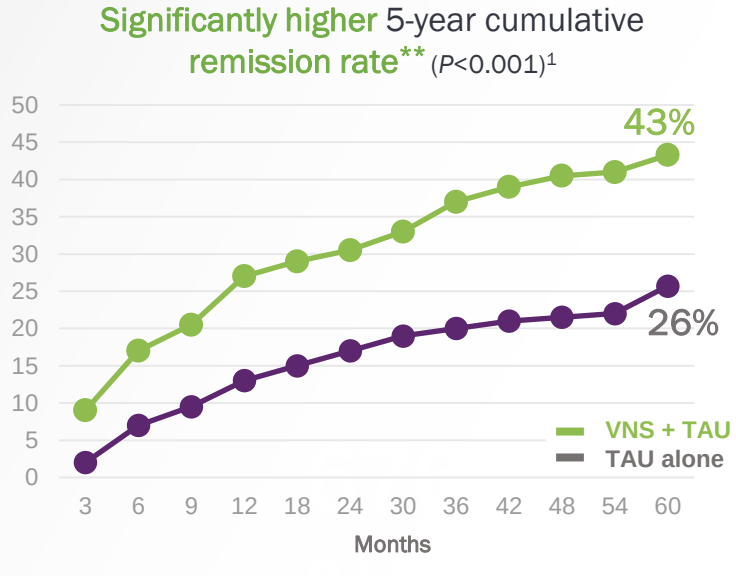
*Response rate defined as decrease of ≥50% from baseline in MADRS score at any post-baseline visit during the study. MADRS: Montgomery-Åsberg Depression Rating Scale.

1. Aaronson ST, Sears P, Ruvana F, et al. Am J Psychiatry. 2017;174:640-48.
2. LivaNova VNS Therapy® System Depression Physician's Manual, May 2020

LivaNova

VNS Therapy® + TAU delivered superior response and remission rates vs TAU alone over 5 years





Efficacy analysis conducted on intent-to-treat population. *Response rate defined as decrease of ≥50% from baseline in MADRS score at any post-baseline visit during the study. **Remission based on MADRS score ≤9 at a post-baseline visit, a QIDS-SR score ≤5 at a post-baseline visit, and a CGI-I score of 1 at a post-baseline visit. ITT population was used for efficacy analysis.

1. Aaronson ST, Sears P, Ruvana F, et al. Am J Psychiatry. 2017;174:640-48.

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VNS Therapy® effective across different populations

- ECT Responders & Non-Responders
- Baseline Anxiety & No Baseline Anxiety
- Unipolar & Bipolar

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The RECOVER Study: Overview[1]

RECOVER
A VNS Therapy® Clinical Trial

Clinical Study Objective

Compare VNS Therapy® vs No Stimulation control in subjects with treatment-resistant depression (TRD)

Rate of MADRS Response

1) Defined as total # of months in response divided by total months of expected study participation
2) 50% reduction in baseline MADRS total score at 12 Months

Prospective | Multi-Center | Blinded | RCT

Primary End Point

MADRS Rate of Response
(defined as reduction of 50% vs baseline)

Study Size and Analysis Plan

1) RCT Phase up to 1,000 patients
2) Longitudinal Registry Phase up to 5,800 patients
3) Medicare participants reimbursed by CMS
4) Incorporate adaptive design
5) First interim analysis triggered by achieving 250 implanted unipolar and/or 150 bipolar patients

1. Conway CR. et al. Contemporary Clinical Trials 95 (2020).

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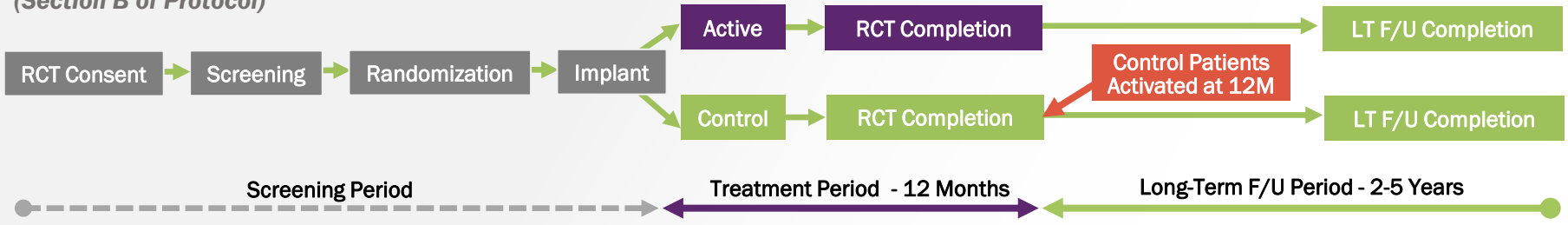
The RECOVER Study: Design - RCT and Registry Phase[1]

RECOVER
A VNS Therapy® Clinical Trial

RCT + Follow-up Study

(Section B of Protocol)

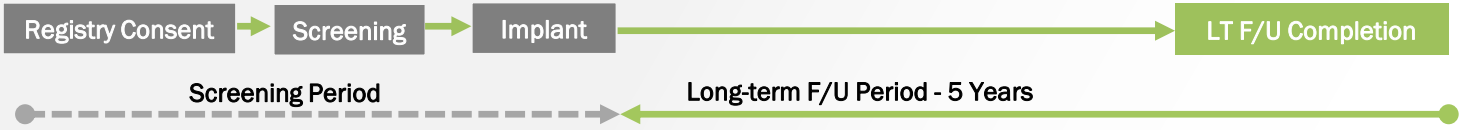


Longitudinal Registry

(Section C of Protocol)

Longitudinal Registry Starts Only When RCT Reaches 95% Predictive Probability of Success

Separate Longitudinal Registry Triggers for Unipolar & Bipolar Subgroups



1. Conway CR. et al. Contemporary Clinical Trials 95 (2020).

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The RECOVER Study: Patient selection[1]

RECOVER
A VNS Therapy® Clinical Trial

Key inclusion criteria

- 18 years or older
- Documented diagnosis of MDD or Bipolar Depression: either chronic (≥2 years) or recurrent (≥4 prior episodes, at least two months apart) according to DSM-5
- Insufficient response to ≥4 adequate trials of antidepressant treatment in the current episode (any combination of the following: oral depressant drugs of different classes, psychotherapy, repetitive transcranial magnetic stimulation (rTMS) and ECT)
- Score of at least 22 on both baseline administrations of the Montgomery-Åsberg Depression Rating Scale (MADRS), with a difference between the two scores that does not exceed 25%
- Continued use of mood stabilizer if bipolar

Key exclusion criteria

- Acute suicidality or recent suicide attempt
- History of substance abuse (past 12 months)
- History of psychosis
- Severe personality disorder
- Deep brain stimulation implant
- Dementia

1. Conway CR. et al. Contemporary Clinical Trials 95 (2020).

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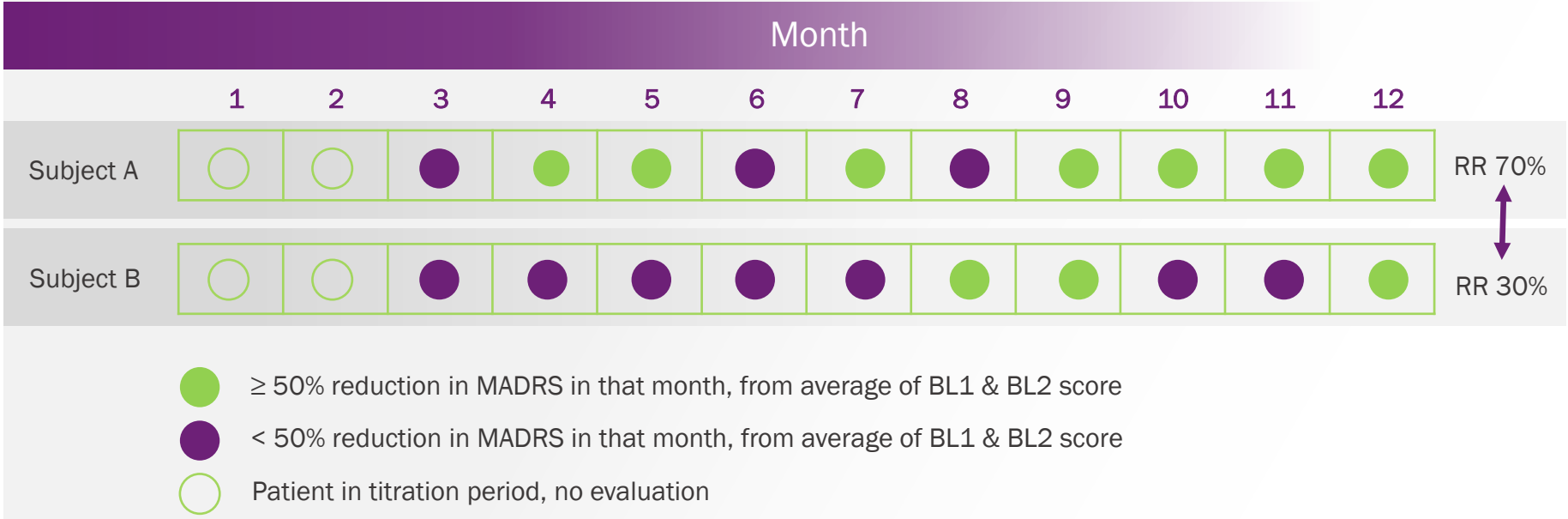
MADRS Rate of Response *(Illustrative Example Only)*

RECOVER
A VNS Therapy® Clinical Trial

Rate of Response shows how many patients respond and how often they are in response in one endpoint



1. Conway CR. et al. Contemporary Clinical Trials 95 (2020).

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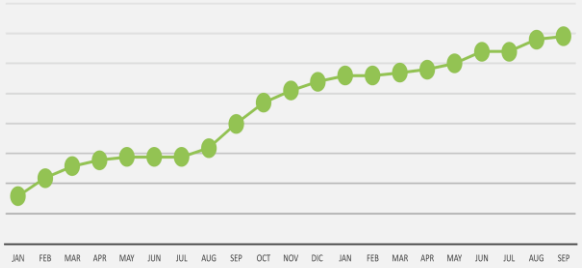
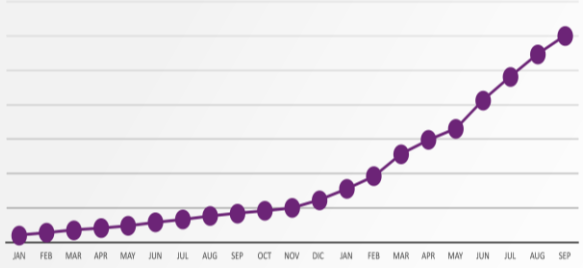
Momentum continues with the RECOVER study*

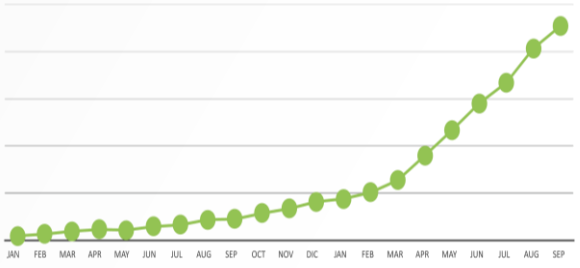
> 90% of sites activated



All UP patients consented



> 75% of patients Implanted



*as of end September 2021

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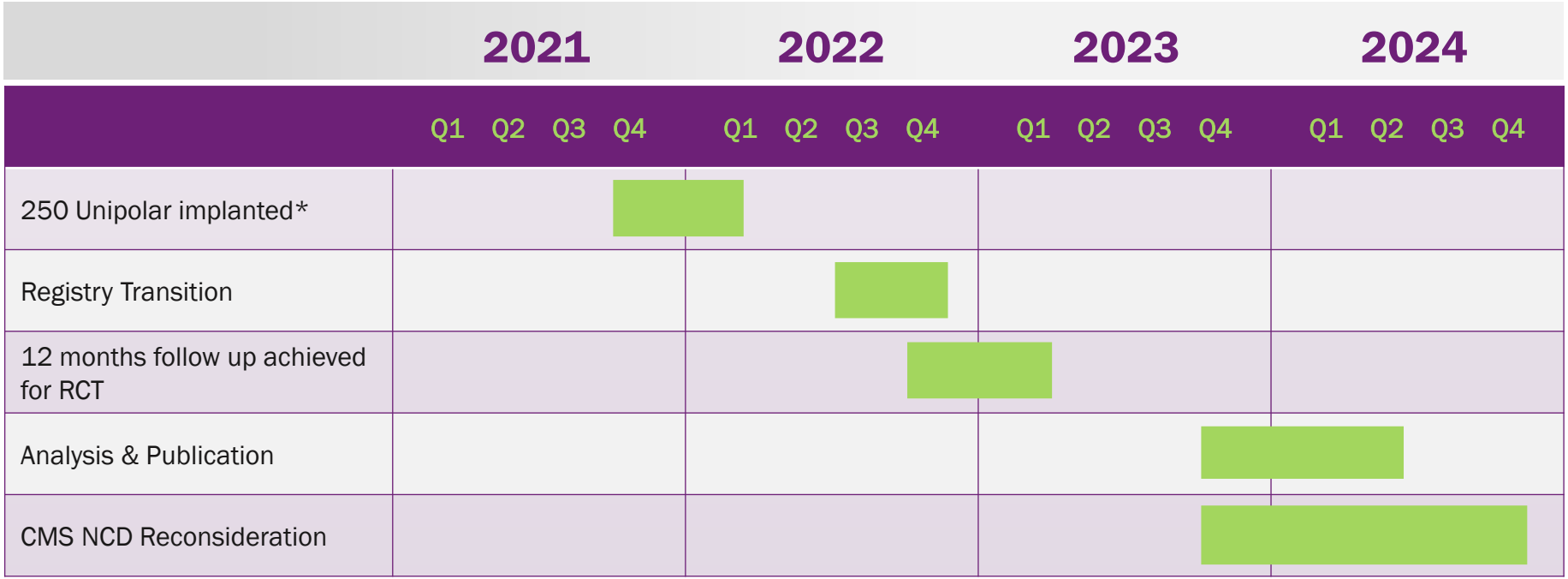
Current Planning Timelines for CMS NCD Reconsideration



*The 1st interim analysis is triggered by the implant of the 250th unipolar (UP) patient.

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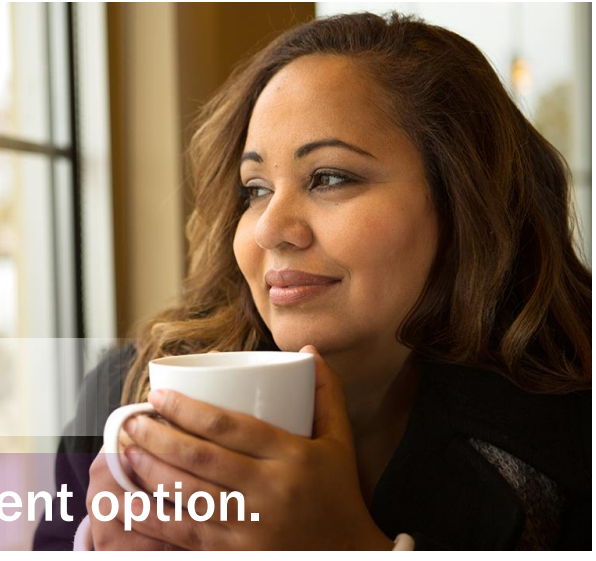
SYMMETRY™ for Depression: Market Size

U.S. Prevalence of Major Depressive Disorder (MDD)	~26.5MM	~15.9MM go undiagnosed and/or untreated
Diagnosed and Treated	~10.6MM	~6.7MM respond to 1st or 2nd line treatment
DTD Prevalence (2+ treatment failures)	~3.9MM	~1.2MM respond to 3rd or 4th line treatment
VNS Addressable Market (4+ treatment failures)	~2.7MM	Initial target ~700k patients which excludes: • ~1.5 million that opt out of additional treatment • ~0.5 million that respond to other treatments (i.e., ECT, TMS)



A large number of patients need another treatment option.

1. JAMA Psychiatry 2018; 75(4):336-346.
2. National Survey on Drug Use and Health: 2019, U.S. DHHS.
3. Rush et al. STAR*D report. Am J Psychiatry 2006; 163:1905-1917

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Assumptions used for opportunity sizing at peak

86% of patients seek further treatment and 30% get offered a neuromodulation therapy

VNS therapy is accessible to 50% of patients: Commercial, Medicare / Advantage & VA

VNS peak market share of the interventional market is assumed to be ~11% in the base case scenario

Assume $27k ASP with an average increase of 3% per year

Peak year sales $1.2bn

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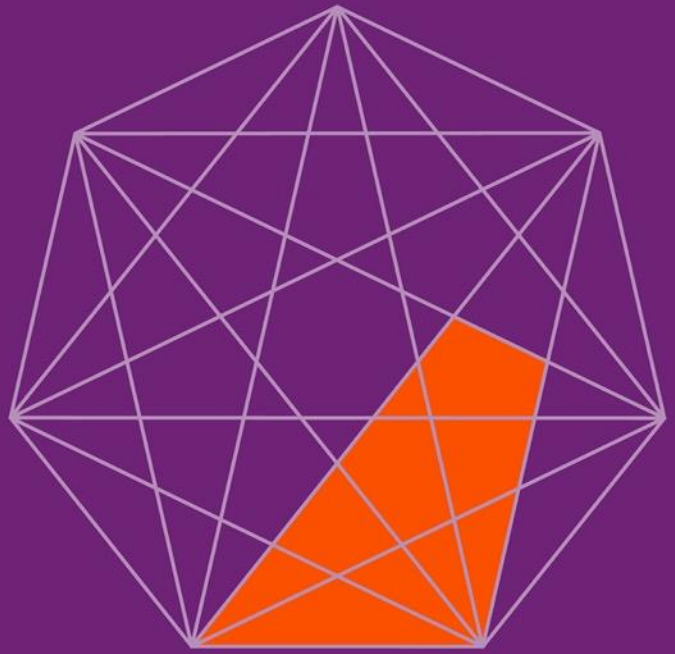


Heart Failure

Dr. Lorenzo DiCarlo, VP of Medical Affairs

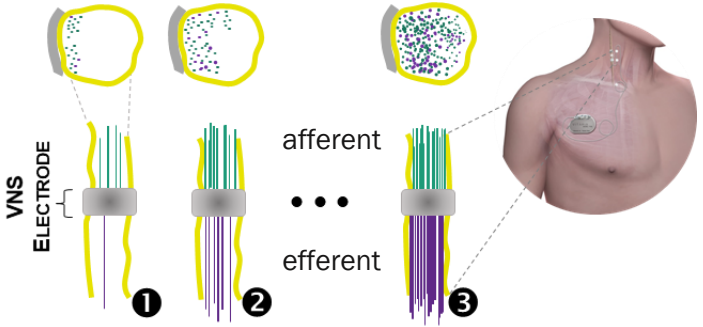
LivaNova

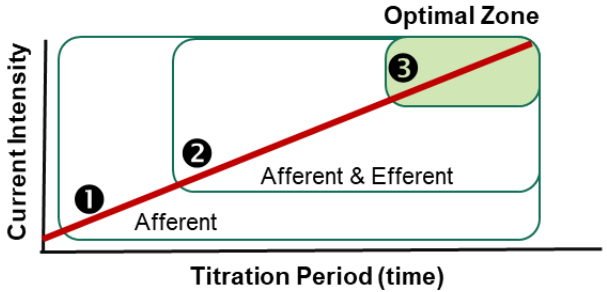
Heart Failure

Autonomic Regulation Therapy (ART)

How it works

- Electrical stimulation of vagus nerve with specific intensity and temporal pattern results in beneficial alteration of post-ganglionic signaling[1]
- Neuromodulation targets are understood[2]
  - Central & Peripheral
  - Ganglionic and Post-ganglionic
  - Activation (cholinergic) & Inhibition (adrenergic) of muscarinic (M_2) myocyte receptor systems
- Unique Approach: ART Dose is optimized in each patient by measuring real-time heart rate dynamics during ON-time compared to OFF-time[3]





1. Ardell JL, et al. *Am J Physiol Heart Circ Physiol* 2015
2. Ardell JL, et al. *J Physiol*. 2017
3. Libbus I, et al *J Electrocardiol* 2017

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Central and Peripheral Neural Network Interactions Informed Therapeutic and Clinical Study Design

Am J Physiol Heart Circ Physiol 309: H1740–H1752. 2015.
First published September 14, 2015; doi:10.1152/ajpheart.00557.2015.

Central-peripheral neural network interactions evoked by vagus nerve stimulation: functional consequences on control of cardiac function

Jeffrey L. Ardell,[1,2,3] Pradeep S. Rajendran,[1,2,3] Heath A. Nier,[4] Bruce H. KenKnight,[5] and J. Andrew Armour[1,2]

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Submitted 15 July 2015; accepted in final form 10 September 2015

Ardell JL, Rajendran PS, Nier HA, KenKnight BH, Armour JA. Central-peripheral neural network interactions evoked by vagus nerve stimulation: functional consequences on control of cardiac function. *Am J Physiol Heart Circ Physiol* 309: H1740–H1752, 2015. First published September 14, 2015; doi:10.1152/ajpheart.00557.2015.—Using vagus nerve stimulation (VNS), we sought to determine the contribution of vagal afferents to efferent control of cardiac function. In anesthetized dogs, the right and left cervical vagosympathetic trunks were stimulated in the intact state, following ipsilateral or contralateral vagus nerve transection (VNTx), and then following bilateral VNTx. Stimulations were performed at currents from 0.25 to 4.0 mA, frequencies from 2 to 30 Hz, and a 500-μs pulse width. Right or left VNS evoked significantly greater current- and frequency-dependent suppression of chronotropic, inotropic, and lusitropic function subsequent to sequential VNTx. Bradycardia threshold was defined as the current first required for a 5% decrease in heart rate. The threshold for the right vs. left vagus-induced bradycardia in the intact state (2.91 ± 0.18 and 3.47 ± 0.20 mA, respectively) decreased significantly with right VNTx (1.69 ± 0.17 mA for right and 3.04 ± 0.27 mA for left) and decreased further following bilateral VNTx (1.29 ± 0.16 mA for right and 1.74 ± 0.19 mA for left). Similar effects were observed following left VNTx. The thresholds for afferent-mediated effects on cardiac parameters were 0.62 ± 0.04 and 0.65 ± 0.06 mA with right and left VNS, respectively, and were reflected primarily as augmentation. Afferent-mediated tachycardias were maintained following β-blockade but were eliminated by VNTx. The increased effectiveness and decrease in bradycardia threshold with sequential VNTx suggest that *1*) vagal afferents inhibit centrally mediated parasympathetic efferent outflow and *2*) the ipsilateral and contralateral vagi exert a substantial buffering capacity. The intact threshold reflects the interaction between multiple levels of the cardiac neural hierarchy.

vagus nerve stimulation; autonomic nervous system; parasympathetic; afferent; intrinsic cardiac nervous system

NEW & NOTEWORTHY

Vagus nerve stimulation-evoked changes in cardiac function reflect the dynamic interplay between direct activation of descending efferents and afferent-induced decreases in central parasympathetic drive to the heart. With increasing current, vagus nerve stimulation first activates afferent fibers and then descending parasympathetic efferent fibers, interactions that maintain cardiac stability.

Address for reprint requests and other correspondence: J. L. Ardell, Neurocardiology Research Center of Excellence, 100 UCLA Medical Plaza, Suite 660, Los Angeles, CA 90095 (e-mail: jardell@mednet.ucla.edu).

CARDIAC CONTROL IS A MANIFESTATION of a neural hierarchy that may be considered in three levels (9, 21, 33). *Level 1* comprises the spinal cord and medulla as modulated by higher centers (1, 16, 27, 38). *Level 2* comprises extracardiac-intrathoracic neurons, including the stellate, middle cervical, and mediastinal ganglia (4, 6, 8). *Level 3* involves the intrinsic cardiac nervous system (ICNS) (9). The peripheral levels (*2* and *3*) form cardiocentric control loops, while the central nervous system (*level 1*) engages neural mechanisms for regulation of both cardiac and peripheral vasculature (33, 60). Acting together, these hierarchical populations coordinate and regulate regional cardiac electrical, mechanical, and metabolic indexes throughout each cardiac cycle (7, 9, 12). Endogenous or exogenous stresses have the potential to impact multiple levels of this hierarchy (19, 21, 32, 60). It is through the understanding of such hierarchical control and how it adapts to acute and chronic stress that rational, mechanistic-based approaches can be devised to target the cardiac neural hierarchy to manage cardiovascular pathology (14, 19, 21).

The vagus nerve is a complex neural structure containing descending efferent parasympathetic fibers and ascending afferent fibers. Efferent parasympathetic fibers modulate several cardiac indexes, including chronotropy, dromotropy, inotropy, and lusitropy (46, 48). The majority (~80%) of fibers contained within the vagus are afferent (sensory) in nature (13, 42). Thus the vagus nerve is an important pathway that carries sensory information from visceral organs, including the heart, to the central nervous system. Also, structural and functional data suggest that the cervical vagus trunk contains a small population of sympathetic fibers (41, 47).

For any bioelectronic approach for therapeutic neuromodulation, one must consider both direct and reactive (reflex) responses (14). The vagus can be stimulated in many different ways, at a number of different levels, and for multiple pathologies. As such, the anatomic characteristics of the nerves being stimulated (afferent/efferent) and the functional impact of stimulation parameters (current, frequency, pulse width, waveform, and duty cycle) must be considered (13, 14). Ultimately, these factors influence off-target adverse effects and, more importantly, the acute and chronic efficacy of the applied therapy. In most clinical applications for cardiovascular pathologies, electrical vagus nerve stimulation (VNS) is imposed unilaterally to either the right or left cervical vagosympathetic trunk (17, 18, 43).

While preclinical and clinical studies have yielded encouraging results for the safety and efficacy of VNS for cardiac

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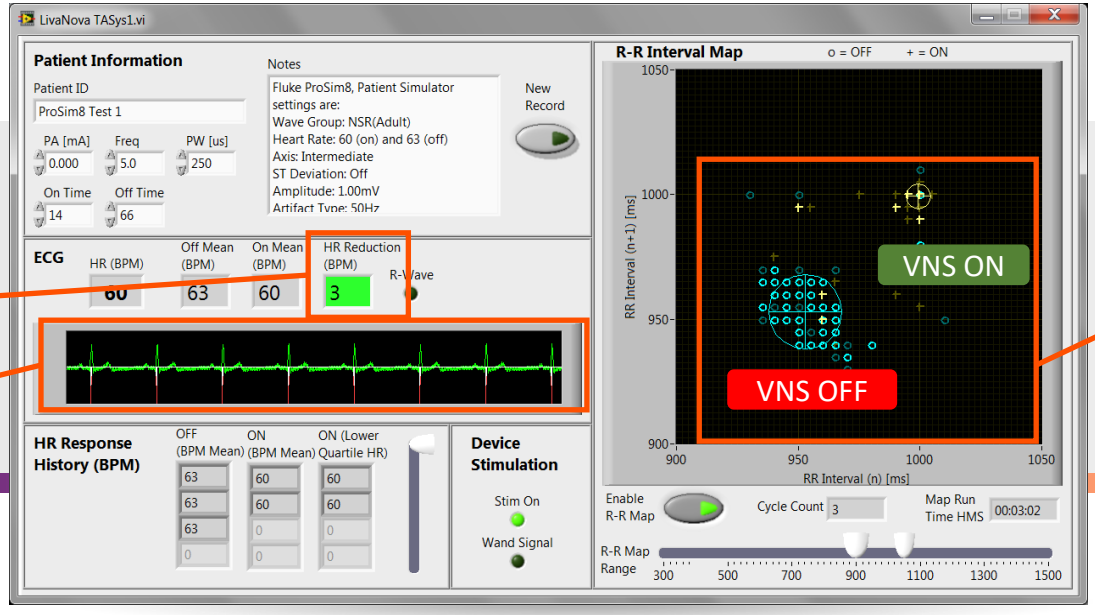
Titration Assessment System (TASys-1)



Heart rate

ECG

R-R interval map

The VITARIA® System

Delivers Autonomic Regulation Therapy (ART) via vagus nerve stimulation

Focused on a Systematic Approach to our ART Program

- Supporting evidence and strong collaboration with FDA led to design and approval of ANTHEM Pivotal Study with FDA's *Breakthrough Technology* designation
- Multi-national, adaptive, randomized, controlled clinical trial underway
  - Good progress with enrollment and randomization
  - Regaining momentum post-COVID

Breakthrough Device Program

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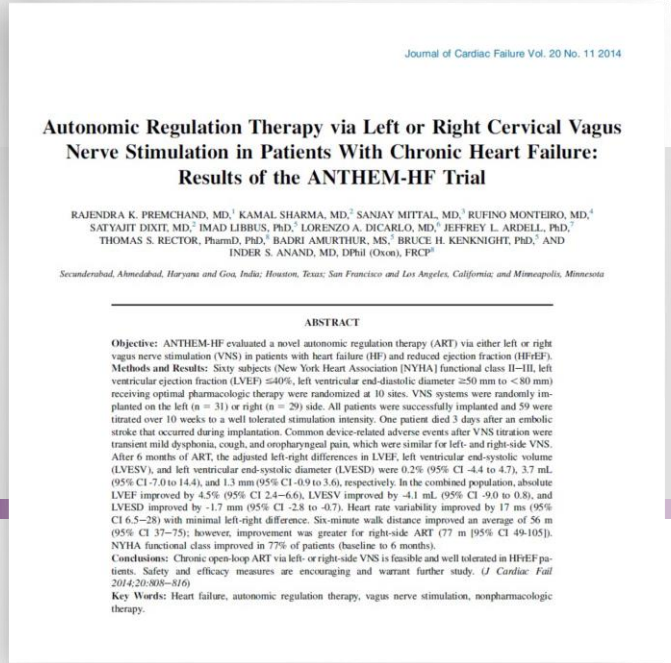
ANTHEM-HF Pilot Trial Motivated by Poor HF Patient Prognosis Despite New Drugs & Devices



Journal of Cardiac Failure Vol. 20 No. 11 2014

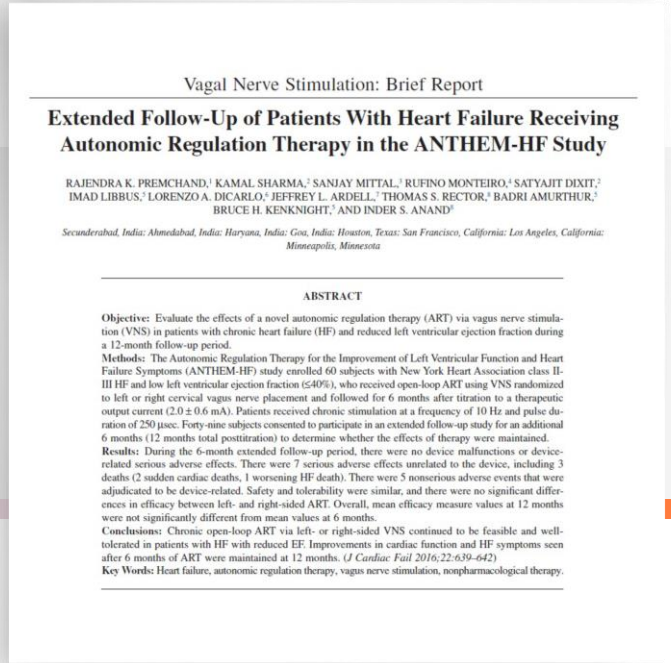
Autonomic Regulation Therapy via Left or Right Cervical Vagus Nerve Stimulation in Patients With Chronic Heart Failure: Results of the ANTHEM-HF Trial

RAJENDRA K. PREMCHAND, MD,[1] KAMAL SHARMA, MD,[2] SANJAY MITTAL, MD,[3] RUFINO MONTEIRO, MD,[4] SATYAJIT DIXIT, MD,[2] IMAD LIBBUS, PhD,[5] LORENZO A. DICARLO, MD,[6] JEFFREY L. ARDELL, PhD,[7] THOMAS S. RECTOR, PharmD, PhD,[8] BADRI AMURTHUR, MS,[5] BRUCE H. KENKNIGHT, PhD,[5] AND INDER S. ANAND, MD, DPhil (Oxon), FRCP[6]

Secunderabad, Ahmedabad, Haryana and Goa, India; Houston, Texas; San Francisco and Los Angeles, California; and Minneapolis, Minnesota

ABSTRACT

Objective: ANTHEM-HF evaluated a novel autonomic regulation therapy (ART) via either left or right vagus nerve stimulation (VNS) in patients with heart failure (HF) and reduced ejection fraction (HFrEF).
Methods and Results: Sixty subjects (New York Heart Association [NYHA] functional class II–III, left ventricular ejection fraction (LVEF) ≤40%, left ventricular end-diastolic diameter ≥50 mm to <80 mm) receiving optimal pharmacologic therapy were randomized at 10 sites. VNS systems were randomly implanted on the left (n = 31) or right (n = 29) side. All patients were successfully implanted and 59 were titrated over 10 weeks to a well tolerated stimulation intensity. One patient died 3 days after an embolic stroke that occurred during implantation. Common device-related adverse events after VNS titration were transient mild dysphonia, cough, and oropharyngeal pain, which were similar for left- and right-side VNS. After 6 months of ART, the adjusted left-right differences in LVEF, left ventricular end-systolic volume (LVESV), and left ventricular end-systolic diameter (LVESD) were 0.2% (95% CI -4.4 to 4.7), 3.7 mL (95% CI -7.0 to 14.4), and 1.3 mm (95% CI -0.9 to 3.6), respectively. In the combined population, absolute LVEF improved by 4.5% (95% CI 2.4–6.6), LVESV improved by -4.1 mL (95% CI -9.0 to 0.8), and LVESD improved by -1.7 mm (95% CI -2.8 to -0.7). Heart rate variability improved by 17 ms (95% CI 6.5–28) with minimal left-right difference. Six-minute walk distance improved an average of 56 m (95% CI 37–75); however, improvement was greater for right-side ART (77 m [95% CI 49-105]). NYHA functional class improved in 77% of patients (baseline to 6 months).
Conclusions: Chronic open-loop ART via left- or right-side VNS is feasible and well tolerated in HFrEF patients. Safety and efficacy measures are encouraging and warrant further study. (*J Cardiac Fail 2014;20:808–816*)
Key Words: Heart failure, autonomic regulation therapy, vagus nerve stimulation, nonpharmacologic therapy.



Extended Follow-Up of Patients With Heart Failure Receiving Autonomic Regulation Therapy in the ANTHEM-HF Study

RAJENDRA K. PREMCHAND,[1] KAMAL SHARMA,[2] SANJAY MITTAL,[3] RUFINO MONTEIRO,[4] SATYAJIT DIXIT,[2] IMAD LIBBUS,[5] LORENZO A. DICARLO,[6] JEFFREY L. ARDELL,[7] THOMAS S. RECTOR,[8] BADRI AMURTHUR,[5] BRUCE H. KENKNIGHT,[5] AND INDER S. ANAND[6]

Secunderabad, India; Ahmedabad, India; Haryana, India; Goa, India; Houston, Texas; San Francisco, California; Los Angeles, California; Minneapolis, Minnesota

ABSTRACT

Objective: Evaluate the effects of a novel autonomic regulation therapy (ART) via vagus nerve stimulation (VNS) in patients with chronic heart failure (HF) and reduced left ventricular ejection fraction during a 12-month follow-up period.
Methods: The Autonomic Regulation Therapy for the Improvement of Left Ventricular Function and Heart Failure Symptoms (ANTHEM-HF) study enrolled 60 subjects with New York Heart Association class II-III HF and low left ventricular ejection fraction (≤40%), who received open-loop ART using VNS randomized to left or right cervical vagus nerve placement and followed for 6 months after titration to a therapeutic output current (2.0 ± 0.6 mA). Patients received chronic stimulation at a frequency of 10 Hz and pulse duration of 250 μsec. Forty-nine subjects consented to participate in an extended follow-up study for an additional 6 months (12 months total posttitration) to determine whether the effects of therapy were maintained.
Results: During the 6-month extended follow-up period, there were no device malfunctions or device-related serious adverse effects. There were 7 serious adverse effects unrelated to the device, including 3 deaths (2 sudden cardiac deaths, 1 worsening HF death). There were 5 nonserious adverse events that were adjudicated to be device-related. Safety and tolerability were similar, and there were no significant differences in efficacy between left- and right-sided ART. Overall, mean efficacy measure values at 12 months were not significantly different from mean values at 6 months.
Conclusions: Chronic open-loop ART via left- or right-sided VNS continued to be feasible and well-tolerated in patients with HF with reduced EF. Improvements in cardiac function and HF symptoms seen after 6 months of ART were maintained at 12 months. (*J Cardiac Fail 2016;22:639–642*)
Key Words: Heart failure, autonomic regulation therapy, vagus nerve stimulation, nonpharmacological therapy.

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ANTHEM Pilot Study Results

Concordance among data is encouraging [1,2]

	Baseline	12 Months	p-value	Proof of Feasibility
LVEF (%)	33.2 ± 7.4	39.5 ± 10.4	<0.0005	Better LV Function
NYHA Class (I/II/III/IV)	0/26/20/0	32/14/0/0	<0.0005	Improved Symptoms
Quality of Life (MLHFQ Score)	39 ± 12	18 ± 9	<0.0005	Improved Symptoms
HRV (SDNN, ms)	95 ± 29	109 ± 40	<0.01	Decreased Sympathetic Drive
6 min walk (m)	288 ± 64	352 ± 62	<0.0005	Improved Function

1. Premchand RK et al. *J Card Fail* 2016;22:639-42
2. Baseline and 12 Months n=46

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42-Month Follow up Suggests Durable Benefits of ART

International Journal of Cardiology 323 (2021) 175–178

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journal homepage: www.elsevier.com/locate/ijcard

Short communication

Long-term Follow-Up of Patients with Heart Failure and Reduced Ejection Fraction Receiving Autonomic Regulation Therapy in the ANTHEM-HF Pilot Study

Kamal Sharma [a], Rajendra K. Premchand [b], Sanjay Mittal [c], Rufino Monteiro [d], Imad Libbus [e], Lorenzo A. DiCarlo [f], Jeffrey L. Ardell [g], Badri Amurthur [e], Bruce H. KenKnight [e], Inder S. Anand [h,*]

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[b] Krishna Institute of Medical Sciences, Secunderabad, India
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Vagus nerve stimulation
Non-pharmacological therapy

ABSTRACT

Background: The ANTHEM-HF pilot study was an open-label study that evaluated the safety and feasibility of autonomic regulation therapy (ART) utilizing cervical vagus nerve stimulation (VNS) for patients with chronic HF with reduced EF (HFrEF). Patients in NYHA class II–III with EF ≤40% (n = 60) received ART for 6 months post-titration. ART was associated with sustained improvement in left ventricular (LV) function and HF symptoms at 6 and 12 months.

Methods: Continuously cyclic VNS was maintained to determine longer-term safety and chronic effects of ART. Echocardiographic parameters and HF symptoms were assessed throughout a follow-up period of at least 42 months.

Results: Between 12 and 42 months after initial titration, there were no device-related SAEs or malfunctions. There were 10 SAEs adjudicated to be unrelated to VNS, including 5 deaths. There were 6 non-serious adverse events that were adjudicated to be device-related (2 oropharyngeal pain, 1 implant site pain, 2 voice alteration, and 1 hoarseness). At 42 months, there was significant improvement from baseline in LVEF, NYHA class, 6-min walk distance, and MLHFQ score. However, these improvements at 42 months were not significantly different from mean values at 6 and 12 months.

Conclusions: In a 42-month follow-up, ART was durable, safe, and was associated with beneficial effects on LVEF and 6-min walk distance. Long term, chronic, open-loop ART continued to be well-tolerated in patients with HFrEF. The open label, randomized, controlled, ANTHEM-HFrEF Pivotal Study is currently underway to further evaluate ART in patients with advanced HF.

Adverse Effects of Autonomic Dysregulation

Loss of Equipoise	Reduced sympathetic responsiveness Renin-angiotensin system activation	*Circ Heart Fail* 2009;2:692–9 *Clin Auton Res* 2019; 29: 289-299
O_2 Supply-Demand Mismatch	Reduced coronary flow Increased oxidative stress Endothelial dysfunction	*Cardiovasc Res* 2001; 49: 27-37 *Cardiovasc Res* 2008; 77: 713-21 *Hypertension* 2016; 68: 1004-10
Inflammation	Immune system activation and inflammation	*J Clin Invest* 2007; 117: 289-96 *Nature* 2002; 420: 853-9
Myocardial Injury, Fibrosis, and Remodeling	Apoptotic gene expression Direct myocardial injury Adverse myocardial remodeling and fibrosis	*Circ Heart Fail* 2009; 2: 692-9 *J Am Coll Cardiol* 2019; 73: 1189-1206 *Am J Physiol Heart Circ Physiol* 2007; 293: H2254-61
Arrhythmias	Inappropriate Sinus Tachycardia Supraventricular Tachycardia Ventricular Tachycardia	*Exp Physiol* 2010; 95: 919-25 *J Cardiovasc Pharmacol Ther* 2003; 8:107-13 *Pacing Clin Electrophysiol* 2020; 43:172-180

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ART is synergistic with GDMT

Autonomic Regulation Therapy has biological effects that are synergistic to GDMT

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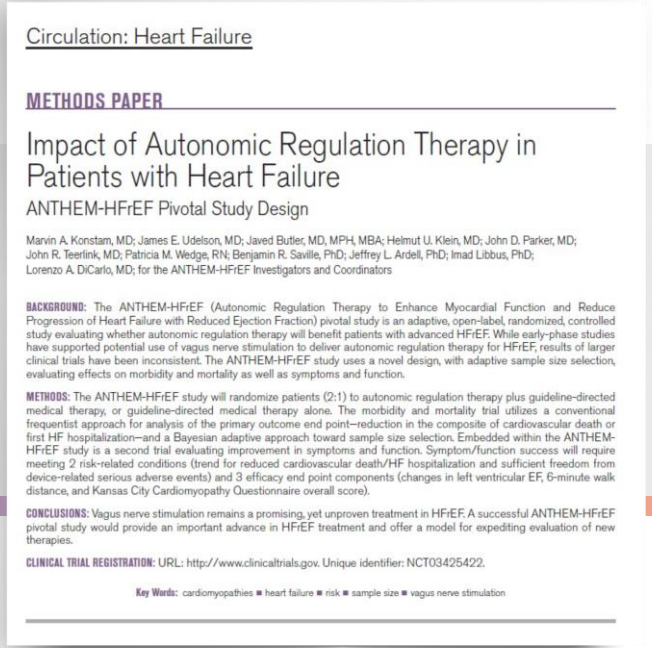
ANTHEM-HFrEF Pivotal Study Design



Circulation: Heart Failure

METHODS PAPER

Impact of Autonomic Regulation Therapy in Patients with Heart Failure

ANTHEM-HFrEF Pivotal Study Design

Marvin A. Konstam, MD; James E. Udelson, MD; Javed Butler, MD, MPH, MBA; Helmut U. Klein, MD; John D. Parker, MD; John R. Teerlink, MD; Patricia M. Wedge, RN; Benjamin R. Saville, PhD; Jeffrey L. Ardell, PhD; Imad Libbus, PhD; Lorenzo A. DiCarlo, MD; for the ANTHEM-HFrEF Investigators and Coordinators

BACKGROUND: The ANTHEM-HFrEF (Autonomic Regulation Therapy to Enhance Myocardial Function and Reduce Progression of Heart Failure with Reduced Ejection Fraction) pivotal study is an adaptive, open-label, randomized, controlled study evaluating whether autonomic regulation therapy will benefit patients with advanced HFrEF. While early-phase studies have supported potential use of vagus nerve stimulation to deliver autonomic regulation therapy for HFrEF, results of larger clinical trials have been inconsistent. The ANTHEM-HFrEF study uses a novel design, with adaptive sample size selection, evaluating effects on morbidity and mortality as well as symptoms and function.

METHODS: The ANTHEM-HFrEF study will randomize patients (2:1) to autonomic regulation therapy plus guideline-directed medical therapy, or guideline-directed medical therapy alone. The morbidity and mortality trial utilizes a conventional frequentist approach for analysis of the primary outcome end point—reduction in the composite of cardiovascular death or first HF hospitalization—and a Bayesian adaptive approach toward sample size selection. Embedded within the ANTHEM-HFrEF study is a second trial evaluating improvement in symptoms and function. Symptom/function success will require meeting 2 risk-related conditions (trend for reduced cardiovascular death/HF hospitalization and sufficient freedom from device-related serious adverse events) and 3 efficacy end point components (changes in left ventricular EF, 6-minute walk distance, and Kansas City Cardiomyopathy Questionnaire overall score).

CONCLUSIONS: Vagus nerve stimulation remains a promising, yet unproven treatment in HFrEF. A successful ANTHEM-HFrEF pivotal study would provide an important advance in HFrEF treatment and offer a model for expediting evaluation of new therapies.

CLINICAL TRIAL REGISTRATION: URL: http://www.clinicaltrials.gov. Unique identifier: NCT03425422.

Key Words: cardiomyopathies ■ heart failure ■ risk ■ sample size ■ vagus nerve stimulation

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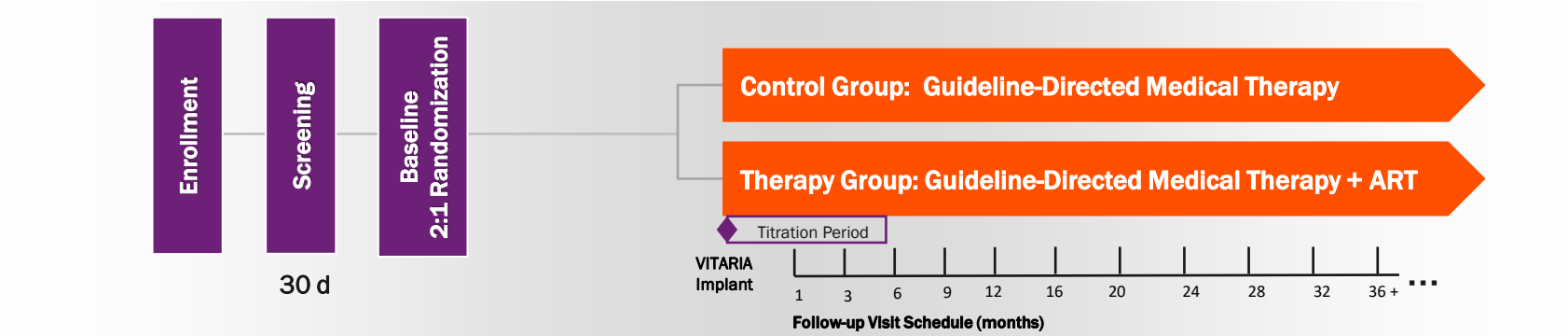
ANTHEM-HFrEF Pivotal Study Design



- **Key Inclusion Criteria;** selects for symptomatic patients likely to have outcome events
  - stable GDMT for ≥4 weeks, symptomatic
  - NYHA class III or class II if hospitalized for HF within the previous 12 months
  - LVEF ≤ 35%, LVEDD <8.0 cm
  - NT-proBNP ≥800 pg/mL and 6-minute walk distance (6MWD) of 150 to 450 meters, limited by HF symptoms

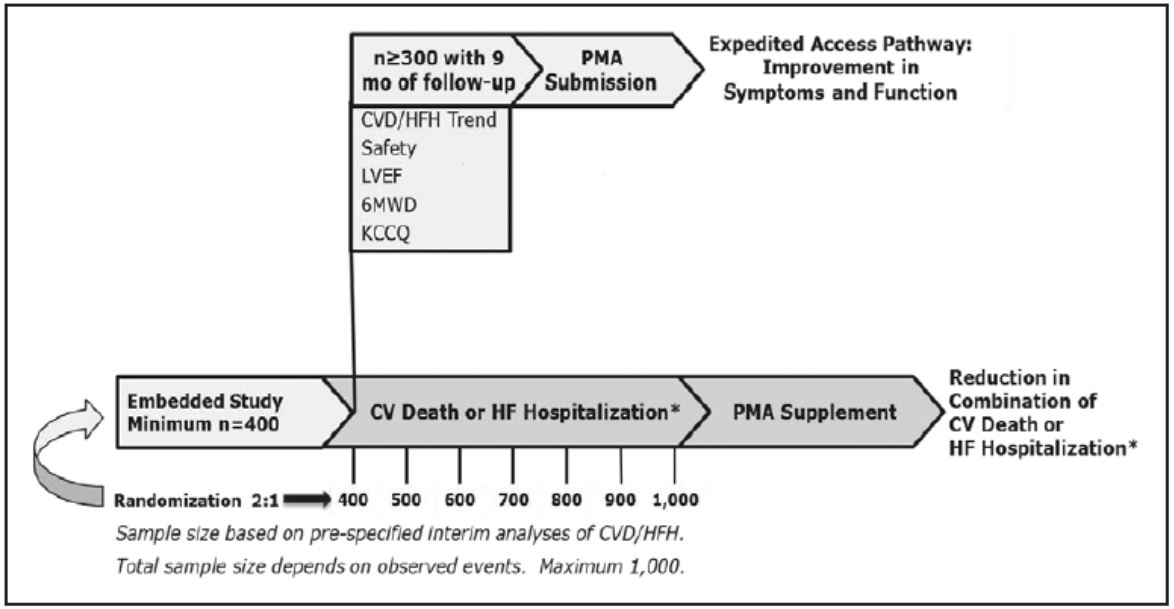
- **Key Characteristics**
  - Adaptive sample size selection based on pre-specified assessment of adjudicated Primary Events
  - Primary Outcome: time-first-event, HF Hosp or CV death
  - Novel design utilizes embedded study to provide data for both pre-market and post-market regulatory submissions
    - improved symptoms and function (PMA), and
    - reduction of morbidity and mortality (PMA Supplement)

Konstam et al. *Circ Heart Fail.* 2019

ANTHEM-HFrEF Pivotal Study Design

FDA's Breakthrough Devices Program provides expedited pathway

ANTHEM HFrEF Pivotal Study



- Bayesian, adaptive design determines most appropriate sample size selection
- Stratification for:
  - Region
  - 6-min walk
  - ±Heart Transplant Site
  - ±ICD/CRT recipient
- Interim Analyses of embedded trial provides PMA pathway for improved symptoms and function
- Early stopping for expected Success or Futility

Konstam et al. *Circ Heart Fail.* 2019

ART = Autonomic Regulation Therapy; GDMT = Guideline-directed Medical Therapy (drugs)
CVD = Cardiovascular death; HFH = HF hospitalization; LVEF = LV ejection fraction;
6MWD = 6 min walk distance; KCCQ = Kansas City Cardiovascular Questionnaire (QoL)

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First Interim Analyses for ANTHEM-HFrEF

ANTHEM HFrEF Pivotal Study

- Requires 400 randomized subjects, including 300 completing 9 months after randomization
- Interim Analyses will consist of 2 Risk-related conditions
  - Freedom from system and procedure-related Serious Adverse Events
  - Predictive probability of achieving the morbidity and mortality endpoint
- If these conditions are satisfied, then 3 co-primary functional endpoints will be statistically assessed:
  - Six-minute walk test
  - Quality of Life (KCCQ)
  - LVEF (core lab values)

Konstam et al. *Circ Heart Fail.* 2019

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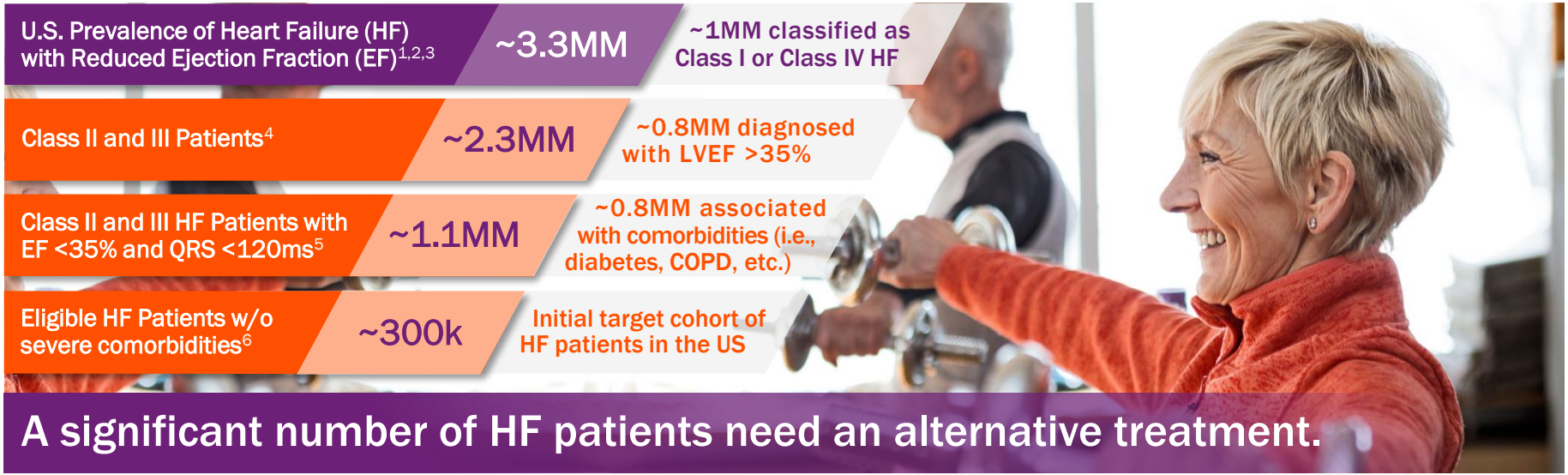
VITARIA® for Heart Failure: Market Size



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2. Benjamin EJ, Muntner P, Alonso A, Bittencourt MS, Callaway CW, Carson AP, et al. Heart disease and stroke statistics—2019 update: a report from the American Heart Association. Circulation. 2019;139(10):e56–528.
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Obstructive Sleep Apnea

John Webb, VP of Sleep Apnea

Intended for Investor Use Only | Not Intended for Use by Patients or HCPs

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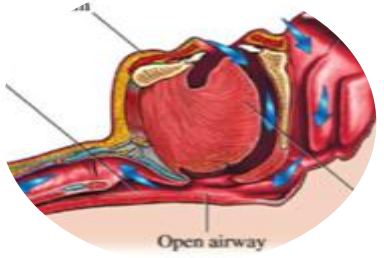
Obstructive Sleep Apnea Defined

Obstructive Sleep Apnea (OSA) is a debilitating, often life-threatening sleep disorder

- Patients repeatedly and involuntarily stop breathing during sleep
- Tongue and pharyngeal wall collapse is the primary cause
- OSA is diagnosed by Polysomnography (PSG)
- During a PSG, a patient's Apnea Hypopnea Index is measured
- OSA severity is defined as:
  - Mild: AHI 5–15
  - Moderate: AHI 15–30
  - Severe: AHI >30



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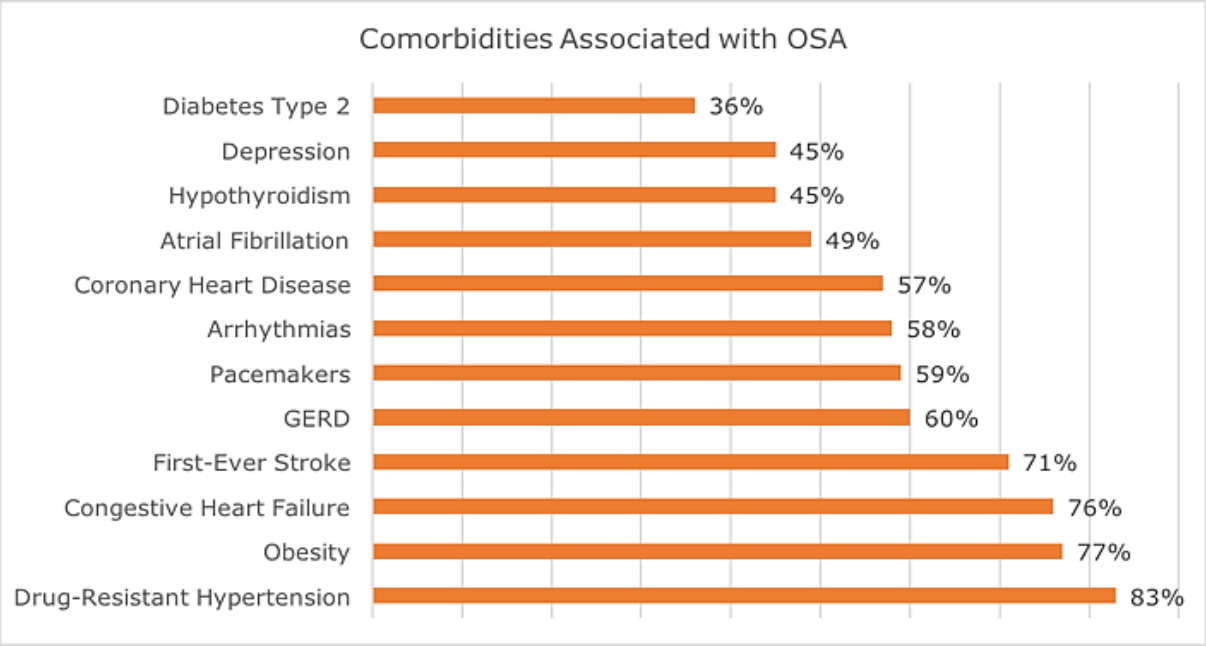
Sleep Apnea - More Than Just Sleepiness



Bonsignore et al. Multidisciplinary Respiratory Medicine (2019) 14:8 https://doi.org/10.1186/s40248-019-0172-9

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Obstructive Sleep Apnea - The Facts

- **1 billion** globally impacted by Obstructive Sleep Apnea
- **54 million** impacted by Obstructive Sleep Apnea (US)
- **US costs** of managing untreated OSA patients:
  - $65 billion/year in direct medical costs
  - $100 billion/year in indirect costs

Benjafield et al., Global Prevalence of Obstructive Sleep Apnea in Adults: Estimation Using Currently Available Data

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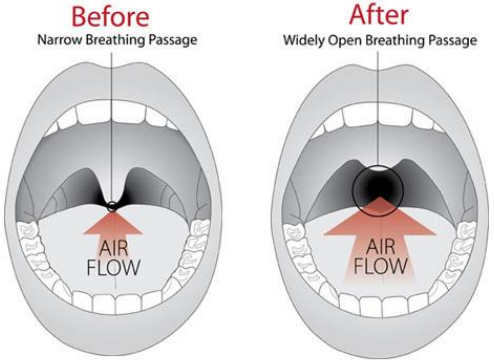
Sleep Apnea - Current Therapies

CPAP
~50% NON-COMPLIANCE WORLDWIDE



Surgical Options
~ UPPP
~MMA

Hypoglossal Nerve Stimulation

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aura6000® for Obstructive Sleep Apnea: Market Size

Prevalence of Obstructive Sleep Apnea (OSA) in the U.S.[1]	~54MM	~29MM experience mild OSA
Moderate to Severe OSA[2]	~25MM	Millions remain undiagnosed and untreated
Diagnosed and Prescribed CPAP[3]	~4.7MM	~50% are non-compliant with CPAP
CPAP Non-Compliant[4]	~2.3MM	~50-60% not eligible based on anatomy and other exclusions
HGNS Eligible	~1MM	Patients need a CPAP alternative.

1. Malhotra Et al., Lancet Respir Med 2019 7: 687–98 Published Online July 9, 2019 http://dx.doi.org/10.1016/ S2213-2600(19)30198-5
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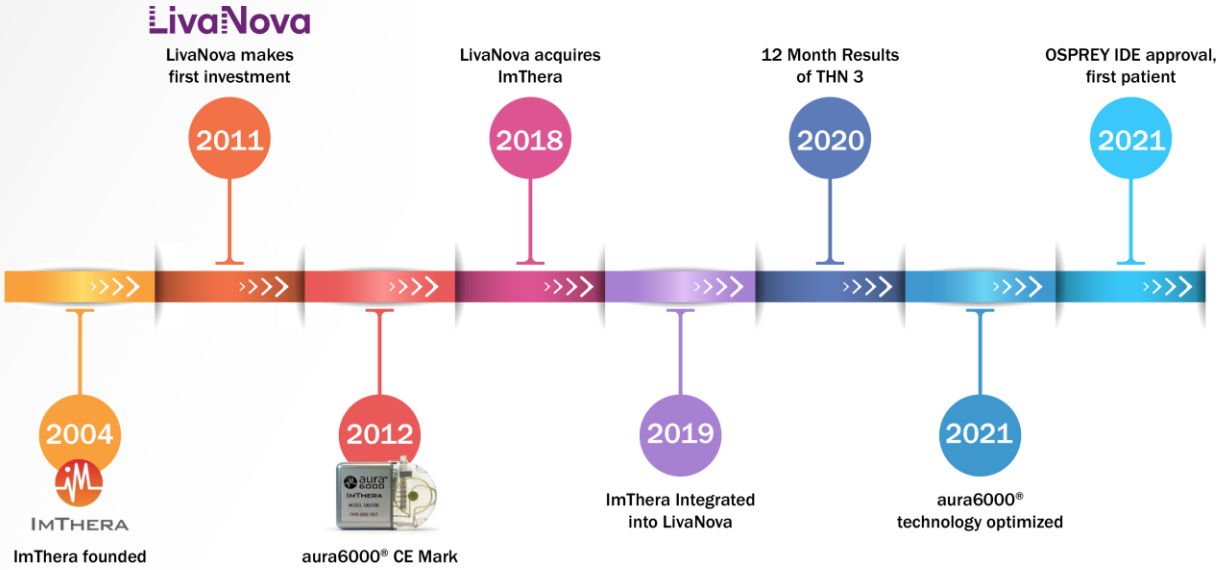
LivaNova's OSA Therapy Journey

OSPREY is the fulfillment of LivaNova's commitment to:

- Build upon the technology created by ImThera
- Leverage the experience gained in over 300 patients worldwide
- Bring a new therapy to the US market in a trial that uses our learning



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The aura6000® System

IPG

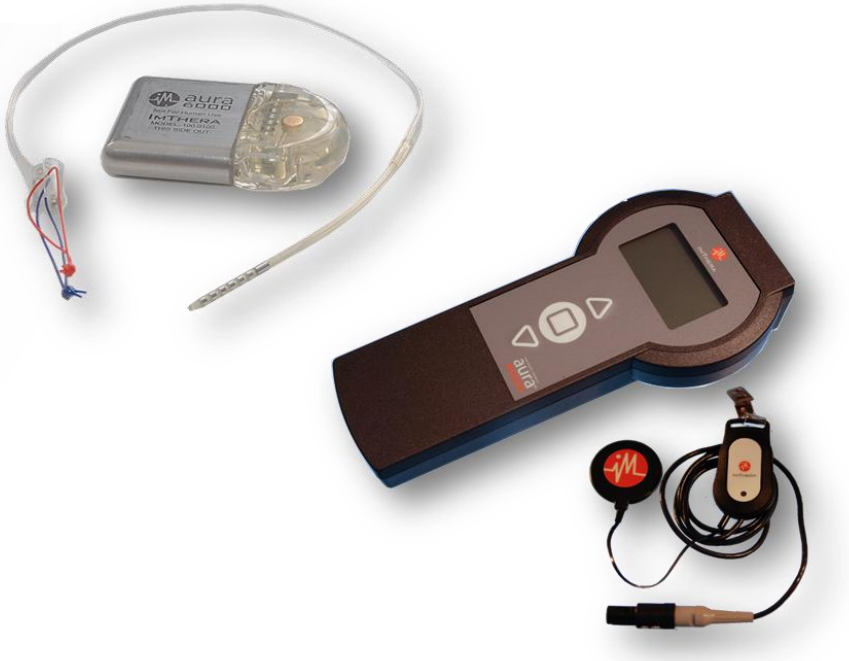
- Rechargeable and lasts up to 15 years

Lead

- Self-sizing cuff electrode containing 6 contacts

Remote Control and Charger

- Used to recharge and control the IPG



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The aura6000® System

Rechargeable Battery

- Up to 15 years of life
- Charges in roughly less than an hour
- Provides therapy for up to 3 days

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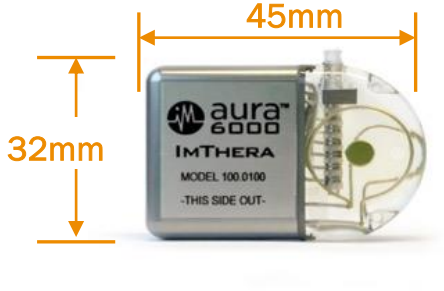
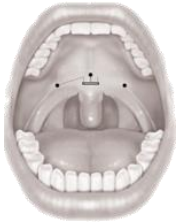
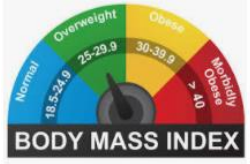
The aura6000® System



Small Device

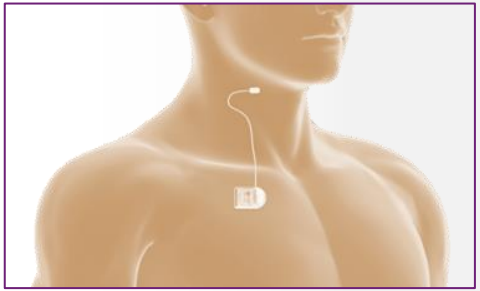
Complete Concentric Collapse





High BMI:
≤ 35 kg/m²

Broad Patient Population



No Thoracic Lead

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Hypoglossal Nerve Stimulator Landscape

	LivaNova Health innovation that matters	Inspire Sleep Apnea Innovation	Nyxoah
	OSPREY	STAR	DREAM
BMI Exclusion	≥35	≥32	≥32
CCC Exclusion	No	Yes	No
Thoracic Lead	No	Yes	No
Stimulator/Lead Placement	Proximal	Distal	Distal
Pivotal Trial Design	RCT	Single-Arm (withdrawal)	Single-Arm

FOR ILLUSTRATIVE PURPOSES ONLY

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IDE Trial - OSPREY

- The OSPREY trial will be the first trial to confirm efficacy of HGNS in an RCT

	Trial Design
Trial Design	RCT
Primary Efficacy Endpoints	AHI
Secondary Endpoints	ODI, ESS, FOSQ
Win Criteria	Beat Control (Treatment Rate ≤ Control Rate)
Patient Population	Up to 150
Follow up	6 Months - 12 month follow up

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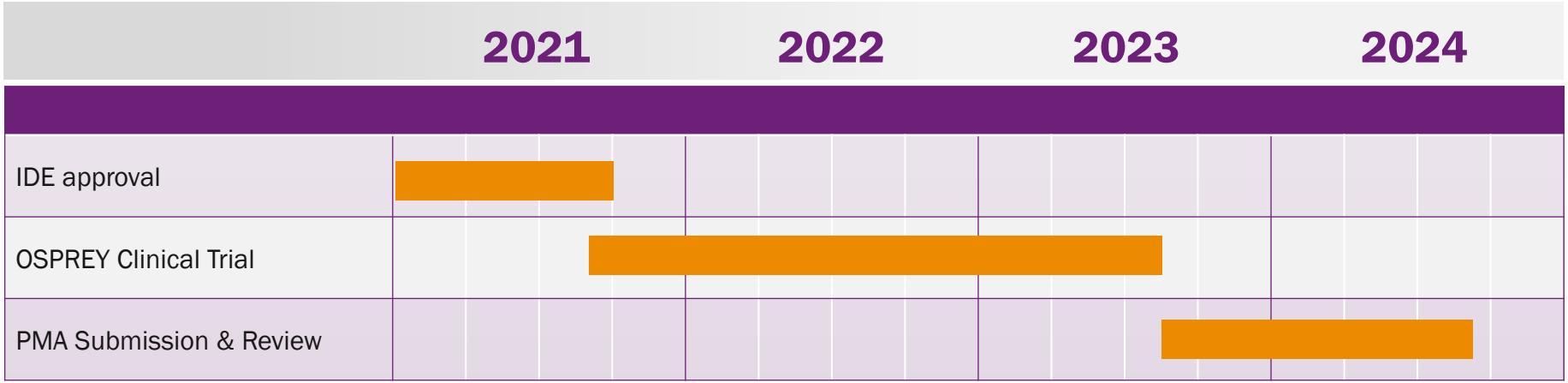
Anticipated Milestones



- We received PMA approval for the OSPREY study earlier this year
- We estimate enrollment completion in 2023
- We plan for our submission in the latter half of 2023 and anticipate approval in 2024

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Financial Update

Alex Shvartsburg
Chief Financial Officer

2021 Guidance

Reaffirming 2021 guidance issued November 3rd

	Guidance as of Feb. 24, 2021	Guidance as of Jun. 1, 2021	Guidance as of Jul. 28, 2021	Guidance as of Aug. 16, 2021	Guidance as of Nov. 3, 2021
Worldwide net sales growth[1]	8 - 13%	0 - 5%	5 - 10%	5 - 10%	8 - 11%
Worldwide net sales growth, excluding Heart Valves[1][2]	7 - 12%	7 - 12%	12 - 17%	12 - 17%	15 - 18%
Diluted Adjusted EPS[1] [3]	$1.40 - 1.90	$1.31 - 1.81	$1.60 - 1.90	$1.75 - 2.05	$2.00 - 2.10
Adjusted free cash flow[4]	$30 - 50M	$30 - 50M	$35 - 55M	$50 - 70M	$55 - 75M

(1) Net sales are on a constant-currency basis. All financial measures are adjusted non-GAAP measures.
(2) The Heart Valves business was divested and deconsolidated effective June 1, 2021.
(3) Diluted Adjusted EPS for guidance issued November 3, 2021 assumes adjusted diluted weighted average shares outstanding of approximately 51.5 million for the full-year of 2021.
(4) Adjusted free cash flow is a non-GAAP metric and is defined as net cash provided by operating activities less cash used for the purchase of property, plant and equipment excluding the impact of 3T litigation payments, a tax stimulus benefit and gains related to dividends received from investments.

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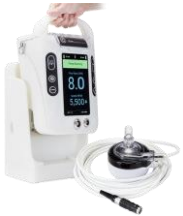
Segment Reporting Update

Changing to Three Reportable Segments

- We are changing our segment reporting from two reportable segments, Neuromodulation and Cardiovascular, to three:
  - Neuromodulation
  - Cardiopulmonary (CP)
  - Advanced Circulatory Support (ACS)
- The change to segregate our Cardiovascular segment into CP and ACS represents the way we will manage and evaluate our business moving forward and provides greater transparency around the growth and margin profiles.
- Historical financial results will be recast in our 2021 10-K to maintain comparability.

Three Segments with Significant Market Opportunity

Defining Core Businesses and Strategic Portfolio Initiatives (SPIs)

	Neuromodulation			Cardiopulmonary	Advanced Circulatory Support
	Creator, Leader of VNS Therapy			Market-leading positions	Advanced temporary support solutions
					
	Strategic Portfolio Initiatives (SPIs) *Clinical Pipeline Targeting High Unmet Needs*			Core	
Disease States	Difficult-to-Treat Depression	Obstructive Sleep Apnea	Heart Failure	Drug-Resistant Epilepsy	Coronary Artery Disease Congenital Heart Defect Atrial Fibrillation Valvular Disease	Cardiogenic Shock Cardiac Arrest Left and Right Ventricle Failure ARDS/COPD
2021E Net Sales[1]	~$10M	–	–	$434-452M	$465-480M	$55M+
Market Size[2]	~$10M	~$220M	~$15M	~$505M	~$2B	$1.5B
Market Growth[2]	N/A	30%+	20%+	10%+	0-3%	10%+

(1) 2021E represents guidance issued on November 3, 2021.
(2) Managements estimates for full year 2021.

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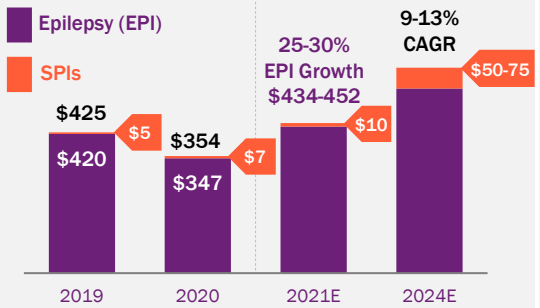
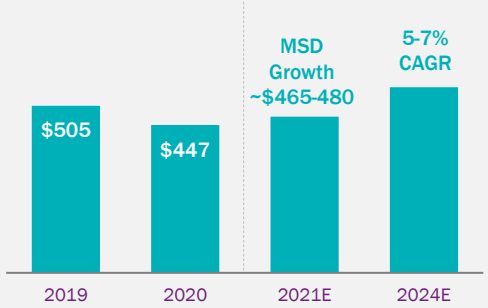
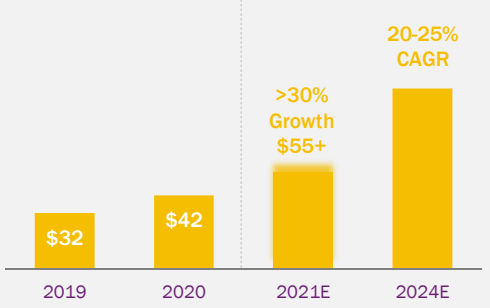
2021-2024 Financial Outlook by Segment

	Neuromodulation	Cardiopulmonary	Advanced Circulatory Support
Net Sales[1] ($M)			
2021-2024 Net Sales CAGR[2]	Epilepsy: 7–9% Epilepsy + SPIs: 9–13%	5–7%	20–25%
Gross Margin (2024 Target)	85–90%	50–55%	70–75%
Adjusted Operating Margin (2024 Target)	Epilepsy: >40% Epilepsy + SPIs: 25–30%	18–23%	-3–2%
Growth Drivers	• GTM strategy • Integrated digital network strategy • SPI milestone achievements, namely DTD & OSA	• Next-generation HLM launch in 2H 2022 accelerates growth in 2023	• Continue to invest in sales force expansion to drive adoption in new accounts and expand utilization with current accounts

2021E represents mid-point guidance issued on November 3, 2021. 2024E represents mid-point outlook based on 3-year CAGR from 2021E mid-point guidance.

(1) Net sales are on a constant-currency basis.

(2) 3-year CAGR from mid-point 2021 guidance issued on November 3, 3021.

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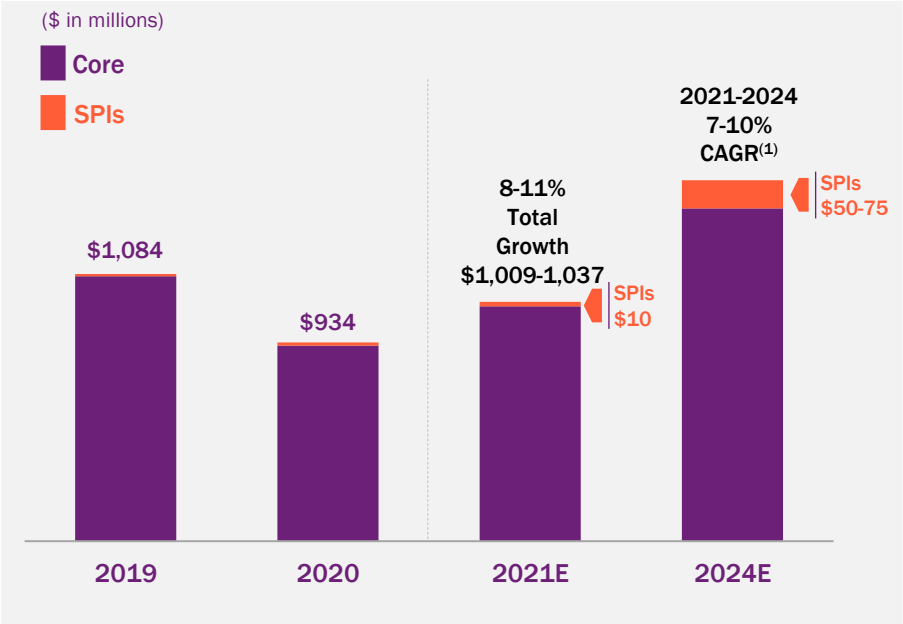
2021-2024 Financial Outlook

*Outlook for Core and Core plus Strategic Portfolio Initiatives (SPIs)**

	Core	Core + SPIs
Worldwide net sales CAGR[1][2]	5–8%	7–10%
Gross Margin (2024 Target)	Low–70s	Mid–70s
Adjusted Operating Margin[3] (2024 Target)	25–30%	17–22%
Diluted Adjusted EPS CAGR[1][3][4]	N/A	~20%



* Core LIVN excludes impact from Strategic Portfolio Initiatives (SPIs), specifically impacts from Difficult-to-Treat Depression, Heart Failure and Obstructive Sleep Apnea clinical pipeline programs.

(1) 3-year CAGR from mid-point 2021 guidance issued on November 3, 2021. Net sales are on a constant-currency basis.
(2) Worldwide net sales CAGR when excluding impact of the Heart Valves business that was divested and deconsolidated effective June 1, 2021 would be higher by approximately 100bps.
(3) Adjusted operating margin assumes ~$55M of annual corporate shared service expenses that are not allocated to a segment.
(4) Diluted adjusted EPS CAGR assumes annual adjusted interest expense of $11-12M, an adjusted income tax rate range of 15-20% for 2022-2024 and adjusted diluted weighted average shares outstanding of approximately 54M for the full-year 2024.

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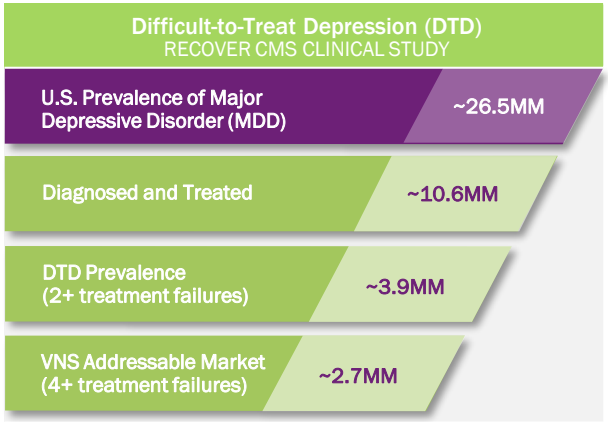
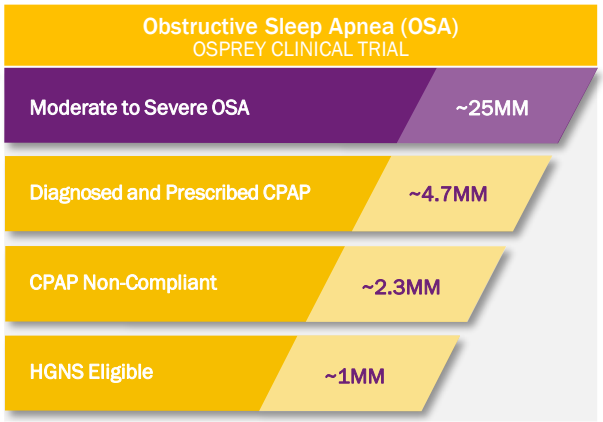
Strategic Portfolio Initiatives Long-Term Outlook

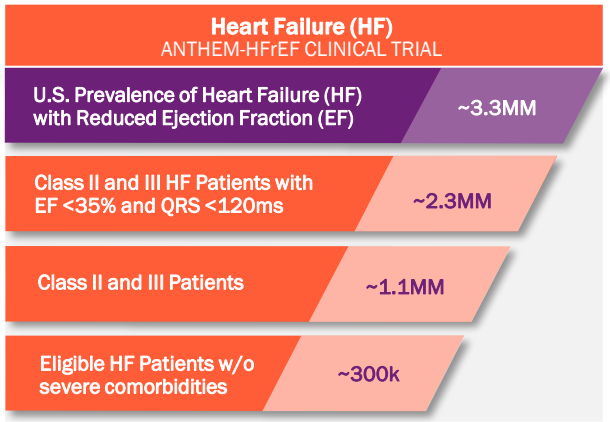
*Three Differentiated Clinical Pipeline Initiatives Targeting Significant Market Opportunities**



- Transition to registry anticipated by late-2022/early-2023 and CMS reconsideration of non-coverage decision anticipated during 2024
- Projected annual sales of $150-200M at **4 years following transition to registry** dependent upon a favorable CMS non-coverage reconsideration decision



- Intend to seek FDA approval in mid-2024
- Projected annual sales of $175-225M at **4 years following FDA approval**



- First phase (functional data) readout anticipated in 1H 2022
- Second phase (primary endpoint) estimated to take ~2-3 years after completion of first phase
- Projected annual sales of $100-150M at **4 years following primary endpoint FDA approval**

* See market size references in respective Investor Day SPI sections.

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Cash Generation & Capital Allocation Priorities

Optimize deployment of capital to maximize long-term shareholder value

$400-500M

Adjusted Free Cash Flow (FCF)[1]
Cumulative 2021-2024

>80%

Target FCF Conversion Ratio[2]
by 2024

Capital Allocation Priorities

Fund R&D investments
Executing strategic pipeline initiatives

Build commercial infrastructure for SPIs
Scaling commercial organization to drive market development

Repay/re-finance convertible debt
Protecting long-term health of balance sheet

Pursue strategic tuck-in M&A
Investing in future growth opportunities

(1) Adjusted free cash flow is a non-GAAP metric and is defined as net cash provided by operating activities less cash used for the purchase of property, plant and equipment excluding the impact of 3T litigation payments, tax stimulus benefits and gains related to dividends received from investments.
(2) Free cash flow conversion ratio calculated as adjusted free cash flow divided by non-GAAP net income.

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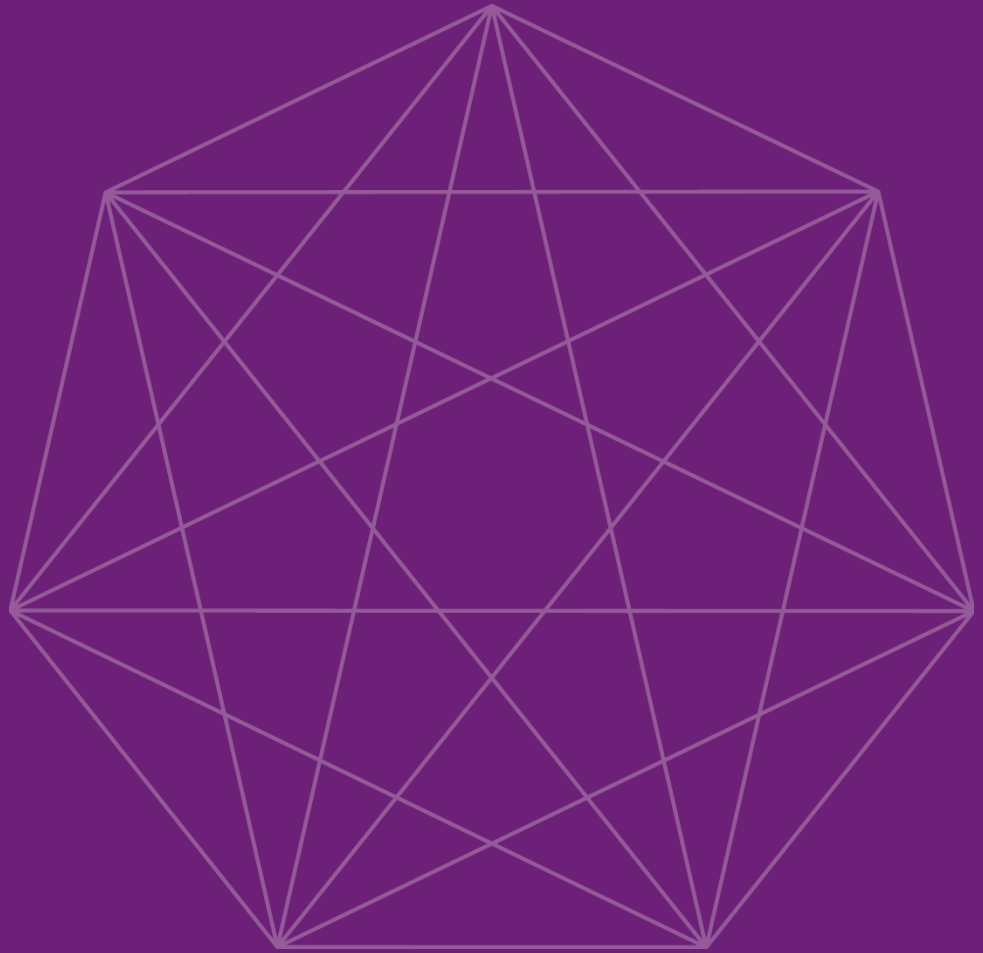
Financial Outlook

Key takeaways

- Stable growth in Epilepsy
- Above market growth in Cardiopulmonary & Advanced Circulatory Support
- Three shots on goal with SPIs targeting significant market opportunities:
  - $50-75M of incremental revenue from SPIs projected by 2024
  - $150-200M of DTD revenues projected at 4 years following transition to registry dependent upon a favorable CMS non-coverage reconsideration decision
  - $175-225M of OSA revenues projected at 4 years following FDA approval
  - $100-150M of HF revenues projected at 4 years following primary endpoint FDA approval
- Annual adjusted operating margin expansion of 50+ basis points
- Cumulative adjusted free cash flow generation of $400-500M by 2024
- Disciplined capital allocation



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Closing Remarks

Damien McDonald
Chief Executive Officer

Investor Day 2021

Key Takeaways

Core Businesses	• Growth in Epilepsy driven by the go-to-market and digital network strategies • Above market growth in Cardiopulmonary behind next-generation HLM, Essenz, launch • Above market growth in ACS behind sales force expansion to drive LifeSPARC adoption
Strategic Portfolio Initiatives	• DTD: 250 unipolar patients implanted in the RECOVER study arm by early 1Q22 • Heart Failure: Reach 9 month follow-up for 300 patients in ANTHEM-HFrEF in 1Q22 • OSA: IDE FDA approval received and anticipate implanting the first patient this quarter
Focus on Execution	• Gross margin expansion over 70% • Adjusted operating margin of 25-30% for the core businesses by 2024 • Cumulative adjusted free cash flow generation of $400-500M by 2024

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Glossary

Glossary of acronyms and key terms

Business specific		Business specific		Financial & Other	
ACS	Advanced circulatory support	HFrEF	Heart failure reduced ejection fraction	$M	Millions of Dollars
ARDS	Acute respiratory distress syndrome	HLM	Heart-lung machine	B	Billion
ART	Autonomic Regulation Therapy	HRV	Heart rate variability	ASP	Average selling price
ASM	Anti-seizure medicine	KOL	Key opinion leader	Bps	Basis Points
ATS	Auto Transfusion System	LVEF	Left ventricular ejection fraction	CAGR	Compound annual growth rate
CEC	Comprehensive Epilepsy Center	NPI	New patient implant (VNS)	CE	Conformitè Europëenne
CP	Cardiopulmonary	NYHA	New York Heart Association	CMS	Centers for Medicare & Medicaid Services
CRM	Cardiac Rhythm Management	OSA	Obstructive sleep apnea	COVID-19	Coronavirus Disease 2019
DRE	Drug resistant epilepsy	Oxy	Oxygenator	EPS	Earnings Per Share
DTD	Difficult-to-treat depression	PCI	Percutaneous coronary intervention	FDA	Food and Drug Administration
ECLS	Extracorporeal life support system	PDM	Perfusion data management	IDE	Investigational Device Exemption
ECMO	Extracorporeal membrane oxygenation	PVAD	Percutaneous ventricular assist device	NCD	National Coverage Determination
EOS	End of service (VNS)	SPI	Strategic portfolio initiative	OUS	Outside U.S.
ECT	Electroconvulsive therapy	TMS	Transcranial magnetic stimulation	PMA	Premarket approval
GTM	Go-to-market	VNS	Vagus nerve stimulation	RCT	Randomized control trial

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GAAP to Non-GAAP Reconciliations

	2017	2021E
Total GAAP net sales	$1,012	$1,023
Less Heart Valves net sales	(138)	(36.2)
Total net sales, excluding Heart Valves	$874	$977

2021E represents mid-point guidance issued on November 3, 2021

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