

**CARDIOLOGY
MARKET UPDATE**



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FALL 2022

Cardiology Market Update



Cardiology Market Overview

Key Trends

- Major factors driving the global interventional cardiology market revenue growth include:
 - Rapidly growing geriatric population
 - Rising prevalence of lifestyle-induced diseases such as obesity, diabetes, and hypertension
 - Increasing burden of cardiovascular disorders including coronary artery disease, cardiac arrest, stroke, arrhythmia, and congenital heart disease
- There are approximately 30,000 cardiologists practicing in the U.S.
- Hospitals continue to be the main point of care for cardiovascular related health issues, but alternative sites such as ambulatory surgical centers ("ASCs") are becoming an increasingly important access point for cardiovascular services
- Cardiologists primarily provide observational and diagnostic services but can engage in more intensive diagnostic and surgery procedures
 - Approximately 60.0% of 2021 cardiology revenue was generated from non-invasive procedures such as heart stress testing
- 1 in 4 deaths in the U.S. are related to some form of heart disease

Key Cardiology Stats



805,000
Americans have heart attacks each year



38.2%
American adults have total cholesterol of 200 mg/dl or higher

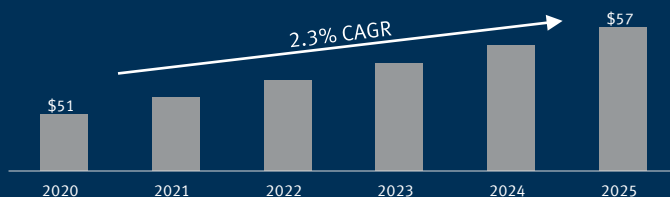


108 million
People in the U.S. have high blood pressure



\$214 billion
Annual cost of heart disease on the U.S. health care system

Annual Cardiology Market Revenue (\$Bn)



Continuum of Care

	Scope	Treatments & Services
Observational	"Stress Tests" to observe heart and determine irregularities	Echocardiograms are used to observe heart strength, size, and tissue damage
Interventional / Emergency	Often triggered by atherosclerosis (restricted blood flow)	Common procedures include cardiac catheterization, angioplasty, and bypass surgery
Chronic	Management of chronic health issues like diabetes and obesity that place additional stress on the heart	Wearing trackable health devices, eating healthier, not smoking, and consultations with cardiologist help maintain heart health

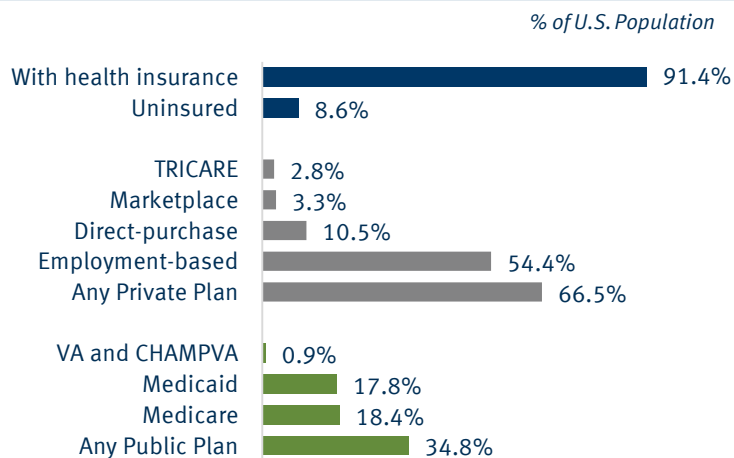


Sources: American Heart Association, IBISWorld, KPNG

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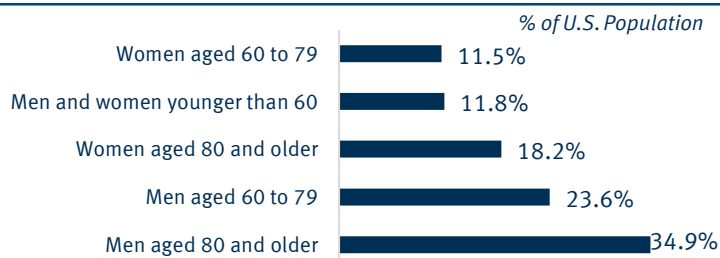
Cardiology Market Demand Drivers

Increased Coverage From Federal Funding and Insurance



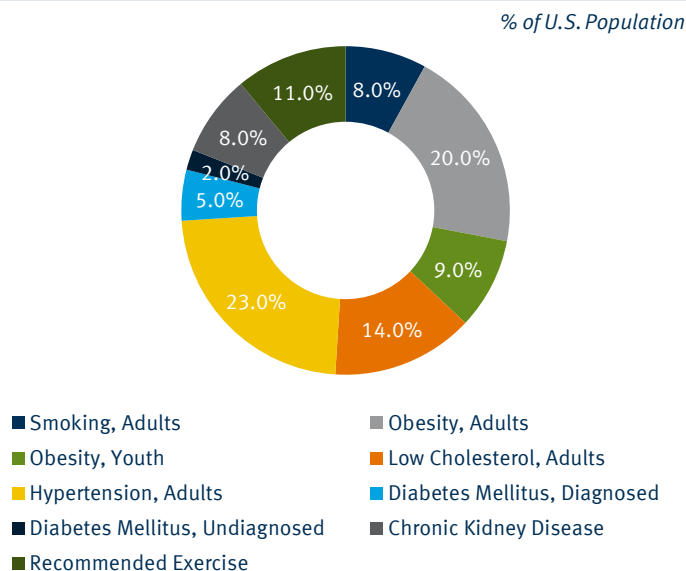
- Coverage from Medicare, Medicaid and private insurance enable access to preventative health visits, causing more people to seek cardiology care
- Medicare and Medicaid spending is projected to grow at an average annual rate of 7.2% and 5.6% respectively through 2030

Aging Population



- The decrease in production of crucial hormones in aging adults contribute to conditions such as diabetes and obesity, and are independently linked to increased risk of myocardial infarction
- Adults over the age of 60 years old contribute 88.2% of cardiology practice revenue
- Over the past 5 years, the U.S. population aged 65 or older has increased at an annualized rate of 2.9% and is expected to reach 90 million by 2050
 - Americans aged 65 or older account for 82.0% of people who die of heart disease

Rise of Early Health Issues



- Obesity, prediabetes and hypertension are leading causes of cardio-related health issues in the U.S.

Lower Digital Adoption Rates for Target Population

- Only 13.0% of seniors use technology to measure fitness and health improvement
 - Cardiovascular Disease prevalence among seniors is 85.0-86.0%
- Integration of wireless devices has reduced door-to-intervention times by an average of 66 minutes
- Digital health intervention has led to a 7.5% absolute risk reduction in CVD events, hospitalizations, and deaths



The increase in demand for services is favorable for the cardiology sector as it is necessary for younger generations to consult a cardiologist to prevent a future cardiac-related event

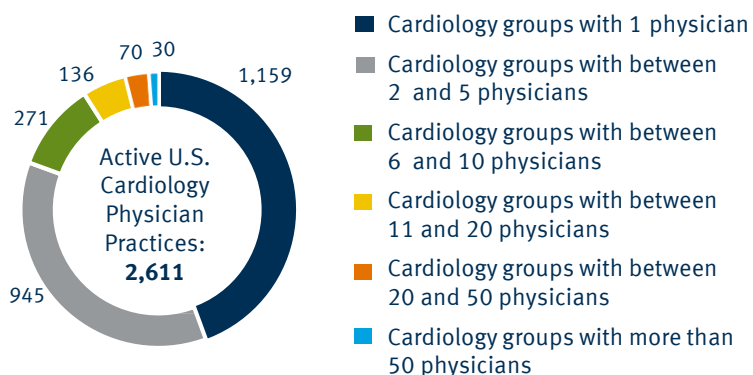
Sources: Administration of Community Living, American Heart Association, CMS, Deloitte, IBISWorld, U.S. Census Bureau, Rural Health Information Hub.

Cardiology Market Update

Cardiology Market Supply Drivers

Cardiology Care Model Shifts

- Certain treatment activities, including prescription writing, are shifting from cardiologists to nurse practitioners and physician assistants
- 30.0% of private practice physicians have opted to merge with a larger health system that tracks value-based care metrics, driving improved outcomes



Supply Chain

1st Tier Suppliers

- Medical Supplies Wholesalers
- Diagnostic & Medical Laboratories

2nd Tier Suppliers

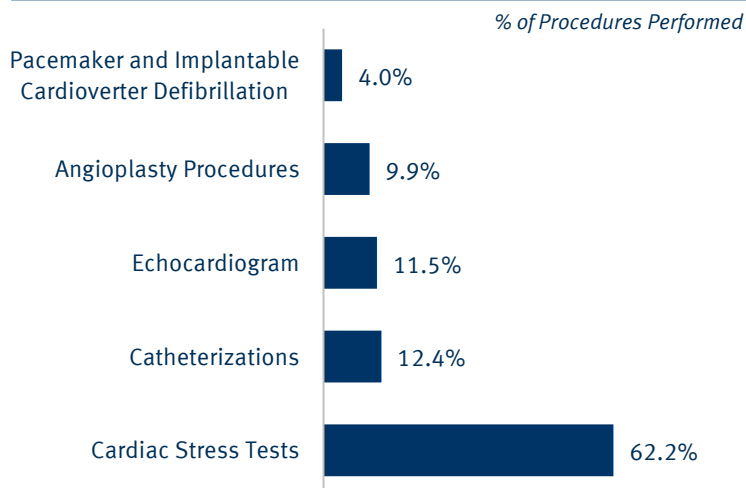
- Pharmaceutical Manufacturing
- Medical Instrument and Supply Manufacturing
- Hospitals

Medical Supplies Wholesaling and Diagnostic & Medical Laboratories have become key suppliers due to the rising prevalence of non-invasive procedures and increased use of critical materials

Cardiology Shortage in the U.S.

- Anticipated deficit of ~7,080 cardiologists in the U.S. by 2025 is driven primarily by an aging physician workforce and declining productivity
 - 30.0% of cardiologists are over the age of 59
 - Cardiologists above the age of 59 are 19.0% less productive than cardiologists between ages 49 and 53
 - In 2021, 21.0% of physicians were considering early retirement and 15.0% were considering leaving the practice of medicine entirely due to Covid-19
- The Cardiology physician market is anticipated to grow at a CAGR of 2.3% from 2021-2025
 - Higher efficiency, enhanced accuracy, and improved safety in interventional cardiology devices will continue to increase the ease at which patients can receive cardiologic care
 - Cardiology is an attractive market to enter as cardiovascular surgeons, invasive cardiologist and non-invasive cardiologists generate revenues 8.7x, 5.9x and 5.4x of their respected salaries

Key Procedures Performed by Cardiologists



Sources: Beckers ASC, Deloitte, Emergen Research KPMG, IBISWorld, MGMA

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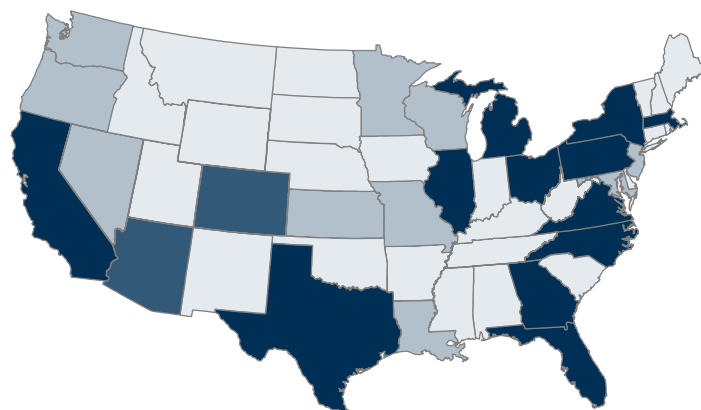
Key Trends In The Cardiology Market

Cardiologists Continue to Concentrate in Densely Populated Regions

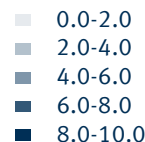
Impact On Rural Populations

- Rural patients are less likely to receive cardiovascular care
 - The 15.0% of Americans who live in rural places are more likely to die of cancer, respiratory diseases, and cardiovascular diseases than urban Americans
- Need for doctors vary by region
 - Nearly 98.0% of projected growth in demand for physicians will occur in metropolitan areas
- Number of non-metropolitan hospitals decrease
 - 41.0% of hospitals are operating at a negative margin despite National Rural Health Association warning that 12 million patients are at risk of losing direct access to care
- Lack of access to telemedicine disproportionately impacts non-urban regions
 - 39.0% of rural Americans and 41.0% of Americans living on tribal lands lack access to broadband compared to 4.0% of urban Americans

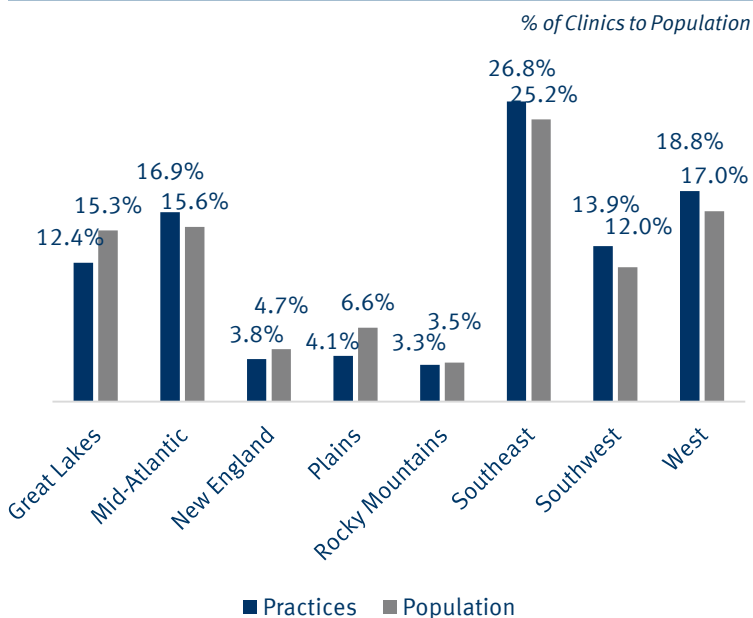
Cardiologist Practices Are Increasingly Moving to Urban Regions



Percent of U.S. Cardiology Practices (%)



Cardiology Practices To Population Ratios Vary Across U.S.



Sources: AAMC, IBISWorld, KPMG.

Population and Region Drivers

- Southeast Region
 - Florida has the highest single-state portion of geriatric citizens at 19.1%, driving demand for cardiovascular clinics in the state
- Mid-Atlantic Region
 - Most densely populated area of the country with New York and New Jersey who house 6.9% and 3.8% of the nation's total cardiologists, respectively
- Western Region
 - The West contains the second-largest portion of cardiology practices, accounting for 18.8% of the national total
 - California contains the most cardiology offices of any state with 14.4%
- Southwestern Region
 - Texas and Arizona have large elderly populations and contain 9.9% and 2.4% of the country's cardiology practices respectively

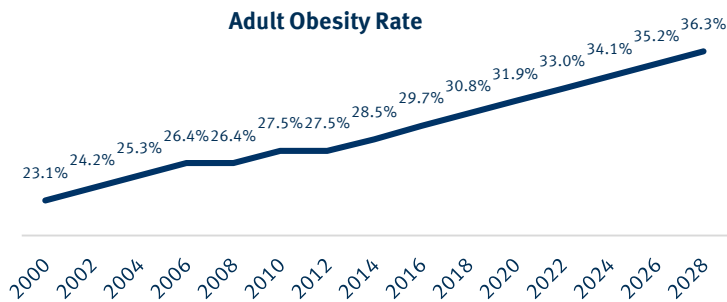
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Key Trends In The Cardiology Market

Underlying Health Problems Within the United States Continue to Drive Heart Disease

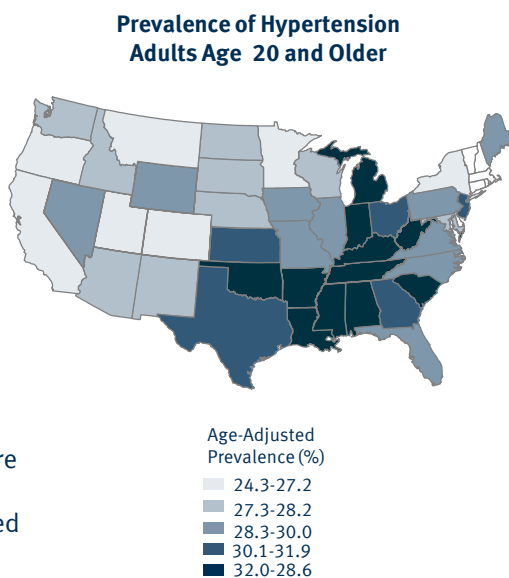
Adult Obesity Rate Expected to Rise Dramatically

- The estimated annual cost of obesity was nearly \$173 billion in 2019
 - Medical costs were \$1,861 higher on average for individuals with obesity than for people with healthy weight
- Obesity prevalence was 41.5% among adults aged 60 and older
- From 2002 through 2028 the obesity rate is projected to increase at a CAGR of 1.6% to 36.3% of the U.S. population



Hypertension

- High blood pressure was a primary or contributing cause of death for 516,955 people in the United States in 2019
- 47.0% of adults in the United States (~116 million) have hypertension
- High blood pressure costs the United States an estimated \$131 billion each year



Diabetes



Diabetes patients have a **2.0-3.0x** increased risk for heart disease



Individuals with diabetes receive **30.0%** of all coronary stents



Diabetes patients suffer **280,000** heart attacks annually



Diabetic individuals have **2.0-4.0x** higher heart disease morbidity and mortality rates



U.S. diabetes patients have a **60.0%** chance of dying from heart disease



- Compared to individuals without DM, the relative risk for cardiovascular disease morbidity and mortality in adults with diabetes ranges from 1.0x-3.0x in men and from 2.0x-5.0x in women
- The incidence of diabetes mellitus (DM) continues to rise and has quickly become one of the most prevalent and costly chronic diseases worldwide
- The latest estimates by the International Diabetes Federation Project expects that 592 million people worldwide will have DM by 2035
- In the United States, the total cost of DM averages \$2,108/patient per year

Sources: ACC, American Diabetes Association, American Heart Association, Centers for Disease Control and Prevention, Deloitte, IBISWorld, NIH, U.S. Food & Drug Administration, Heart Vascular and Leg Center.

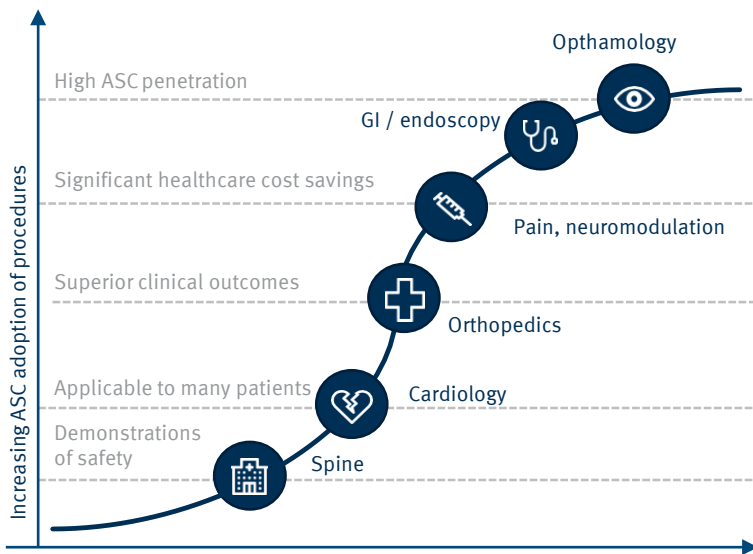
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Key Trends In The Cardiology Market

Rise of Value-Based and Decentralized Models Are Increasing Efficiency of Care

Shift of Care to Non-Acute Settings has Accelerated

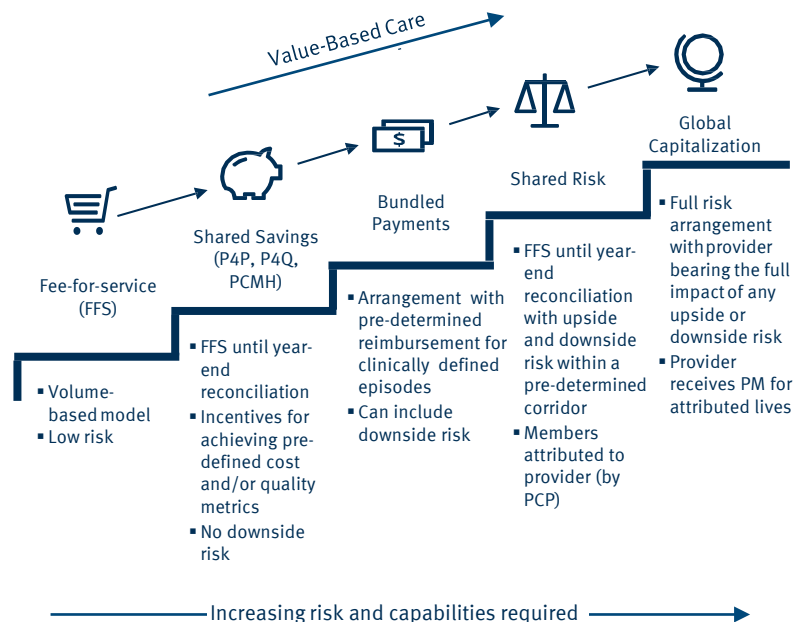
Maturity of specialties transitioning to ASC's



- ASCs, office-based labs (OBLs), home care and telehealth are becoming important care settings
- The broader shift toward ASCs will continue to be a priority for a larger cross-section of medical technologies
 - Patient satisfaction rate for ASCs is 98.0%
 - Most patients find the setting to be more personal, convenient, and comfortable than hospitals
- The majority of cardiovascular cases are performed on an outpatient basis
 - Common procedures include right and left heart catheterizations, coronary interventions, peripheral vascular interventions, defibrillator and pacemaker implants
- The increased use of drug-eluting stent placement will allow patients avoid multiple visits to diagnose and treat heart conditions

Value-Based Care Payment Models Increase

- The U.S. Centers for Medicare and Medicaid Services ("CMS") is offering incentives based on utilization of post-cardiac care services by recently discharged patients
- Shared savings programs include pay-for-performance ("P4P"), pay-for-quality ("P4Q"), and patient-centered medical homes ("PCMHs")
- The shift to value-based care is changing provider economics and placing MedTech manufacturers under a commoditization threat
- As of 2019, 46 states, the District of Columbia and Puerto Rico had begun implementing some sort of value-based care payment model, representing a 7.0x increase since 2015
- Value-based care payment models help payers with lower incomes afford cardiology services



Sources: ASCA Journal, Fierce Healthcare, L.E.K. Consulting.

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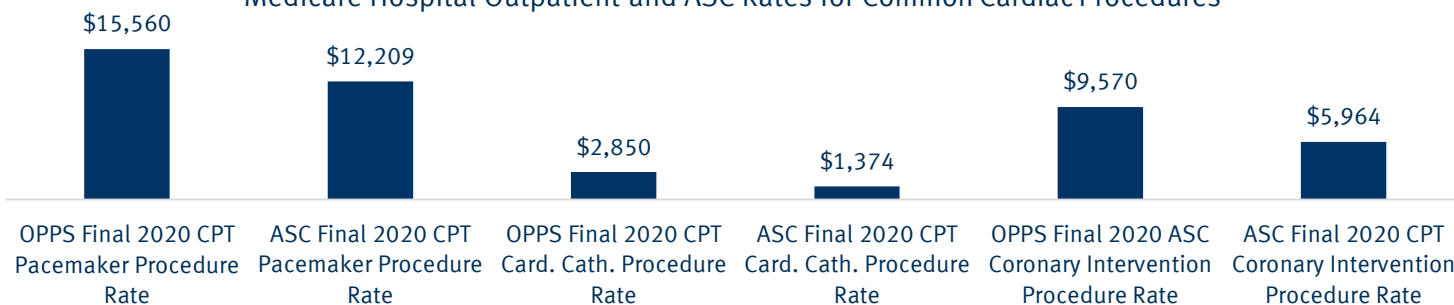
Key Trends In The Cardiology Market

Evolving Cardiology Paradigms: ASC CMS Rule Changes

Cardiovascular and cath lab procedures added to the Medicare ASC-approved list in 2019 and 2020 will dramatically expand the opportunity for cardiologist in office based labs (“OBLs”) and ASC settings

- ASC-approved procedures in cardiac cath. and coronary intervention, coupled with pacemaker procedures represented about 566,000 Medicare procedures performed in hospital outpatient divisions (“HOPD”) in 2018
- The 2018 HOPD volume allowed in the ASC represents revenue of nearly \$4 billion in the HOPD and nearly \$3 billion in the ASC; assuming conservatively that there is a 20.0% shift, there is a \$500 million dollar opportunity for ASCs

Medicare Hospital Outpatient and ASC Rates for Common Cardiac Procedures

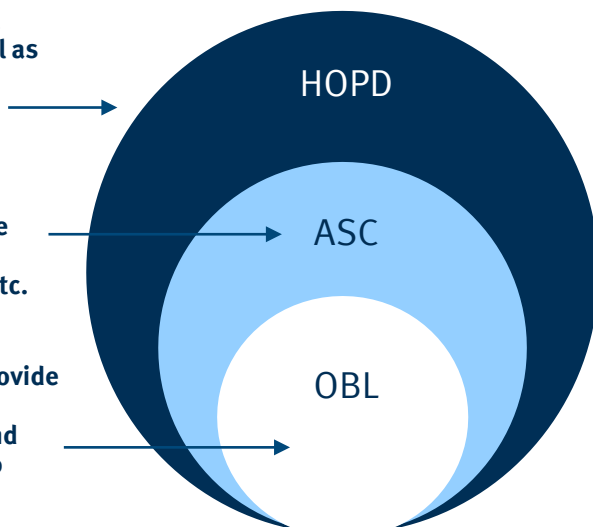


In states where there are no rules that limit access by SOS, there may be an opportunity for cardiology procedures commonly performed in the hospital that may be at risk to migrate to other outpatient SOSs

HOPDs provide the full complement of outpatient CV services (e.g. pacemakers, AICD, ICD, diagnostic, etc.), as well as coronary intervention procedures

ASCs provide limited outpatient cardiac cath, PPCI, EP and implantable device procedures including pacemakers, etc.

OBLs most commonly provide diagnostic cardiac cath, vascular intervention, and peripheral procedures to patients without using general anesthesia



Summary Case Categories and SOSs

Category	HOPD	ASC	OBL
Pacemaker	X	X	
AICD	X	X	
Diagnostic Card. Cath.	X	X	X
Coronary Intervention	X	X	X
Peripheral Vascular	X	X	X
EP Ablation	X		

Key Trends In The Cardiology Market

Evolving Cardiology Paradigms: Impact of Cardiology Migration

Continuing downward pressure on healthcare expenditures related to cardiovascular care are resulting in a major shift in procedures from hospitals to ASCs



COVID has accelerated the migration of cardiology procedures and shifted patients attitudes towards receiving care in ambulatory versus hospital settings

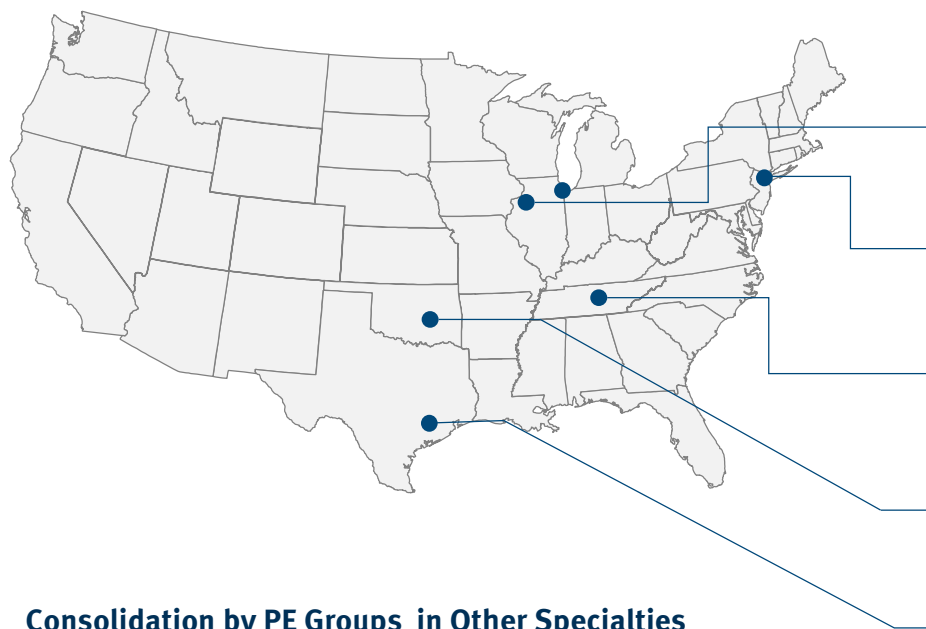
Cardiology Market Update

Select Private Equity Investment in Cardiovascular Practices

Private Equity groups are capitalizing on successful partnership models in other specialties and reimbursement changes allowing some cardiovascular procedures to be performed in ambulatory settings to make targeted investments in leading cardiology groups. High quality patient care remains the priority for these groups, while increasing scale enables better contract negotiation, purchasing agreements, and back-office support for providers

Early Stages of Practice Consolidation Across the U.S.

Notable PE Partnerships with Cardiology Groups



Consolidation by PE Groups in Other Specialties

Dental	Dermatology	Ophthalmology
20+	20+	20+

Notable Recent Transactions

Date	Details
August 11, 2022	Cypress Ridge Capital made a controlling investment in a newly launched value-based cardiovascular care organization atria health
August 3, 2022	Cardiovascular Associates of America announced Carolina Cardiology Associates is joining its network, bringing in 12 providers across 4 locations
July 19, 2022	US Heart & Vascular announced an agreement with Willowbrook Cardiovascular Associates, a Houston-based cardiovascular physician practice focused on preventative care, diagnostic testing, curative procedures, and electrophysiology services

Health Care Services & Health Tech Practice

Leadership



Alena Antigua
Managing Director
Technology
(312) 423-8220
alena.antigua@stifel.com



Kojo Appenteng
Managing Director
Technology
(630) 926-2136
appentengk@stifel.com



Chip Bierbaum
Managing Director
Pharma Services
(917) 597-5743
bierbaumc@stifel.com



Jim Hesburgh
Managing Director
Services
(917) 302-7695
hesburghj@stifel.com



Patrick Krause
Managing Director
Services
(415) 722-6514
krausepa@stifel.com



Alex Halpern
Director
(203) 912-4366
halperna@stifel.com



Ben Maddison
UK Director
+44 (0) 207 710 7624
ben.maddison@stifel.com

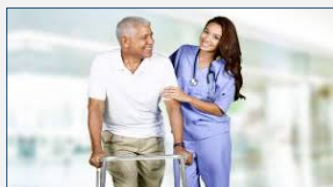


Harvinder Minhas
Director
(718) 355-0541
minhash@stifel.com



Charles Simon
Director
(757) 270-5628
simonch@stifel.com

Sector Coverage



Alternate Site

- Labs
- Infusion Sites
- Physical Therapy
- Post-Acute Care



Behavioral Health

- Autism
- General Psychology
- Mental Health
- Substance Abuse



Health Tech

- Data Analytics
- Digital Health
- Software/SaaS
- Tech-enabled Services



Payor Services

- Managed Care
- PBMs
- TPAs
- Worker's Compensation



Pharma Services

- Clinical Trials
- Manufacturing
- Marketing
- Supply Chain



Physician Groups

- Dental Services
- Hospital-Based
- Multi-Site
- Veterinary Services

Product Offering

M&A
Advisory

Equity Capital
Raising

Debt Capital
Raising

Restructuring
Advisory

Fairness
Opinions

Provider Coverage



Patrick Krause
Managing Director

Address:
One Montgomery Street, FL 37
San Francisco, CA 94104

Phone: (415) 364-7174

Email: krausepa@stifel.com

Focus at Stifel

Patrick is a senior investment banker at Stifel where he focuses on healthcare services transactions. He specializes in M&A and capital raising, working closely with key stakeholders across a range of healthcare industry sub-verticals including specialty physician groups, behavioral healthcare, and other healthcare services enabling the care of patients.

Career Background

Over the past 15+ years, Patrick has had increasingly senior roles in healthcare and investment banking. Most recently, Patrick led the Healthcare Services practice at MHT Partners. Prior to joining MHT Partners, Patrick worked for Novartis' Molecular Diagnostics group (now part of Grifols). From 2003 to 2011, he worked for Deloitte, where he served many of the firm's largest healthcare clients. Through these engagements, Patrick provided an array of strategic, financial, and technology advisory services to healthcare leaders at hospitals, commercial payors, technology, and life sciences companies.

Career Background

MBA, University of California – Haas School of Business

BA, Economics, Organizational Studies, University of Michigan, Ann Arbor

Selected Provider Experience



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