RWD89

Assessing Early Adoption Of Pulsed Field Ablation For The Treatment of Atrial Fibrillation Using Claims And Hospital Charge Data

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Background and Objectives

Objectives

Atrial fibrillation (Afib) is the most common cardiac arrhythmia and is characterized by rapid and irregular atrial electrical activity leading to ineffective atrial contraction. It is associated with increased risk of stroke, heart failure, and reduced quality of life. Afib is commonly treated by ablation of tissues surrounding the pulmonary vein (PVI) to stop the spread of abnormal signals into the left atrium. Pulsed Field Ablation (PFA) is an emerging technology for treating atrial fibrillation with established benefits (safety and efficiency) compared to thermal ablation technologies such as radiofrequency (RF) and cryoablation. The first generation of PFA devices for treating Afib were launched by leading device manufacturers in 2024.

Objectives

- Analyze the rate of adoption of PFA for the treatment of Afib
- Assess the relative suitability of claims and hospital charge datasets to identify specific modalities
- Analyze differences in patients, procedures and physicians in early adoption of PFA

Methods

We analyzed US open medical claims and hospital charge data from January 2024 through July 2025 corresponding to the launch of newly approved PFA devices.

Procedure Codes Used:

CPT 93650-93657 Ablation for treatment of arrhythmia including Afib by PVI (93656)
ICD10 02583ZF Irreversible Electroporation Ablation (PFA)
ICD10 02583ZZ Catheter Ablation (Other; RF and Cryoablation)
Charge Data: Specific devices were also queried by billing description

In each dataset we compared the share of ablation procedures for each modality and/or device brand. Patient, provider, and facility characteristics were also compared.

In total, data on 243,693 patients from 378,016 claims was included in medical claims analysis and data from 53,760 visits were included in Hospital Charge Data analysis

Data Sources

IQVIA's open-sourced medical claims include unadjudicated institutional and professional medical claims data covering approximately 191 million patients with history from 2006. Data is anonymized and sourced from office management and clearinghouse switches

Data Elements

- Procedural and Diagnostic Codes
- Patient demographics
- Site of Service and Specialty Data

IQVIA's Hospital Charge Data Master (CDM) uses accounting data from ~350 acute care hospitals covering ~60M outpatient and ~4M inpatient visits annually. It includes anonymized patient level data providing insights into hospital stays including detailed drug and device utilization.

Data Elements

- Procedural and Diagnostic Codes
- Devices and Drugs Used
- Visit Details (Facility Type and Length of Stay)

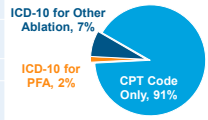
Medical Claims Results

Patient Counts by Code

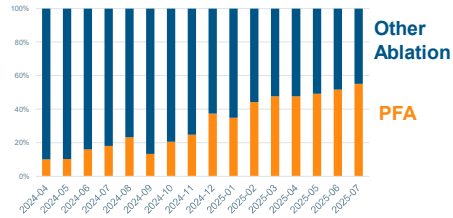
	All Ablation
02583ZF – PFA	4,135
02583ZZ – Other Ablation	18,240
93650 – AV Node Function; Complete Heart Block	12,081
93653 – Supraventricular Tachycardia	56,140
93654 – Ventricular Tachycardia	14,761
93655 – Additional Ablation of Distinct Arrhythmia	72,551
93656 – Afib with PVI	144,263
93657 – Add on for Afib after PVI	75,277

Mix of Codes in All Ablations

n = 243,693 unique patients



Patient Share of Ablation Procedures Based on ICD-10 Codes with Afib Primary Diagnosis



CPT codes describe the **type of arrhythmia** treated but **not the modality** of ablation and **are most of the counts** due to the **outpatient nature of the procedure**

ICD-10 code became available in April 2024; PFA reached **39% of all ablation procedures** and **55% of ablation for Afib** by July 2025

Patient, Facility and Treating Physician

PFA patients were **slightly younger**

		PFA	Other
Male Gender		56%	55%
Age Range	< 45	2%	2%
	45 – 64	15%	16%
	65 – 84	76%	70%
	85+	7%	12%

PFA had **fewer inpatient procedures** and **more treatments by cardiac EPs**

		PFA	Other
Inpatient Claims		79%	97%
Treating Specialty	Cardiac Electrophysiology	55%	30%
	Cardiovascular Disease	26%	24%
	Internal Medicine	9%	21%
	Hospitalist	5%	9%

Treated Patient Primary Diagnosis

	PFA	Other
PAROXYSMAL ATRIAL FIBRILLATION	43%	16%
OTHER PERSISTENT ATRIAL FIBRILLATION	39%	21%
TYPICAL ATRIAL FLUTTER	2%	9%
OTHER SUPRAVENTRICULAR TACHYCARDIA	1%	7%
UNSPECIFIED ATRIAL FLUTTER	1%	4%
VENTRICULAR TACHYCARDIA, UNSPECIFIED	1%	8%

Patients treated with **PFA** were **more likely to have Afib** while those **treated with other modalities** were **more likely** to have other arrhythmias such as **atrial flutter** or **supraventricular tachycardia**

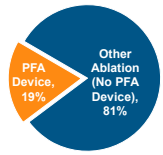
Hospital CDM Results

CDM Data allowed the **specific identification of PFA procedures** and identified **10,009 PFA** visits by **device name** vs. **only 719 by code**

	Visits
02583ZF – PFA Code	719
02583ZZ – Other Ablation Code	9,718
93656 – Afib with PVI Code (No ICD-10)	48,120
Ablation Code (ICD-10 or 93656) No PFA Device = OTHER ABLATION	43,751
Ablation Code (ICD-10 or 93656) and PFA Device = PFA DEVICE	10,009

Mix of Modalities in CDM Ablation Data

n = 53,760 unique visits

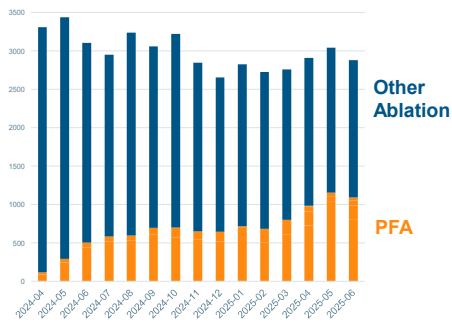


Visit and Stay Data

Hospital Visit Data	PFA	Other
% Teaching Hospital	53%	42%
% Inpatient Stays	8%	15%
Of Inpatient stays; Average Length of Stay	4.2 days	6.4 days

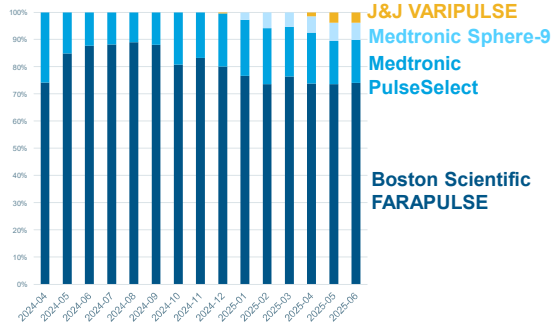
PFA treated patients were **less likely to have an inpatient stay** and had **shorter length of stay**

Visits by Ablation Type



PFA reached 37% of ablation visits

Share of PFA Visits by Device Brand



Farapulse is used in ~75% of PFA procedures

Limitations / Discussion

Limitations

- CDM is from a subset only of acute care hospitals
- Claims data does not have 100% coverage and excludes most fee for service Medicare patients

Discussion

- The rate of adoption of PFA is much faster than typical for new medical technologies
- Real-world data is consistent with reported data from device manufacturers and industry groups
- Both datasets can be used for future real-world studies to compare clinical and economic outcomes by type of ablation and device

Conclusions

- Adoption of PFA is rapid and accounts for ~40% of all ablation procedures and up to ~55% for Afib
- Both datasets can identify patients for real world studies; CDM is better able to resolve coding ambiguities
- Boston Scientific's Farapulse device is the most widely used in the United States
- PFA is primarily being used for Afib patients
- Patient demographics are similar by ablation type
- PFA results in shorter hospitalizations and a higher percentage of outpatient procedures