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Atrial Fibrillation/Atrial Flutter Report for Virginia, 2011

Backgrounder

- The most common chronic cardiac arrhythmia, atrial fibrillation (AFib) affects nearly 2.5 million Americans and increases risks for death, congestive heart failure and stroke.^{1,2}
- By age 40, men and women alike have a 1 in 4 lifetime risk of developing AFib, which makes it a higher risk than breast cancer for women or hip fracture for men or women.¹
- According to a recent study published by the American Heart Association, AFib patients entered hospitals more than twice as often as non-AFib patients and were three times more likely than non-AFib patients to have multiple hospitalizations.³
- Approximately three in 10 AFib patients are readmitted to the hospital within 30 days of their initial hospitalization.
- Total annual AFib costs are estimated at \$6.65 billion, with the largest share going to direct hospital inpatient costs (\$2.93 billion, or 44% of the total).⁴
- Control of rate and rhythm and the prevention of stroke are three nonmutually exclusive management approaches to AFib.⁵
- AFib is rising in prevalence and has demonstrated a significant cost burden. It is projected that 5.6 million Americans will develop AFib by the year 2050.²

INPATIENT/OUTPATIENT CASES

NUMBER OF INPATIENT ATRIAL FIBRILLATION/ATRIAL FLUTTER CASES

MARKET	Average Number of Cases per Hospital per Year		Total Number of Cases per Year	
	2008	2009	2008	2009
Norfolk	827.4	880.9	12,411	13,213
Richmond	1,082.9	1,172.8	10,829	11,728
Roanoke	2,211.5	2,214.0	4,423	4,428
Virginia	795.6	799.5	65,236	66,362
NATION	599.0	603.0	2,934,605	2,971,608

NUMBER OF OUTPATIENT ATRIAL FIBRILLATION/ATRIAL FLUTTER CASES

MARKET	Average Number of Cases per Hospital per Year		Total Number of Cases per Year	
	2008	2009	2008	2009
Norfolk	1,867.6	1,958.6	26,146	27,420
Richmond	2,701.1	2,803.2	27,011	28,032
Roanoke	2,873.5	4,829.5	5,747	9,659
Virginia	2,036.7	2,139.2	162,933	173,274
NATION	1,692.9	1,762.4	8,110,595	8,522,768

IP, OP AFIB/AFLUTTER CASE COUNTS IN VA TOP NATIONAL MEANS

Hospitals in all four profiled Virginia markets reported average inpatient and outpatient case counts of atrial fibrillation/atrial flutter that surpassed the corresponding national means in 2009. Roanoke hospitals treated, on average, the largest numbers of such cases in either setting among the markets profiled, with 2,214.0 inpatient and 4,829.5 outpatient cases. However, hospitals in Norfolk treated the largest volume of atrial fibrillation/atrial flutter inpatient cases of the local Virginia markets, at 13,213.

Data source: SDI © 2011



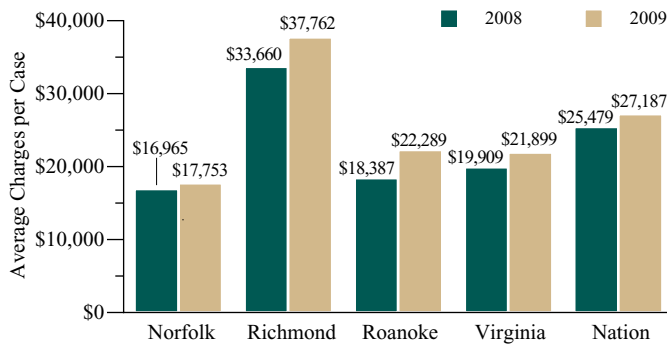
AVERAGE LENGTH OF STAY/CHARGES

IP CHARGES ACROSS VIRGINIA SWELL FOR AFIB AND ABLATION

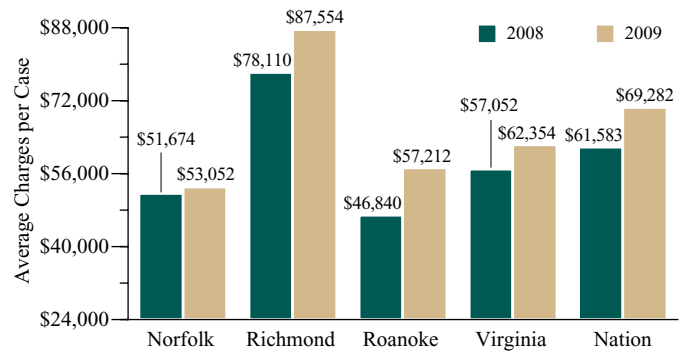
Across the Commonwealth of Virginia, the average inpatient charges per atrial fibrillation/atrial flutter or catheter ablation case grew between 2008 and 2009.

AVERAGE LENGTH OF STAY PER INPATIENT CASE (DAYS)				
MARKET	Atrial Fibrillation/Atrial Flutter		Catheter Ablation	
	2008	2009	2008	2009
Norfolk	3.9	4.4	—	3.5
Richmond	4.1	3.7	3.2	3.8
Roanoke	4.0	4.0	6.1	5.7
Virginia	3.5	3.4	4.8	4.2
NATION	3.4	3.4	4.1	4.1

AVERAGE INPATIENT CHARGES PER ATRIAL FIBRILLATION/ATRIAL FLUTTER CASE*



AVERAGE INPATIENT CHARGES PER CATHETER ABLATION CASE*



CONCOMITANT DIAGNOSES/PROCEDURES

LARGE SHARES OF VA PATIENTS HAVE CONCOMITANT DXs

More than a quarter (25.2%) of Virginia patients with a primary diagnosis of atrial fibrillation/atrial flutter were also diagnosed with hypertension (ICD-9 code 401.9) in 2009, and nearly half (47.8%) of such Medicare patients were diagnosed as concomitantly hypertensive. High lipid levels were also common in these Virginia populations, with notable shares of atrial fibrillation/atrial flutter patients overall (16.2%) and those covered by Medicare (30.9%) also diagnosed with hyperlipidemia.

MOST COMMON CONCOMITANT DIAGNOSES FOR PATIENTS WITH A PRIMARY DIAGNOSIS OF ATRIAL FIBRILLATION/ATRIAL FLUTTER, BY ICD-9 CODE, VIRGINIA, 2009

ICD-9 Code	Description	Overall	Medicare
401.9	Unspecified Essential Hypertension	25.2%	47.8%
272.4	Other and Unspecified Hyperlipidemia	16.2	30.9
428.0	Congestive Heart Failure	12.2	24.4
250.00	Type 2 or Unspecified Type Diabetes Mellitus	9.5	19.1
414.01	Coronary Atherosclerosis of Native Coronary Artery	8.5	18.3
530.81	Esophageal Reflux	7.3	13.5
244.9	Unspecified Hypothyroidism	6.5	13.8

MOST COMMON CONCOMITANT PROCEDURES FOR PATIENTS WITH A PRIMARY DIAGNOSIS OF ATRIAL FIBRILLATION/ATRIAL FLUTTER, BY ICD-9 CODE, VIRGINIA, 2009

ICD-9 Code	Description	Overall	Medicare
88.72	Diagnostic Ultrasound of Heart	14.6%	13.5%
99.62	Other Electric Countershock of Heart	8.3	7.5
37.26	Cardiac Electrophysiologic Stimulation and Recording Studies	4.4	4.0
37.27	Cardiac Mapping	4.3	4.1
88.56	Coronary Arteriography Using Two Catheters	4.2	3.2

Data source: SDI © 2011

* Data reflect the average amounts charged, not the amounts paid.
NOTE: Some ALOS data were unavailable for the Norfolk market.



READMISSION/PHARMACOTHERAPY

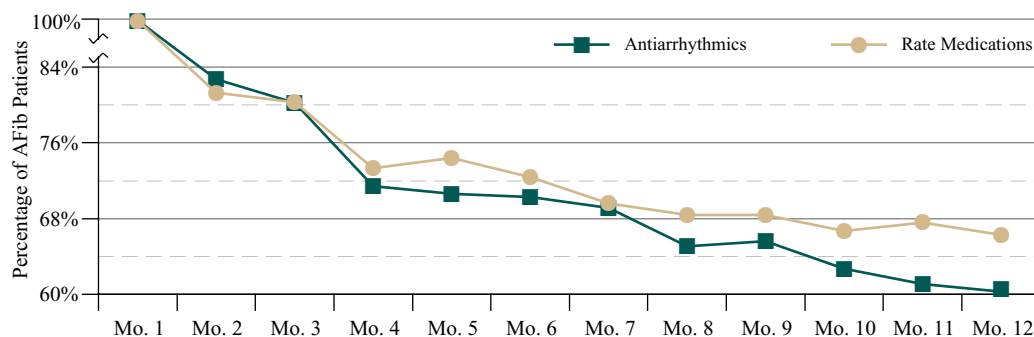
HOSPITAL READMISSION RATES FOR PATIENTS WITH ATRIAL FIBRILLATION OR ATRIAL FLUTTER, 2008–2010*

MARKET	Atrial Fibrillation		Atrial Flutter	
	3-Day Readmissions	30-Day Readmissions	3-Day Readmissions	30-Day Readmissions
Virginia	16.1%	30.3%	10.9%	24.2%
Midatlantic Region	15.6	31.0	10.0	23.6
NATION	16.0%	30.4%	11.6%	23.3%

PERCENTAGE OF ATRIAL FIBRILLATION AND ATRIAL FLUTTER PATIENTS USING VARIOUS THERAPIES, 2010

MARKET	Atrial Fibrillation			Atrial Flutter		
	Antiarrhythmics	Anticoagulants	Rate Medications	Antiarrhythmics	Anticoagulants	Rate Medications
Norfolk	37.5%	57.4%	73.2%	40.7%	60.1%	70.2%
Richmond	41.2	55.8	73.3	42.6	57.4	69.3
Roanoke	34.5	65.2	68.8	—	—	—
Virginia	35.5	57.5	73.8	37.3	57.4	72.9
NATION	39.0%	60.3%	74.9%	41.4%	59.4%	75.1%

PERSISTENCY: ATRIAL FIBRILLATION PATIENTS, VIRGINIA, 2010



AVERAGE ANNUAL PAYMENTS PER ATRIAL FIBRILLATION AND ATRIAL FLUTTER PATIENT USING VARIOUS THERAPIES, 2010**

MARKET	Atrial Fibrillation			Atrial Flutter		
	Antiarrhythmics	Anticoagulants	Rate Medications	Antiarrhythmics	Anticoagulants	Rate Medications
Norfolk	\$272	\$103	\$236	\$329	\$102	\$249
Richmond	219	114	226	379	106	231
Roanoke	174	110	210	—	—	—
Virginia	239	109	230	342	103	240
NATION	\$194	\$116	\$213	\$271	\$110	\$216

Data source: SDI © 2011

* Figures reflect the percentages of atrial fibrillation or atrial flutter patients who were readmitted to an inpatient facility in the three-year period between 2008 and 2010. These percentages include all patients regardless of treatment. Readmissions are not necessarily due to atrial fibrillation or atrial flutter.

** Figures reflect the per-patient yearly payments for atrial fibrillation and atrial flutter patients receiving a particular type of therapy. Prescription costs are based on the total amount paid for each prescription (insurance + patient amounts paid).

NOTE: “Persistence” measures whether patients maintain their prescribed therapy. It is calculated by identifying patients who filled a prescription for the reported drug class in the four months prior to the reported year, and then tracking prescription fills for those same patients in each of the months in the current reported year. If patients fill a prescription in a month, they are reported among the patients who have continued or restarted on therapy. Continued means that the patient has filled the drug group in each of the preceding months. Restarted means that the patient did not fill in one or more of the preceding months. Continuing and restarting patients are reported together. All patients tracked are “New-to-Brand,” meaning they have not filled a prescription for their cohort product during the six months prior to initiation of therapy on that product.

NOTE: Atrial flutter pharmacotherapy data were unavailable for the Roanoke market.

30-DAY READMISSION RATES ARE OVER 30% FOR VA AFIBs

In Virginia, a substantial 30.3% of atrial fibrillation patients who were treated in the hospital inpatient setting between 2008 and 2010 were readmitted within 30 days of their discharge. Moreover, nearly one in every six (16.1%) such Virginia patients were readmitted within just three days of being discharged.

VA ANTIARRHYTHMIC USE TRAILS U.S. AVG.

Atrial fibrillation patients in three of the four featured Virginia markets (Richmond excepted) were less likely than their national counterparts to be dispensed antiarrhythmics in 2010. In Richmond, despite higher-than-average antiarrhythmic use (41.2%) among atrial fibrillation patients, such patients were still significantly more likely to fill rate medication prescriptions (73.3%).

ANTIARRHYTHMIC COSTS ARE LOW IN TWO LOCAL VA AREAS

In Richmond and Roanoke alike in 2010, atrial fibrillation patients paid less on an annual basis for antiarrhythmic therapy (\$219 and \$174, respectively) than similar patients who filled rate medications (\$226 and \$210, respectively).



**PERCENTAGE OF ATRIAL FIBRILLATION AND ATRIAL FLUTTER PATIENTS
USING VARIOUS THERAPIES, BY PRESCRIBING SPECIALIST, 2010**

ANTIARRHYTHMICS	Atrial Fibrillation				Atrial Flutter			
	Electrophysiology	Cardiology	Primary Care*	Internal Medicine	Electrophysiology	Cardiology	Primary Care*	Internal Medicine
Norfolk	46.9%	39.5%	25.1%	24.1%	48.5%	39.9%	24.8%	26.7%
Richmond	52.3	42.2	23.4	33.0	—	51.9	—	21.7
Roanoke	38.2	38.9	17.7	29.8	—	—	—	—
Virginia	45.7	37.8	22.4	24.3	50.4	39.2	19.9	22.5
NATION	49.9%	39.1%	26.8%	28.7%	50.9%	41.0%	25.3%	28.5%
ANTICOAGULANTS								
Norfolk	33.3%	46.6%	47.2%	49.5%	33.3%	49.7%	43.6%	52.5%
Richmond	27.0	43.7	48.6	49.0	—	45.0	46.3	45.0
Roanoke	61.8	48.5	61.1	56.2	—	—	—	—
Virginia	30.3	45.4	50.6	51.0	31.4	48.7	47.0	48.1
NATION	30.2%	47.9%	52.9%	53.8%	31.5%	49.0%	50.2%	51.1%
RATE MEDICATIONS								
Norfolk	51.7%	59.8%	68.2%	68.9%	51.5%	57.8%	67.6%	66.1%
Richmond	52.3	64.5	65.7	68.0	—	60.3	68.5	65.0
Roanoke	55.9	62.9	62.9	62.0	—	—	—	—
Virginia	56.3	63.6	66.4	68.7	56.9	63.2	67.3	66.8
NATION	56.9%	65.3%	67.6%	68.7%	57.0%	64.9%	66.6%	68.1%

Data source: SDI © 2011

* “Primary care” consists of both general and family practitioners.

NOTE: Atrial flutter pharmacotherapy data were unavailable for the Roanoke market. Some atrial flutter pharmacotherapy data were unavailable for the Richmond market.

Notes

Throughout this Report, “cases” refer to events treated in the hospital inpatient setting. Patients with atrial fibrillation or atrial flutter may have multiple cases in a given year. Inpatient/outpatient case counts, average length of stay (ALOS) and charge data include patients with a diagnosis of atrial fibrillation/atrial flutter (427.3). Readmission rates, nonadherence and pharmacotherapy data include patients with a diagnosis of either atrial fibrillation (427.31) or atrial flutter (427.32). Catheter ablation data include patients with a procedure code of 37.34.

The Norfolk MSA includes Virginia Beach and Newport News, and the Richmond MSA includes Petersburg.

- ¹ Lloyd-Jones, D. M., Wang, T. J., Leip E. P., et al. (2004). Lifetime Risk for Development of Atrial Fibrillation: The Framingham Heart Study. *Circulation*, 110, 1042–1046.
- ² Go, A. S., Hylek, E. M., Phillips, K. A., et al. (2001). Prevalence of Diagnosed Atrial Fibrillation in Adults: National Implications for Rhythm Management and Stroke Prevention: The Anticoagulation and Risk Factors In Atrial Fibrillation (ATRIA) Study. *JAMA*, 285, 2370–2375.
- ³ Johnston, S. S., Chu, B.-C., Dalal, M. R., Schulman, K. L., (2011). *Circulation: Cardiovascular Quality and Outcomes*. American Heart Association.
- ⁴ Coyne, K. S., Paramore, C., Grandy, S., Mercader, M., Reynolds, M. R. & Zimetbaum P. (2006). Assessing the Direct Costs of Treating Nonvalvular Atrial Fibrillation in the United States. *Value Health*, 9, 348–356.
- ⁵ Fuster V, Ryden LE, Cannom DS, et al. ACC/AHA/ESC 2006 Guidelines for the Management of Patients with Atrial Fibrillation: a report of the American College of Cardiology/American Heart Association Task Force on Practice Guidelines and the European Society of Cardiology Committee for Practice Guidelines (Writing Committee to Revise the 2001 Guidelines for the Management of Patients With Atrial Fibrillation): developed in collaboration with the European Heart Rhythm Association and the Heart Rhythm Society.

Methodology

Case counts, ALOS and charge data are derived from SDI’s Hospital Procedure/Diagnosis (HPD) Database. This database contains an extensive set of hospital inpatient and outpatient discharge records, including actual diagnoses and procedures data for about 75% of all discharges nationwide (including 100% of Medicare-reimbursed discharges).

The HPD inpatient database reports the numbers of procedures performed on patients discharged from a hospital. Most states report at least nine diagnostic and six procedure codes from each discharge record.

SDI uses Medicare procedure counts and additional hospital-level information to estimate procedure counts for the remaining 25% of discharges—the non-Medicare hospital discharge information in non-reporting states. The hospital inpatient data in this Report are current as of end-of-year 2009.

SDI generated readmission, nonadherence and pharmacotherapy data for this Report out of health care professional and institutional insurance claims, representing approximately 900,000 unique patients nationally in 2010 with an atrial fibrillation (427.31) or atrial flutter

(427.32) diagnosis. Data from physicians of all specialties and from all hospital types are included. Prescription activity covers cash and insurance claims from retail pharmacies.

Data Integrity

Data arriving into SDI are put through a rigorous process to ensure that data elements match to valid references, such as product codes, ICD-9 (diagnosis) and CPT-4 (procedure) codes, and provider and facility data.

Claims undergo a careful de-duplication process to ensure that when multiple, voided or adjusted claims are assigned to a patient encounter, they are applied to the database, but only for a single, unique patient.

Through its patient encryption methods, SDI creates a unique, random numerical identifier for every patient, and then strips away all patient-specific health information that is protected under the Health Insurance Portability and Accountability Act (HIPAA). The identifier allows SDI to track disease-specific diagnosis and procedure activity across the various settings where patient care is provided.