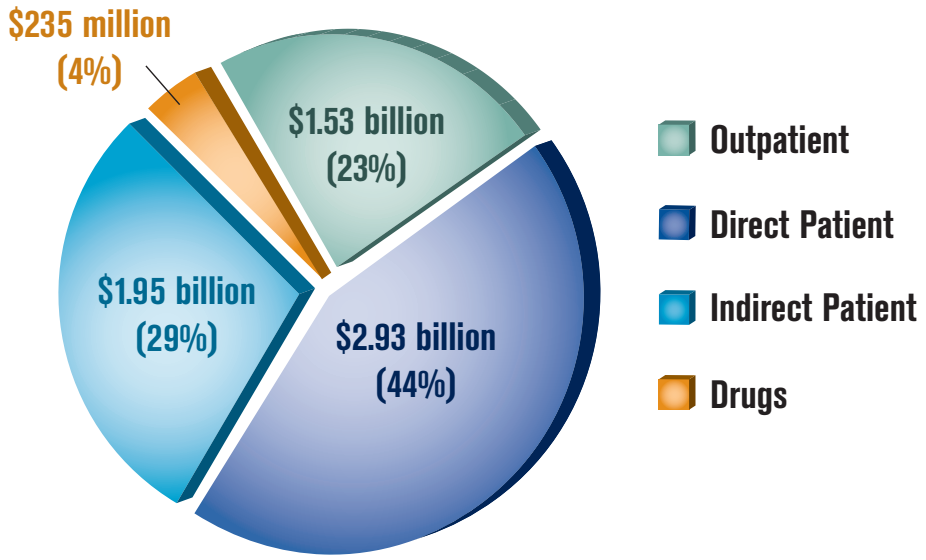
Atrial Fibrillation: A Prevalent and Costly Disease

- Atrial fibrillation (AF) affects more than 2 million Americans, and its prevalence increases significantly with age.[1,2]
- AF substantially increases utilization rates for inpatient, emergency, and other medical services.[3]
- Per-patient medical costs have been found to be 5-fold higher in patients with AF than in those without the disease.[3]

Figure 1. Distribution of $6.65 Billion (2005 U.S. dollars) in Annual Atrial Fibrillation Treatment Costs

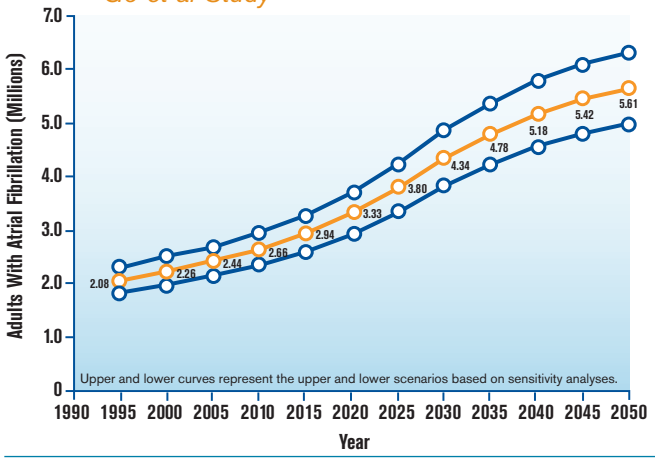
Adapted from: Coyne et al, 2006.[4]



Epidemiology

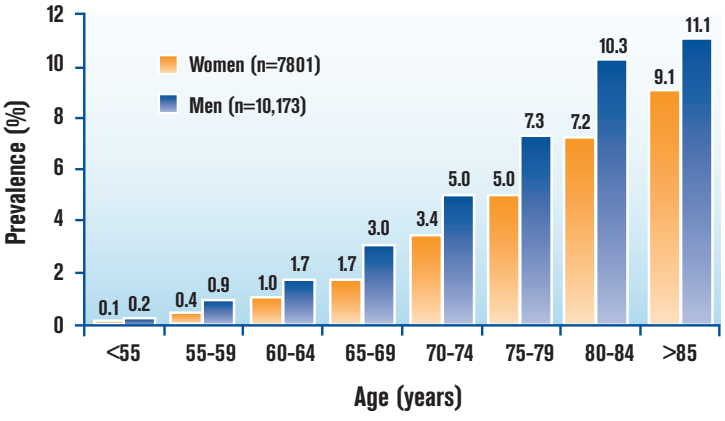
AF is the most common chronic cardiac arrhythmia.[2] It is estimated that more than 2.3 million people in the United States have AF, amounting to about 1% of the adult population.[1,2] Furthermore, it has been projected that the number of persons with AF will increase to 5.6 million by the year 2050 (Figure 2).[1]

Figure 2. Projected Increase in Atrial Fibrillation Prevalence: *Go et al Study*



AF is more common in men than women, and its prevalence increases significantly with age (Figure 3).[1] The lifetime risk of developing AF is 1 in 4 for both men and women aged 40 years and older.[2] In fact, the remaining risk among persons free of disease in middle age is higher for AF (25% for a 40-year-old man or woman) than congestive heart failure (20% for a 40-year-old man or woman) or stroke (17% for a 55-year old man; 20% for a 55-year old woman).[2,5]

Figure 3. Atrial Fibrillation Prevalence by Age and Gender: *Kaiser Permanente ATRIA Study*



In addition, persons with AF often have underlying cardiac disease. In the ALFA study, conducted in France, underlying structural heart disease was present in more than 70% of patients. The comorbid conditions that were seen most frequently are shown in Figure 4.[6]

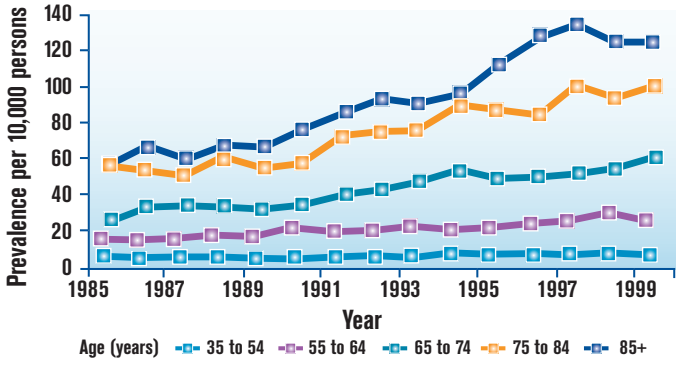
Figure 4. Most Frequent Comorbid Cardiac Conditions in Patients with Atrial Fibrillation: *ALFA Study*

- Hypertensive heart disease: ~21%
- Valvular heart disease: ~19%
- Coronary artery disease: ~17%
- Dilated Cardiomyopathy: ~9%

Resource Utilization

AF has been shown to be responsible for increasing health care utilization. According to data from the National Hospital Discharge Survey, hospitalizations for AF among adults 35 years and older increased substantially (2- to 3-fold) from 1985 to 1999 (Figure 5). Regardless of the year, the frequency of AF hospitalization was higher with increasing age.[7]

Figure 5. Increasing Hospitalizations in the United States When Atrial Fibrillation Is the Principal Diagnosis: *National Hospital Discharge Survey*



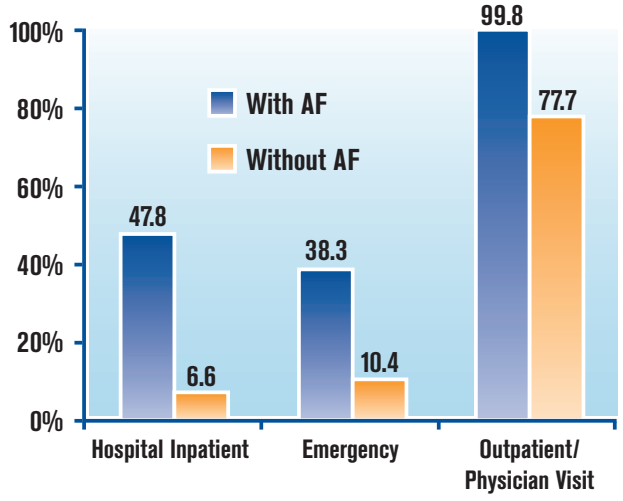
Statistics on AF-attributable annual resource utilization are available from federally funded databases and are shown in Figure 6.[4]

Figure 6. Atrial Fibrillation–Attributable Utilization (Annual) of Key Health Care Resources

- 350,000 hospitalizations
- 5.0 million office visits
- 276,000 emergency department visits
- 234,000 hospital outpatient department visits

Utilization of hospital inpatient, emergency, and outpatient/physician visit services has been found to be significantly higher for patients with AF than those without the disease (Figure 7).[3]

Figure 7. Medical Service Utilization in Persons With (n=3,944) and Without (n=3,944) Atrial Fibrillation: *Wu et al Study*



Economic Burden

The dollar costs of AF are substantial: total annual AF-attributable costs were estimated at $6.65 billion (2005 U.S. dollars), distributed as follows:

- **Direct inpatient: $2.93 billion**
- **Indirect inpatient: $1.95 billion**
- **Outpatient: $1.53 billion**
- **Pharmacy: $235 million**

Of the $2.93 billion spent on direct inpatient costs, the average episode cost for AF was $8,412; when catheter ablation or cardiac mapping was done, costs were substantially higher (Figure 8).[4]

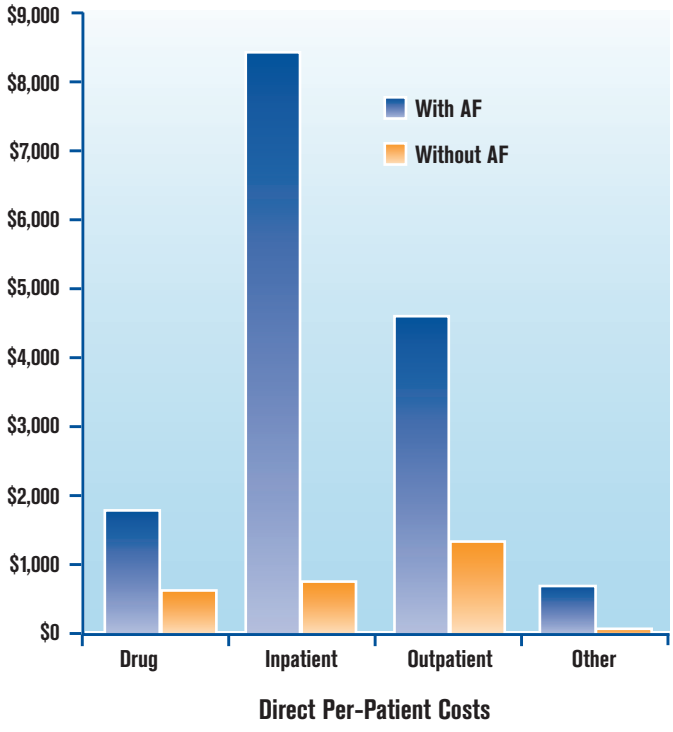
Figure 8. Number of Atrial Fibrillation Hospitalizations and Average Costs per Stay: *Coyne et al Study*

Principal Discharge Diagnosis	Sample (N)	National Estimate	Average Costs (Mean±SE, Year 2005 $)
AF	69,678	348,131	8,412 ± 230
AF and Catheter Ablation or Cardiac Mapping	1,676	8,526	23,080 ± 2,613
AF and Atrial Cardioversion	4,744	23,851	7,873 ± 473

Wu et al compared health care costs between patients with and without AF.[3] They found that the annual direct AF per-patient cost (including medical, drug, and disability claims), at $15,553, was $12,761 greater than the per-patient cost in patients without AF ($2,792), which amounted to about a 5-fold difference. Breaking out this total into the categories of prescription drugs and hospital inpatient, outpatient, and other (eg, laboratory) costs, AF patients had higher

costs than non-AF patients in each category, with a 10-fold difference for hospital inpatient costs (Figure 9).

Figure 9. Average Annual Cost Comparison Between Patients With and Without Atrial Fibrillation:
Wu et al Study



Conclusion

AF, the most common chronic arrhythmia, affects more than 2 million Americans, and its prevalence is rising. Furthermore, the economic impact of AF is significant, both in terms of service utilization and costs. The adverse trend toward hospitalization for AF among an aging population, combined with the prevalence of the disease, sets the stage for an enormous economic burden on the health care system. ■

Reference List

1. Go AS, Hylek EM, Phillips KA, et al. 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*. 2001;285:2370-2375. **2.** Lloyd-Jones DM, Wang TJ, Leip EP, et al. Lifetime risk for development of atrial fibrillation: the Framingham Heart Study. *Circulation*. 2004;110:1042-1046. **3.** Wu EQ, Birnbaum HG, Mareva M, et al. Economic burden and co-morbidities of atrial fibrillation in a privately insured population. *Current Medical Research and Opinion*. 2005; 21(10):1693-1699. **4.** Coyne KS, Paramore C, Grandy S, Mercader M, Reynolds MR, Zimetbaum P. Assessing the direct costs of treating nonvalvular atrial fibrillation in the United States. *Value Health*. 2006;9:348–356. **5.** Rosamond W, Flegal K, Furie K, et al. Heart disease and stroke statistics–2008 update: a report from the American Heart Association Statistics Committee and Stroke Statistics Subcommittee. Circulation. 2008;117:e25-e146. **6.** Lévy S, Maarek M, Coumel P, et al. Characterization of different subsets of atrial fibrillation in general practice in France: the ALFA study. *Circulation*. 1999;99:3028-3035. **7.** Wattigney WA, Mensah GA, Croft JB. Increasing trends in hospitalization for atrial fibrillation in the United States, 1985 through 1999: implications for primary prevention. *Circulation*. 2003;108:711-716.

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