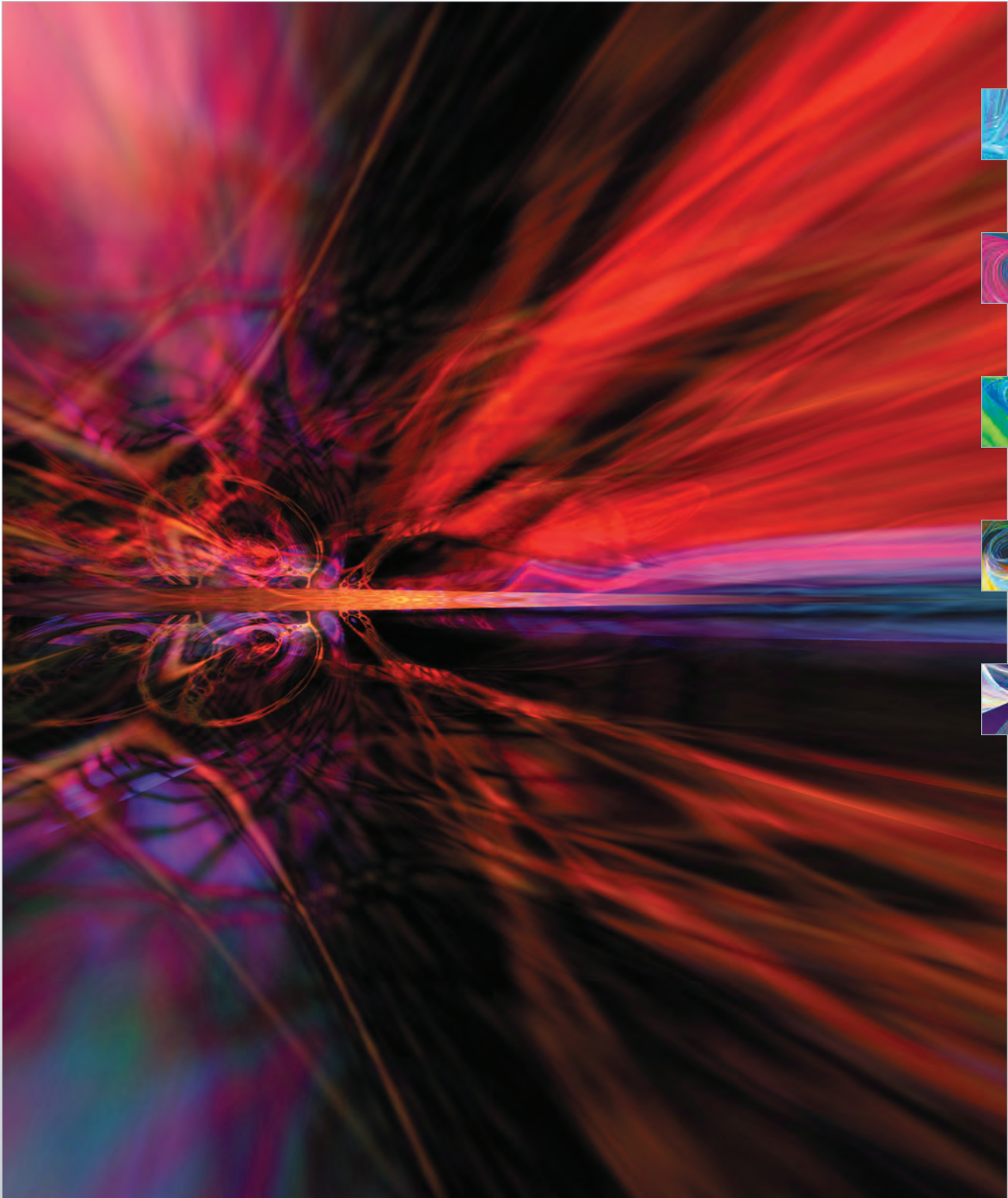


# The Silver Book<sup>®</sup>: **Atrial Fibrillation (AFib)**



## Skyrocketing Prevalence

Atrial fibrillation (AFib) is the most common heart arrhythmia in the U.S. Often going undiagnosed, AFib prevalence estimates vary between...

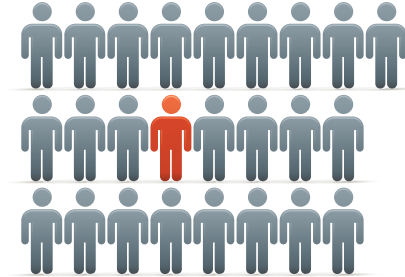


**2.7M - 6.1M**  
AMERICANS

(Go 2001; Miyasaka 2006)

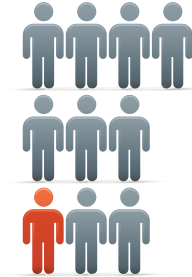
### AGING POPULATION

Age is a major risk factor and prevalence increases significantly as we grow older.



At age 60+,  
**1 in 25**

Americans have AFib

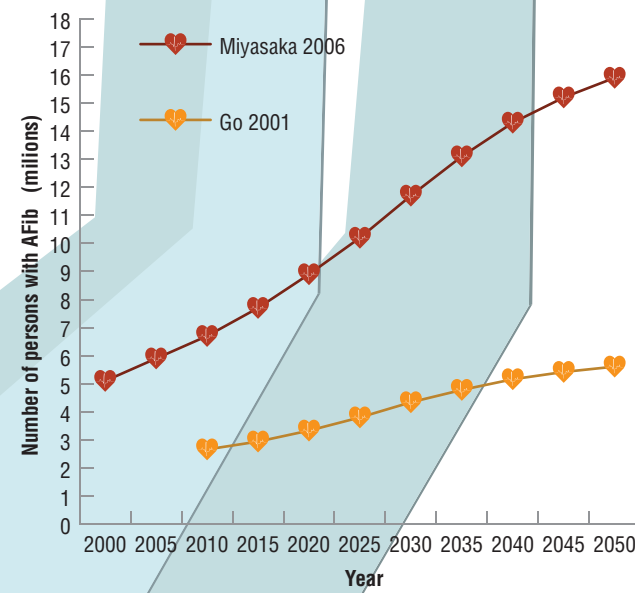


At age 80+, this increases to nearly  
**1 in 10**

Americans have AFib (Go 2001)

As our population continues to age, prevalence is going to skyrocket—  
**5.6 – 15.9 MILLION**  
ADULTS WITH AFIB  
(Go 2001; Miyasaka 2006)

PROJECTED INCREASES IN THE PREVALENCE OF AFIB  
(Go 2001; Miyasaka 2006)



## An Expensive Disease

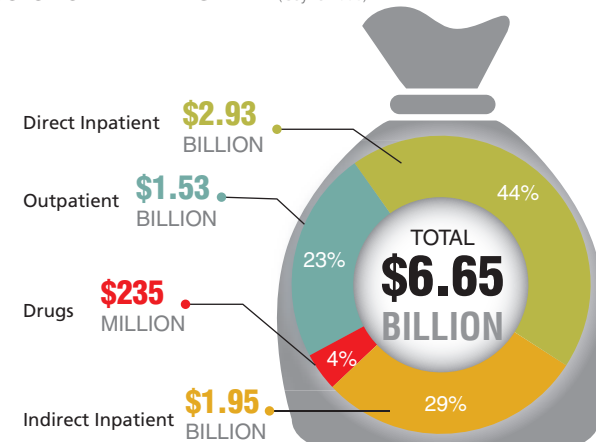
AFib is a major economic burden for the U.S. with at least

**\$6.65 billion**

IN HEALTH CARE COSTS ATTRIBUTABLE TO THE DISEASE EACH YEAR. (Coyné 2006)

The \$6.65 billion a year estimate for direct health care costs from AFib may in fact be extremely low. One study estimates that Medicare alone pays \$15.7 billion per year to treat newly diagnosed AFib patients. (Lee 2008)

DISTRIBUTION OF INPATIENT & SELECTED OUTPATIENT COSTS FOR TREATING AFIB (Coyné 2006)



- The per-patient direct annual medical costs for individuals with AFib are 5-fold higher than for those without the disease. (Wu 2005)
- The estimates of per patient cost of managing AFib range from \$10,000 to \$14,200. (Wolowacz 2011)
- Hospitalizations are the major cost drivers in AFib—representing 44% of total annual direct costs; which total to an estimated \$2.93 billion a year. (Coyné 2006)
- Inpatient care and interventional procedures represent the largest cost component in AFib and account for 50% to 70% of total costs. (Wolowacz 2011)

## Complications & Death

**The most serious and debilitating complication of AFib is stroke**—the risk of having a stroke increases 5-fold in individuals with AFib. Individuals with AFib also have more severe and recurrent strokes than those without the disease. (Wolf 1991; Dulli 2003)

**50%** Stroke is very disabling and individuals recovering from a stroke who also have AFib, have a **higher risk of remaining disabled or handicapped** compared to stroke patients without AFib. (Lamassa 2011)

**AFib can also lead to heart failure.** Within the first year of diagnosis, AFib patients have a 36.7% chance of experiencing heart failure—compared to 10.4% in those without AFib. (Lee 2008)

Individuals with AFib have **2X RISK OF DEMENTIA.** (Ott 1997)

Not surprisingly, individuals with AFib report **substantially worse quality of life** compared to those without the disease. (Dorian 2000).



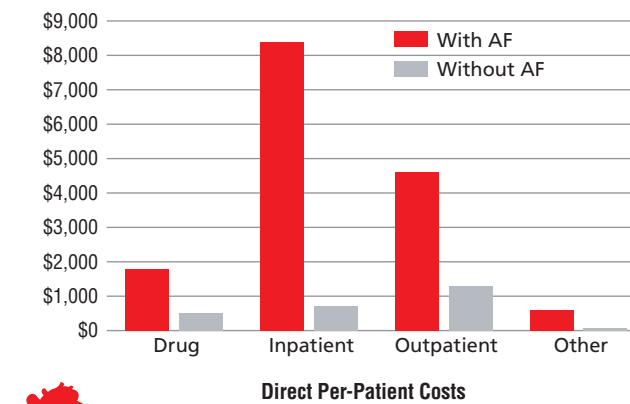
Most importantly, AFib doubles the person's risk of death and is... **THE CAUSE OF NEARLY 100,000 DEATHS** IN THE U.S. EACH YEAR. (Kannel, 1998; Benjamin 1998)

- Outpatient and ambulatory treatment costs for AFib are also significant—office visits account for 66% of costs, emergency department visits for 17%, and hospital outpatient department visits for 16%. (Coyné 2006)
- Adjusted total Medicare spending in one year was found to be 8.6- to 22.6-fold greater in men and 9.8- to 11.2-fold greater in women with AFib compared with a matched group without AFib. (Wolf 1998)

### The Cost of Stroke

- The cost of stroke in AFib individuals is dominated by acute hospitalization (46%), inpatient rehabilitation (13%), hospital readmissions (12%), and nursing care (10%). (Bruggenjürgen 2007)
- The annual cost of stroke in Medicare patients with AFib is estimated at \$8 billion. (Caro 2004)
- Stroke in Medicare patients with AFib who were not treated with anticoagulants, cost Medicare \$4.8 billion each year in direct costs. Those who had strokes despite prophylactic treatment cost an additional \$3.1 billion. (Caro 2004)
- The cost of caring for stroke associated with AFib is around 33% higher than for a non-AFib stroke. (Bruggenjürgen 2007)

AVERAGE ANNUAL COST COMPARISON BETWEEN PATIENTS WITH & WITHOUT ATRIAL FIBRILLATION (Wu 2005)



### The Cost of Bleeding

- The annual all-cause health care costs for patients with an intracranial hemorrhage and major gastrointestinal bleeds are 64.4% and 49% higher, respectively, compared with patients with no bleeding events. (Ghate 2011)
- Mean annual all-cause health care costs were \$41,903 per patient with an intracranial hemorrhage, \$40,586 per patient with a major gastrointestinal (GI) bleed, and \$24,129 per patient with no bleeding events. (Ghate 2011)
- Hospital care is the major cost driver with bleeding complications and the average hospitalization cost per patient was \$15,988. (Fanikos 2005)

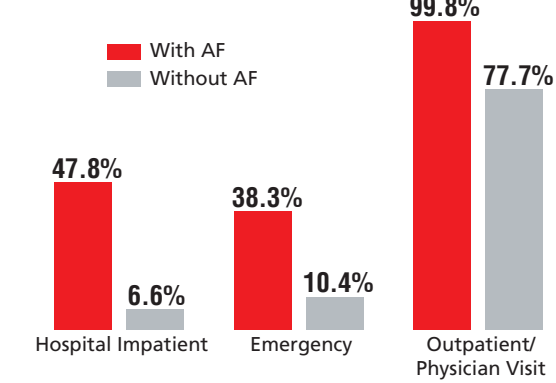
## Major Resource Utilization

AFib substantially increases resource utilization—particularly inpatient services, emergency room visits, and hospitalizations. (Wu 2005)

EACH YEAR AFIB LEADS TO AROUND: (Coyné 2006)

<b>350,000</b>	hospitalizations
<b>5 million</b>	office visits
<b>276,000</b>	emergency department visits
<b>234,000</b>	hospital outpatient department visits

MEDICAL SERVICE UTILIZATION IN PERSONS WITH AND WITHOUT ATRIAL FIBRILLATION (Wu 2005)



Prevention of stroke in AFib can also lead to bleeding events.

**6 Days**  
THE AVERAGE LENGTH OF STAY FOR MAJOR BLEEDING COMPLICATIONS (Fanikos 2005)

### The Value of Innovation

## Prevention of AFib Related Strokes

- Studies show that anticoagulants are underused in AFib patients despite being cost-effective and proven to save lives. The rate of use in patients who should be receiving treatment has been found to be below 60%. (Ogilvie 2010)
- Adjusted-dose warfarin reduces stroke risk in AFib patients by 60%. Antiplatelet agents reduce stroke risk by 20%. (Hart 2007)
- Anticoagulants can reduce the risk of recurrent stroke by 2.1-fold, and the risk for recurrent severe stroke by 2.4-fold. (Penado 2003)
- If half of all AFib patients receiving no anticoagulation instead received optimal anticoagulation, 19,380 strokes could be prevented each year at a savings of around \$1.1 billion in direct costs. If 50% of those currently receiving warfarin therapy were *optimally* anticoagulated, 9,582 additional would be prevented at a savings of \$1.3 billion. (Caro 2004)
- Over a two-year period warfarin use was associated with savings in medical costs averaging \$9,836 per patient per year. (Meraldi 2011).
- New oral anticoagulants as a whole result in a lower risk of stroke, systemic embolism, hemorrhagic stroke, and all-cause mortality compared to warfarin—with stroke reduction increases as high as 21%. Major and intracranial bleeding are also lower with the new oral anticoagulants—as high as 31% reduction in major bleeding. (Lip 2012; Granger, 2011; Patel, 2011; Connolly 2009)
- Institution of a practice guideline for the management of patients presenting in the emergency department with a primary diagnosis of AFib, was associated with a decreased hospital admission (from 74% to 38%). (Zimetbaum 2003)
- The large decrease in resource utilization seen with the institution of a practice guideline for patients presenting in the emergency department with a primary diagnosis of AFib, translated to an average decrease in 30-day total direct health care costs of ~\$1,400 per patient. (Zimetbaum 2003)

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