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BEYOND THE BURDEN: THE IMPACT OF ATRIAL FIBRILLATION IN ASIA PACIFIC

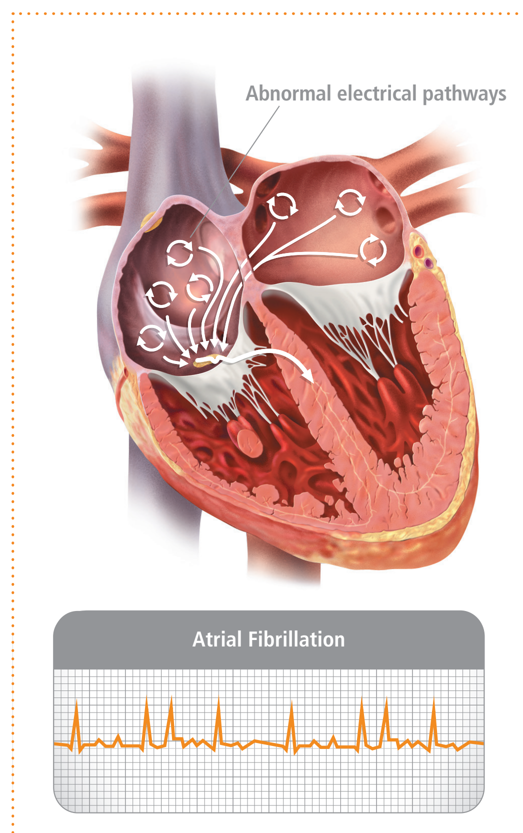
2019 Report

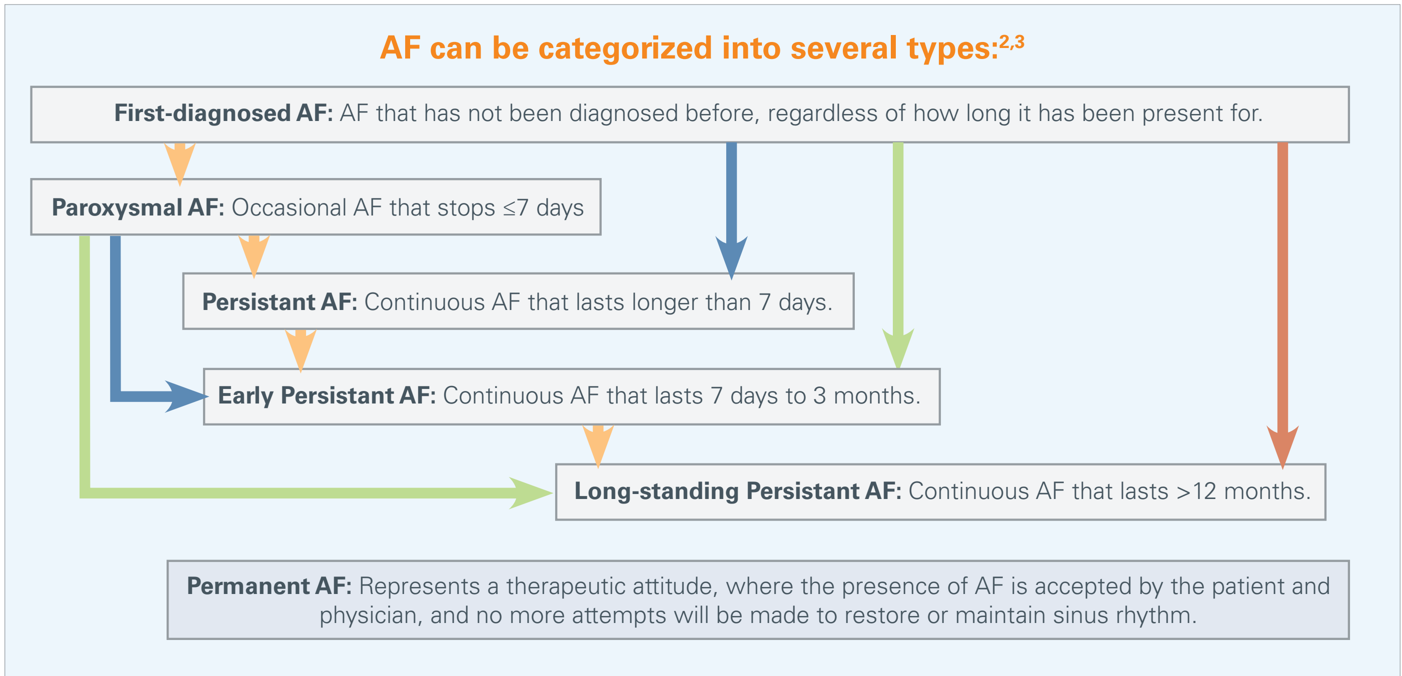
Atrial Fibrillation is fast becoming one of the world's most significant health issues that places a critical burden on healthcare systems

ATRIAL FIBRILLATION

What is Atrial Fibrillation and why is it important?

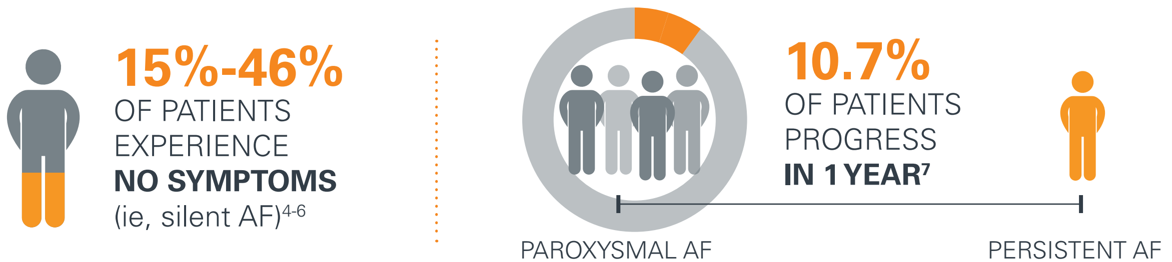
- Atrial fibrillation (AF) is **characterized by an irregular and often fast heartbeat** that results in uncoordinated contraction of the top 2 chambers of the heart (i.e., atria).[1]





- Patients may have episodes of AF that fall into one or more of the above categories; patients are categorized based on their most frequent pattern of AF.[2,3]

- Early detection and diagnosis of AF may help improve patient outcomes, since a long history and an extended duration of AF have been associated with recurrence and may worsen cardiac function.[2]

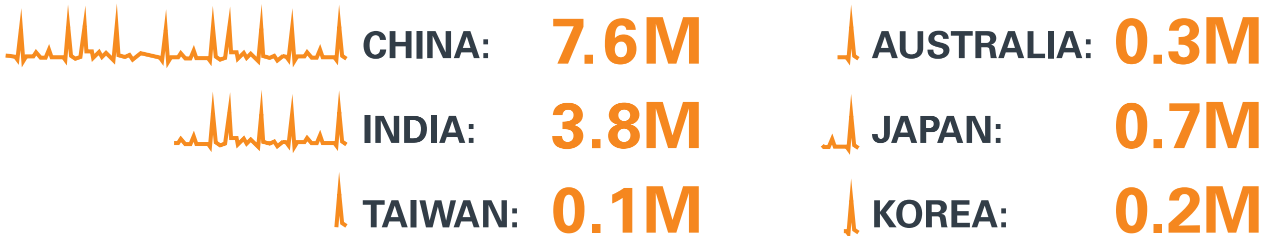


Patients with AF have an increased risk for life-threatening complications and other diseases:[8-13]

- AF worsens quality of life for patients, which can be burdensome to caregivers.[4,6,14,15]
- AF increasingly places a **critical financial burden** on the healthcare system with a **1.8 to 5.6x increase in healthcare costs** every 10 years across APAC.[16-20]

EPIDEMIOLOGY OF AF

AF is a new millennium epidemic that affects over 16M people in APAC, primarily the middle-aged and the elderly.[21]



CHINA:	7.6M	AUSTRALIA:	0.3M
INDIA:	3.8M	JAPAN:	0.7M
TAIWAN:	0.1M	KOREA:	0.2M

How common is AF?

AF is the most common type of cardiac arrhythmia.
Within APAC, the percentage of affected population varies from 0.28% in India to 1.48% in Australia.[21]
However, AF is progressing rapidly across all APAC countries, affecting over

1.4M NEW PEOPLE EACH YEAR.[21]

HOW WILL AF AFFECT THE APAC REGION IN THE FUTURE?

The number of patients is rapidly rising due to an aging population and increasing lifestyle risk factors.[22-28]

With more patients suffering with atrial fibrillation, rates for strokes, hospitalizations, and doctor visits are expected to rise.

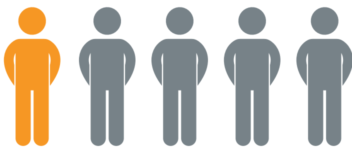
It is estimated there will be
72 MILLION
AF patients in Asia by 2050[28,30]

2.9 MILLION
ASIAN PATIENTS anticipated to suffer from AF-ASSOCIATED STROKE IN 2050[30,31]

HOSPITALIZATIONS FOR AF have been increasing by
5-42%
annually across APAC[16,19,28]

DEMOGRAPHICS OF AF
Who is at risk for AF?

AF is a common age-related arrhythmia; it generally affects people over 30 years old and becomes more prevalent with advancing age.[28,32-36]

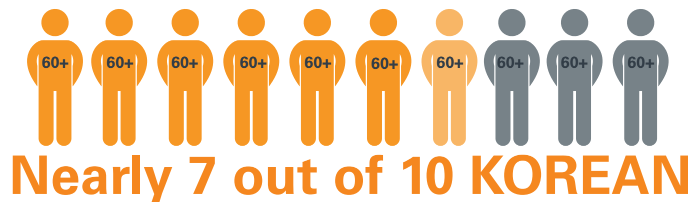


1 in 5 CHINESE adults

Estimated lifetime risk for AF[32]

1 in 4 AUSTRALIAN adults

Estimated lifetime risk for AF[23,37]

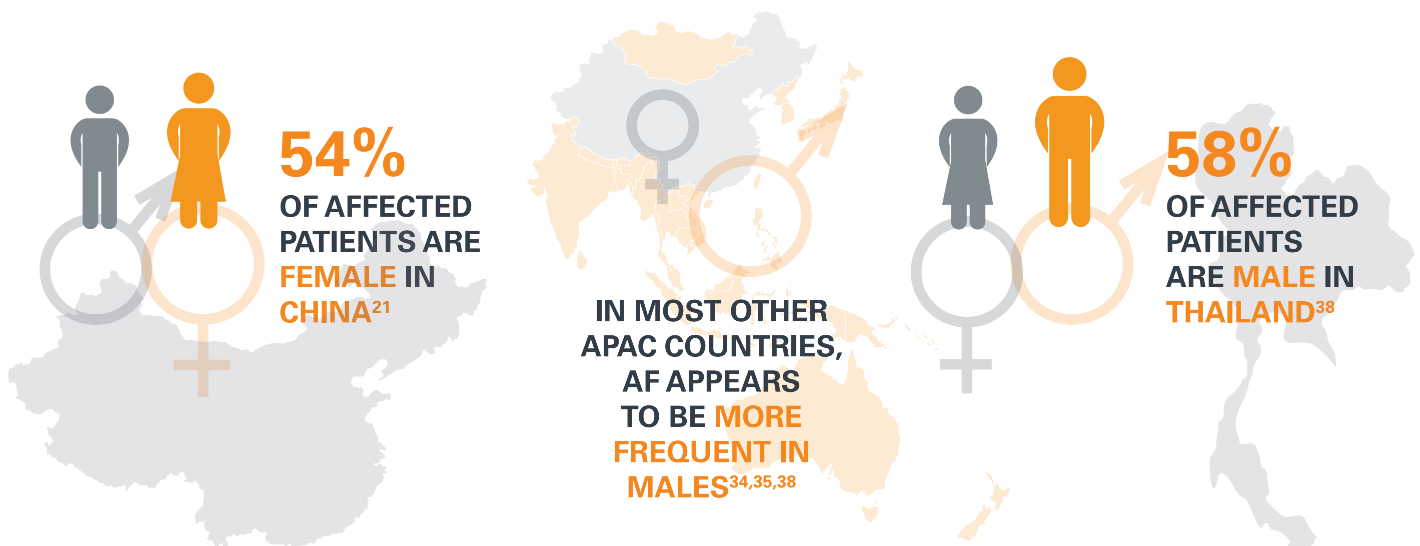


Nearly 7 out of 10 KOREAN

adults suffering from AF

ARE AT LEAST 60 YEARS OLD[34]

60+



54%

OF AFFECTED PATIENTS ARE FEMALE IN CHINA[21]

IN MOST OTHER APAC COUNTRIES, AF APPEARS TO BE MORE FREQUENT IN MALES[34,35,38]

58%

OF AFFECTED PATIENTS ARE MALE IN THAILAND[38]

AF develops from structural changes to the heart due to lifestyle, other chronic conditions, and non-modifiable factors.

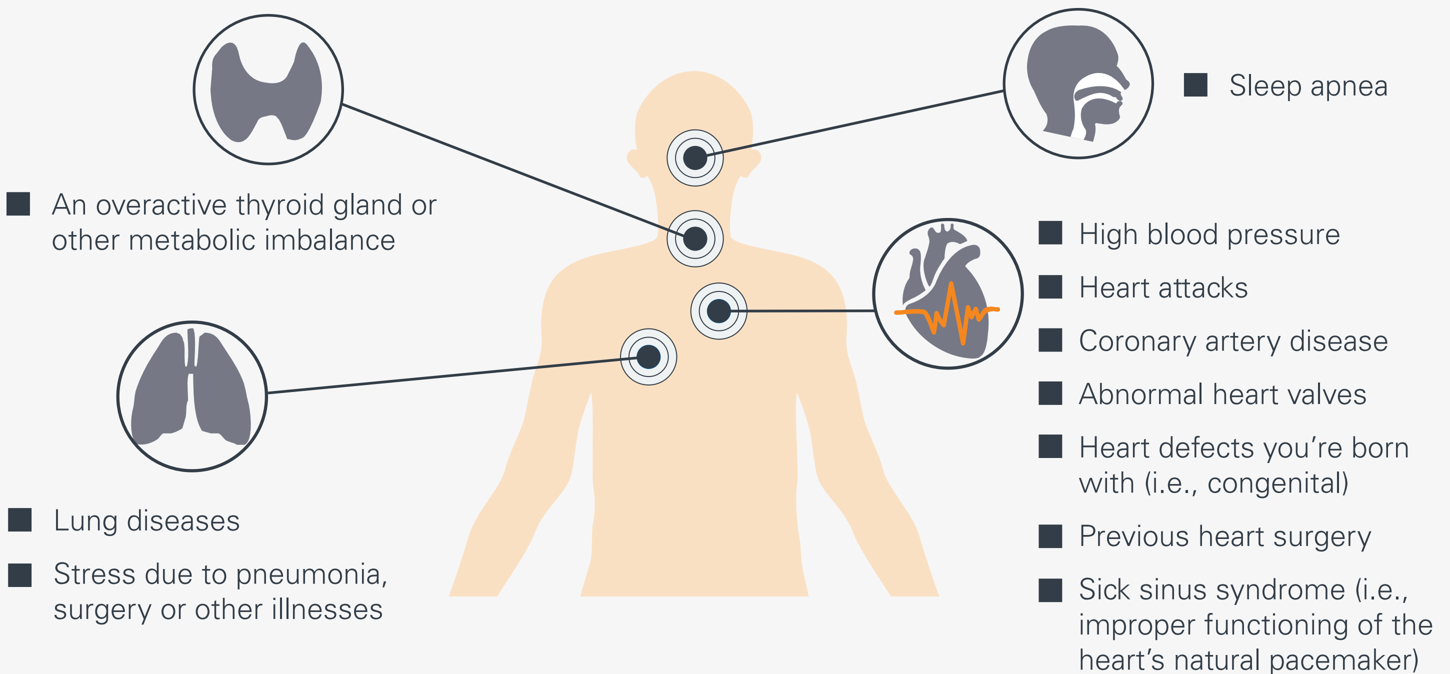
WHAT CAUSES AF?

AF is most often caused by structural changes to the heart due to other conditions and lifestyle factors.[1,3]

- AF is an **irregular and often rapid heartbeat** that occurs when there are extra, uncoordinated electrical signals in the atria.[1]

Common causes of AF

Abnormalities or damage to the heart's structure are the most common cause of AF, and this can be caused by:[3,35,40,41]



Other factors that cause AF:

- Exposure to stimulants, such as medications, caffeine, tobacco or alcohol

WHAT FACTORS LEAD TO AF?

Lifestyle factors, other health conditions, and non-modifiable factors increase the risk of developing AF.

LIFESTYLE FACTORS

- **Obesity**
- **Alcohol consumption**
- **Risks for cardiovascular disease: smoking, stress, caffeine and other stimulants**
- **Activity level**

OTHER CONDITIONS

- **Rheumatic heart disease (cardiac murmur)**
- **Dilated cardiomyopathy**
- **Heart failure**
- **Hyperthyroidism**
- **Coronary artery disease**
- **Chronic kidney disease, Diabetes**
- **Hypertension**

NON-MODIFIABLE FACTORS

- **Older age**
- **Congenital heart defects**
- **Family history or other genetic factors**
- **Male sex**

- Rheumatic heart disease is one of the most important risk factors in lower-income APAC countries.[25,28,41]
- Dilated cardiomyopathy, heart failure, hyperthyroidism, coronary artery disease, and ageing are the other strongest risk factors in Asian populations.[25,35,40,41]
- Obesity, chronic kidney disease, diabetes, hypertension, heart failure, coronary artery disease, male sex, and aging are the strongest risk factors in Australia.[42,43]

The symptoms and clinical consequences of AF disrupt patient quality of life and increase the risk of mortality.

WHAT ARE THE SYMPTOMS OF AF?

Symptoms of AF disrupt daily life and range from mild to debilitating.[14,49] The most common symptoms are:[5,6,44]

- Up to **65%** PALPITATIONS
- **50%** FATIGUE
- Up to **50%** SHORTNESS OF BREATH
- Up to **35%** MALAISE

- Up to **35%** DIZZINESS
- **12%** ANXIETY
- Up to **41%** CHEST PAIN
- **55%** MORE THAN 1 SYMPTOM

OVER **50%** of AF PATIENTS have a reduced ability to exercise

- The frequency and severity of symptoms varies greatly from patient to patient and, within a patient, symptoms can fluctuate widely over time.[44]

Patients who do not experience symptoms of AF may be at **greater risk** of complications and disease severity due to lack of treatment:

15-46%
SILENT AF[4-6,44,45]

21-59%
PATIENTS DIAGNOSED WITH AF AFTER SUFFERING A STROKE[46-48]

PATIENTS WITH SILENT AF EXPERIENCE
POORER GENERAL HEALTH & QUALITY OF LIFE[49]

AF increases the risk of:

Mortality:

AF is independently associated with a significantly greater risk of mortality.[50,51]

45-50% **ALL-CAUSE MORTALITY**[(1)]

Stroke:

a serious complication of AF that is associated with long-term disability and mortality.

170-490% **ANY STROKE**[(1),9,50,54-55]

Heart attack:

a serious complication of AF that also significantly increases the risk of stroke and mortality.[32]

Heart failure and left ventricular dysfunction:

a common complication of AF and the most common cause of death among Asian patients with AF.[52,53]

500-800% **HEART FAILURE**[50,54]

Cognitive dysfunction or vascular dementia:

a complication of AF that causes a decline in memory and thinking skills, which can interrupt daily life and independent function.

40-60% **DEMENTIA OR COGNITIVE IMPAIRMENT**[(1),32,56]

Obstructive sleep apnea:

is common in AF patients and may increase the rate of arrhythmia recurrence.[57]

(1) Relative increased risk based on the relative risk of morbidity and mortality when compared to patients without AF, adjusted for other confounding factors.

AF worsens the quality of life for patients, which can be burdensome to caregivers.

WHY DO PEOPLE WITH AF SEEK MEDICAL TREATMENT?

AF symptoms and repeated recurrence increase unplanned medical visits and hospitalizations.

SYMPTOMS OCCUR IN 54-69% PATIENTS WITH AF, EVEN IF THEY ARE BEING TREATED[4-6,44]

- Clinical decision-making can be challenging because symptoms related to AF can differ a lot between patients and within patients at different time points.[44]
- AF and its related symptoms are a major therapeutic challenge and burden to healthcare systems.[44]

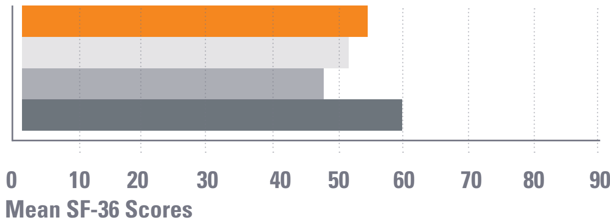
AF is currently THE MOST COMMON CAUSE of cardiovascular hospitalization in Australia.[16] From 1993-2013, AF admissions increased by:

- 295% for Atrial Fibrillation
- 73% for Myocardial Infarction
- 39% for Heart Failure

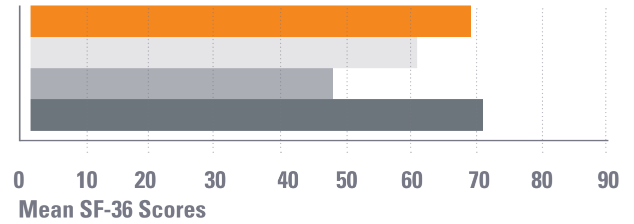
Comparison of Quality of Life between Patients with AF and other Cardiovascular Conditions[58]

SF-36 Quality of Life Subscales

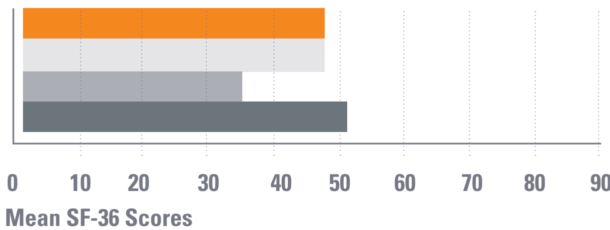
General Health



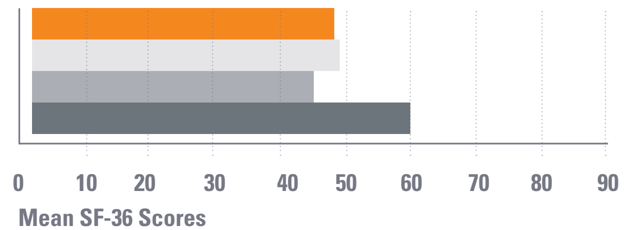
Physical Functioning



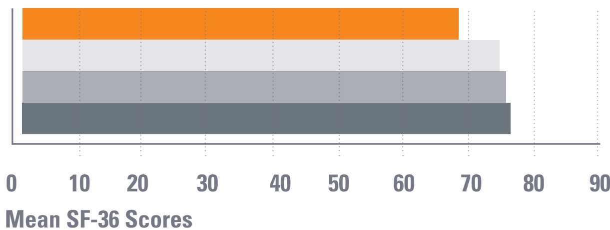
Role Physical



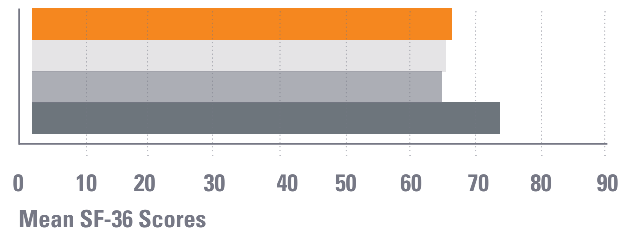
Vitality



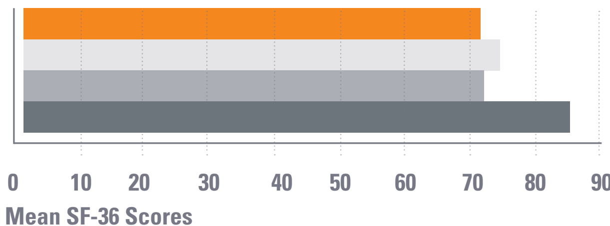
Mental Health



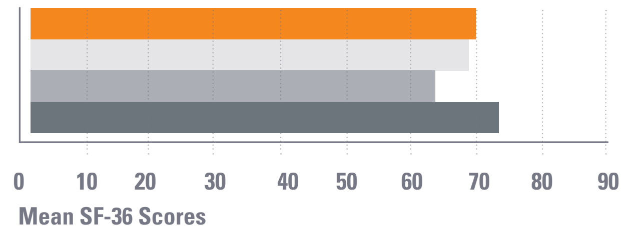
Role Emotional



Social Functioning



Bodily Pain



AF Patients (n=152) **PTCA Patients (n=69)** **CHF Patients (n=216)** **Post-Heart Attack Patients (n=69)**

Abbreviations: AF = atrial fibrillation; CHF = congestive heart failure; PTCA = percutaneous transluminal coronary angioplasty in patients with coronary artery disease.

- AF type has been associated with perceived symptom severity and reductions in quality of life.[52,59]
  - Patients with intermittent AF (paroxysmal and early persistent AF) **had worse impairment of quality of life** than those with chronic AF (persistent and permanent AF).[59]

AF increasingly places a critical financial burden on healthcare systems.

WHAT ARE THE DIRECT AND INDIRECT COSTS OF AF?

The direct cost for the management of AF is highly variable across the Asia Pacific region.

- Costs for AF management can be divided into 2 groups:

DIRECT COSTS

- **Hospitalization**
- **Outpatient and Physicians Visits**
- **Prescriptions**
- **Laboratory Testing**
- **Long-term Care**

INDIRECT COSTS

- **Work Productivity Losses**
- **Support Provided By Caregivers**

- The direct costs of AF have been rising exponentially over the past two decades across APAC and are projected to continue to rise.

479% INCREASE IN AF HOSPITALIZATION COSTS BETWEEN 1993-2003 IN AUSTRALIA. This is twice that of myocardial infarction and heart failure.[16]

KRW 8.79B ➡ KRW 49.8B INCREASE IN AF-RELATED COST OF CARE FROM 2006-2015. This was equivalent to 0.78% of the Korean national health insurance system (NHIS) expenditure.[19]

In 2018, it was estimated that Chinese AF patients over 35 had lost more than 620,000 years of healthy life due to AF-related disability,[60] which suggests high indirect costs due to caregiver support and productivity loss.

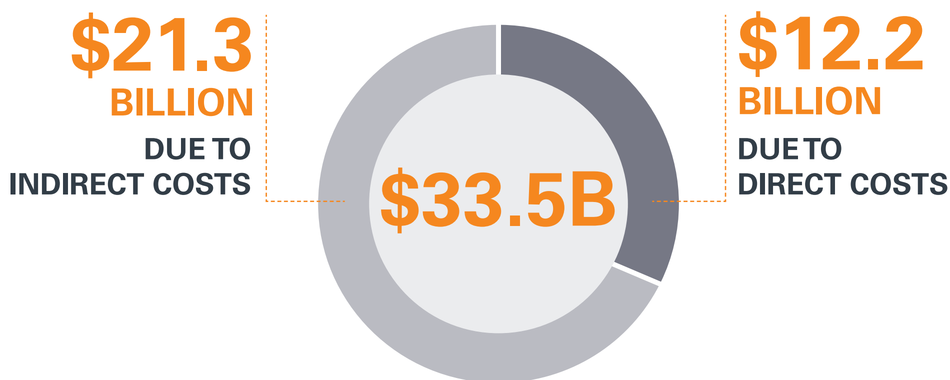
HOW DO STROKE AND HEART FAILURE AFFECT THE COST OF AF?

The cost for the treatment of stroke and heart failure in AF is high, contributing substantially to the total cost of AF management.

STROKE

A Chinese study found that the COST of STROKE TREATMENT IN PATIENTS WITH AF is 19.5% HIGHER than in PATIENTS WITHOUT AF[(1),61]

In 2016, the overall cost of STROKE across the region composing of China, Australia, Hong Kong, Japan, South Korea, Taiwan, and Thailand was estimated to be USD 33.5 BILLION.[62]



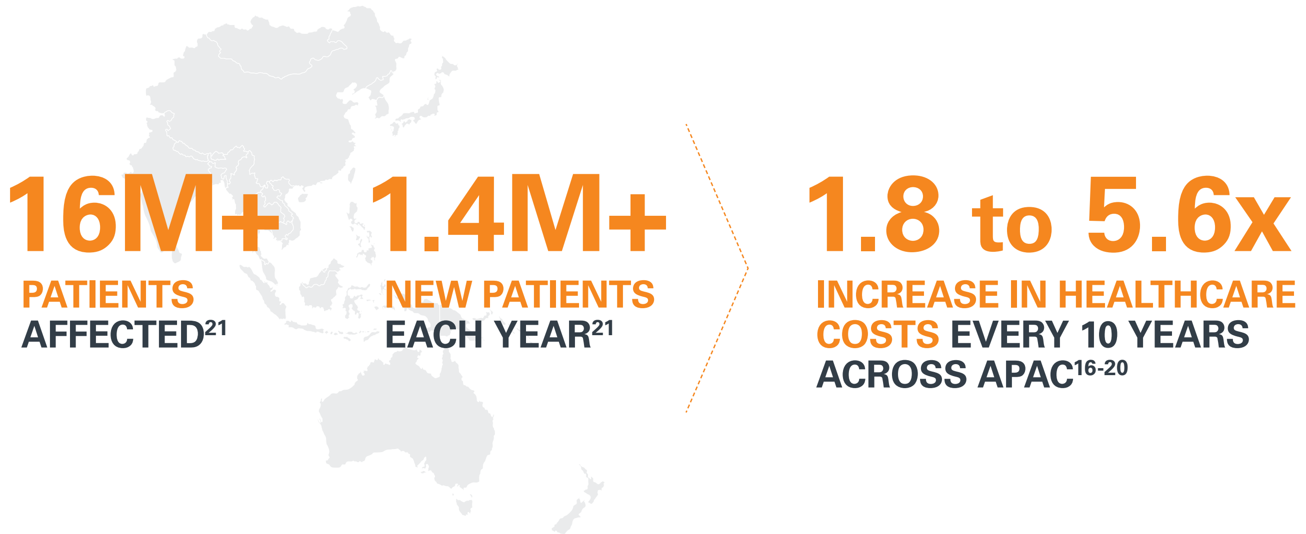
HEART FAILURE

HEART FAILURE is the most common cause of mortality among patients with AF.[52,53] About 1 out of 5 heart failure patients in Asia has concomitant atrial fibrillation.[63]

HEART FAILURE PATIENTS in Asia spend an average of 5 to 12.5 days per YEAR in hospitals, incurring COSTS of USD 2400 IN TAIWAN, USD 3600 IN THAILAND, and nearly USD 9000 IN KOREA.[63]

(1) Relative increased cost based on the comparison to patients without AF, and adjusted for other confounding factors.

AF places a high and increasing financial burden on healthcare systems across the Asia Pacific region.



Given the increasing age, population, and incidence of risk factors for AF in APAC, the **burden** of AF is expected to be far **greater than in any other region in the world.**

BY 2050

ASIA-PACIFIC IS PROJECTED TO HAVE MORE THAN TWICE AS MANY AF-PATIENTS AS EUROPE AND NORTH AMERICA COMBINED.[28,30,64] This is expected to increase the number of stroke events, hospitalizations, and physician visits, ultimately raising the cost to national healthcare systems.[16,18-20]

LIMITATIONS AND FUTURE DIRECTIONS

To date, summaries about the epidemiology of AF have been disproportionally derived from North American and European populations. There is comparatively limited data in the Asia Pacific region.

Interpretation of the existing data is difficult due to the variation in studied regions, ethnic differences, diagnostic methods, and clinical settings.[28,29] Additionally, a large part of the evidence is based on data collected over 10 years ago. Findings on prevalence and healthcare-related costs are likely to be underestimated.

Epidemiologists note that additional high-quality data is required. Key areas for exploration and analysis include the following:

- Data harmonization across countries and improvements in data collection[65]
- Validation of country-specific observations in order to identify generalizability of previously established research findings, including risk stratification and outcomes, to a multinational AF population[65]

Additional epidemiological studies in urban and rural areas should also be undertaken in order to:

- Capture a more accurate and updated picture of the incidence and prevalence of AF,[28,66] especially in remote areas, to guide prevention and management strategies
- Fill existing gaps in the understanding of morbidity, treatment, and its consequent direct and indirect costs, especially in low-income APAC countries where information is scarce
- Clarify risk factors, including the impact of genetic disparities in APAC

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