

Quick facts

- ◆ Millions of people are affected by stroke in the Asia-Pacific region
 - In 2004, in Southeast Asia and the Western Pacific region, between 1.8 and 3.3 million people, respectively, suffered a first-ever stroke (5.1 million across both regions)¹
 - In the same year, 1,816,000 people in China died from a stroke²
 - Furthermore, 727,900 in India died from a stroke²
- ◆ Atrial fibrillation (AF) is the most common sustained heart rhythm abnormality³
- ◆ AF is a major risk factor for stroke.³ It may lead to the formation of a blood clot, which can travel to the brain and cause an ischaemic stroke (stroke caused by blood clots)⁴
- ◆ There are a vast and increasing number of people in the Asia-Pacific region living with AF. In China alone, up to 8 million people suffer from AF^{5,6}
- ◆ Stroke associated with AF is a growing health epidemic due to an ageing population and improved survival in conditions that predispose people to AF, such as heart attack⁷
- ◆ Action is needed to address the increasing clinical, economic and social burden of stroke in the Asia-Pacific region, as well as the damaging effects of stroke on individuals, carers and their families

Stroke: a significant cause of disability and death

What is stroke?

- ◆ There are two main types of stroke: ischaemic and haemorrhagic
- ◆ The most common type of stroke is ischaemic stroke, caused by a blood clot narrowing or blocking a blood vessel, which prevents the blood from reaching the brain, causing brain cells to die due to lack of oxygen⁸
- ◆ A haemorrhagic stroke is caused by a bleed from a blood vessel in the brain
- ◆ For many patients, surviving a stroke can be worse than dying from one, as disability and the fear of death are constant concerns
- ◆ Stroke often results in extensive and long-lasting mental and physical disability to patients, causing weakness or paralysis and impairing cognitive function^{8,9}

Incidence and prevalence of stroke

- ◆ Stroke is the most common cardiovascular disorder after heart disease, killing an

estimated 5.7 million people annually worldwide¹

- ◆ In the Asia-Pacific region in 2004 the approximate number of patients who had survived a stroke at some point in their lifetime was 4.4 million in Southeast Asia and 9.1 million in the Western Pacific region.² In the same year, the number of first-ever strokes was 5.1 million across these regions.¹ This was higher than the estimated number of new cases of cancer¹

Atrial fibrillation: a major risk factor for stroke

What is AF and why is it a risk factor for stroke?

- ◆ AF is the most common sustained abnormal heart rhythm in adults³
- ◆ In patients with AF, the upper chambers of the heart (the atria) stop contracting because of rapid and irregular electrical impulses. As a result, blood is not pumped out of the upper chambers completely during heartbeats. The chamber walls become stickier and cause blood particles to stick to them. This means that blood may pool and

form a clot in the atria. These clots can travel to vessels in the brain blocking them, which can cause an ischaemic stroke (stroke caused by a blood clot)⁴

- ◆ A simple and easily identifiable sign of AF is an irregular pulse¹⁰
- ◆ Other symptoms¹⁰ may include:
 - Palpitations
 - Chest pain or discomfort
 - Shortness of breath
 - Dizziness
 - Fainting
- ◆ However, many people with AF have no symptoms, or vague, non-specific symptoms¹¹
- ◆ Physicians may encounter AF when patients consult them about other conditions, related or unrelated to the heart. Often, AF is not apparent until a person presents to his or her doctor with a complication such as ischaemic stroke, a blood clot in the leg or heart failure¹⁰

Incidence and prevalence of AF

- ◆ Studies have shown that across the Asia-Pacific region the prevalence of AF in adults varies, ranging from 770 per 100,000 of the population in China, and up to 1,634 per 100,000 of the population in Japan^{12,13}
- ◆ The prevalence and incidence of AF in all Asia-Pacific countries is currently unknown and further research is urgently needed to address this
- ◆ The prevalence and incidence of AF is thought to be rising because population age is increasing and survival from conditions predisposing to AF (such as heart attack) is improving⁷
- ◆ AF increases the risk of stroke five-fold and is responsible for 15-20% of all strokes caused by blood clots^{14,15}
- ◆ The rate of death due to stroke is nearly two-fold higher in men and four-fold higher in women with AF compared to those without AF¹⁶
- ◆ Importantly, strokes that result from AF are the most severe and are associated with high mortality and disability rates, and a 50% likelihood of death within one year¹⁷

High cost of stroke to individuals and society

- ◆ Stroke produces devastating effects on patients. Every year, 15 million people worldwide experience a stroke.⁸ Approximately 5 million of these suffer permanent disabilities and a further 5 million die¹⁹
- ◆ Stroke death rates vary between countries in the Asia-Pacific region. For example, stroke death rates range from 43.2 per 100,000 in Malaysia to 138.4 per 100,000 in China.²⁰ China and India have the highest number of deaths from stroke in the region²⁰
- ◆ The onset of stroke is very sudden, meaning that the affected individual and his or her family are not prepared to deal with the physical, psychological and financial burden of the disease⁹
- ◆ For many sufferers death is the first and last manifestation of stroke, and for stroke survivors the affect on their lives can be severe. Some stroke victims are left significantly disabled, losing bowel and bladder control, and with speech and cognitive difficulties
- ◆ The devastating effects of stroke are not only felt by the individual; stroke also places a heavy burden on carers, family members, and health and social services^{8,21}
- ◆ Stroke is a costly health problem in countries in the Asia-Pacific region:
 - For example, in China, the overall mean cost of hospitalization for stroke in 2010 equated to more than half the annual wage.²² China will lose \$558 billion in foregone national income because of the combination of heart disease, stroke and diabetes²³
 - In Australia, the estimated total lifetime cost for all cause strokes is estimated at about AU\$2 billion²⁴
 - Estimates from the Korea National Health Insurance Claims Database for 2005 have shown the total cost for the treatment of stroke in the nation was 3,737 billion Korean won (US\$3.3 billion)²⁵

- ◆ Further research is required in many Asian-Pacific countries to provide a more comprehensive picture of the economic consequences of stroke across the region
- ◆ Early diagnosis and effective management of AF would help to reduce the burden of stroke in Asia-Pacific countries

Current challenges for stroke prevention in patients with AF

- ◆ Prevention of AF: adequate recognition and treatment of the factors that cause AF could help to prevent it and reduce the burden of stroke caused by AF
- ◆ Increased awareness and understanding of AF and AF-related stroke among the general public, patients and carers must be improved to maximize the opportunity for stroke prevention in patients at risk
- ◆ Early diagnosis of AF: the symptoms of AF may be vague or non-specific, so it is often not detected before the first complication, such as a stroke, occurs.¹¹ Thus, many potentially preventable strokes occur every year, leading to millions of early deaths and long-term disability
- ◆ To date, vitamin K antagonists, such as warfarin, have been the mainstay of stroke prevention in patients with AF. They reduce stroke risk in patients with AF when appropriately used and properly monitored. However, while this is an effective drug, it can also have serious side effects such as severe haemorrhage (bleeding). Other drawbacks include a lack of predictability and drug and food interactions, so patients are required to make many lifestyle changes and attend regular follow-up visits²⁶
- ◆ Many patients with AF that have a moderate to high risk of stroke do not receive appropriate anticoagulant therapy and therefore remain unprotected^{27,28}
- ◆ There is a need for improved education among patients and health professionals on the risks and benefits of warfarin and on the optimum management of patients receiving it
- ◆ Several sets of guidelines exist for the management of AF. Their recommendations largely overlap, but the degree to which they are properly implemented varies widely between countries

New developments in stroke prevention for patients with AF

- ◆ New strategies for AF treatment may be helpful in reducing the prevalence of AF, and in turn, AF-related stroke
- ◆ New oral anticoagulants, which will be available across the Asia-Pacific region in the near future, are easier to use than vitamin K antagonists
- ◆ Valuable insights on the impact of these new therapies in stroke prevention in patients with AF can be gained by the use of registries. J-TRACE is a registry of 8,093 Japanese patients with non-valvular AF or a history of stroke and/or myocardial infarction.²⁹ The registry aims to provide information on the incidence of cardiovascular ischaemic events and current medical treatment for Japanese patients at high risk of thromboembolic events²⁹
- ◆ An innovative registry to quantify the global burden of AF was launched in August 2009. The Global Anticoagulant Registry in the Field (GARFIELD) is prospectively following 50,000 newly diagnosed patients with AF who are also candidates for anticoagulation therapy to prevent stroke over a six-year period³⁰

Combined, these activities offer a unique opportunity to improve interdisciplinary stroke prevention in AF patients.

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References

1. World Health Organization. The global burden of disease: 2004 update. http://www.who.int/healthinfo/global_burden_disease/2004_report_update/en/index.html. Accessed March 2011
2. World Health Organization. The global burden of disease: 2004 update. Disease and injury regional estimates for 2004. Prevalance for WHO regions. http://www.who.int/entity/healthinfo/global_burden_disease/PREV6%202004.xls. Accessed March 2011
3. Kannel WB, Benjamin EJ *et al*. Prevalence, incidence, prognosis, and predisposing conditions for atrial fibrillation: population-based estimates. *Am J Cardiol* 1998; 82:457-507
4. NHS choices. Atrial fibrillation. 2009. <http://www.nhs.uk/Conditions/Atrial-fibrillation>. Accessed March 2011
5. Zhou Z, Hu D. An epidemiological study on the prevalence of atrial fibrillation in the Chinese population of mainland China. *J Epidemiol* 2008; 18:209-16
6. Hu D, Sun Y. Epidemiology, risk factors for stroke, and management of atrial fibrillation in China. *JACC* 2008; 52:865-8
7. Murphy NF, Simpson CR, Jhund PS *et al*. Antithrombotic therapy in atrial fibrillation: the Seventh ACCP Conference on Antithrombotic and Thrombolytic Therapy. *Chest* 2004;126:4295-565
8. Wolfe C, Rudd A. The Burden of Stroke White Paper: Raising awareness of the global toll of stroke-related disability and death. 2007 <http://www.safestroke.org/Portals/10/FINAL%20Burden%20of%20Stroke.pdf>. Accessed March 2011
9. Mayo NE, Wood-Dauphinee S, Ahmed S, *et al*. Disablement following stroke. *Disabil Rehabil* 1999;21:258-68
10. National Institute for Health and Clinical Excellence. Understanding NICE guidance: Atrial fibrillation. 2006 <http://www.nice.org.uk/nicemedia/pdf/CG036publicinfo.pdf>. Accessed March 2011
11. Fuster V, Rydén 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. *Circulation* 2006;114:e257-e354
12. Zhou Z, Hu D. An epidemiological study on the prevalence of atrial fibrillation in the Chinese population of mainland China. *J Epidemiol* 2008;18:209-16
13. Iguchi Y, Kimura K, Aoki J, *et al*. Prevalence of atrial fibrillation in community-dwelling Japanese aged 40 years or older in Japan: analysis of 41,436 non-employee residents in Kurashiki-city. *Circ J* 2008;72:909-13
14. Wolf PA, Abbott RD, Kannel WB. Atrial fibrillation as an independent risk factor for stroke: the Framingham Study. *Stroke* 1991;22:983-8
15. American College of Cardiology. CardioSmart. Atrial fibrillation. 2010 <http://www.cardiosmart.org/HeartDisease/CTT.aspx?id=222>. Accessed March 2011
16. Hughes M, Lip GY. Stroke and thromboembolism in atrial fibrillation: a systematic review of stroke risk factors, risk stratification schema and cost effectiveness data. *Thromb Haemost* 2008;99:295-304
17. Lamassa M, Di Carlo A, Pracucci G *et al*. Characteristics, outcome, and care of stroke associated with atrial fibrillation in Europe: data from a multicenter multinational hospital based registry (The European Community Stroke Project). *Stroke* 2001;32:392-8
18. Wolfe CD, Rudd AG. The Burden of stroke White Paper: Raising awareness of the global toll of stroke-related disability and death. <http://www.safestroke.org/Portals/10/FINAL%20urden%20of%20Stroke.pdf>. Accessed March 2011
19. World Health Organization. The Atlas of Heart Disease and Stroke. 2004 http://www.who.int/cardiovascular_diseases/resources/atlas/en/. Accessed March 2011
20. World Health Organization. The global burden of disease: 2004 update. Disease and injury country estimates. Death and DALY estimates for 2004 by cause for WHO Member States. 2008. http://www.who.int/entity/healthinfo/global_burden_disease/gbddeathdalycountryestimates2004.xls. Accessed March 2011
21. Young AJ, Rogers A, Addington-Hall JM. The quality and adequacy of care received at home in the last 3 months of life by people who died following a stroke: a retrospective survey of surviving family and friends using the Views of Informal Carers Evaluation of Services questionnaire. *Health Soc Care Community* 2008;16:419-28
22. Wei JW, Heeley EL, Jan S, *et al*. Variations and determinants of hospital costs for acute stroke in China. *PLoS One*. 2010;5:e13041
23. World Health Organization. Cardiovascular diseases (CVDs): Fact sheet N°317. 2011. <http://www.who.int/mediacentre/factsheets/fs317/en/index.html>. Accessed March 2011
24. Cadilhac DA, Carter R, Thrift AG *et al*. Estimating the long-term costs of ischemic and hemorrhagic

- stroke for Australia: new evidence derived from the North East Melbourne Stroke Incidence Study (NEMESIS). *Stroke* 2009;40:915–21
25. Lim SJ, Kim HJ, Nam CM *et al.* Socioeconomic costs of stroke in Korea: estimated from the Korea national health insurance claims database. *J Prev Med Public Health* 2009;42:251–60
 26. Turpie AG. Warfarin replacements: mechanisms underlying emergent agents. *Can J Cardiol* 2008;24 Suppl C:56C-60C
 27. Nieuwlaat R, Olsson SB, Lip GY *et al.* Guideline-adherent antithrombotic treatment is associated with improved outcomes compared with undertreatment in high-risk patients with atrial fibrillation. The Euro Heart Survey on Atrial Fibrillation. *Am Heart J* 2007;153:1006–12
 28. Frykman V, Beerman B, Ryden L *et al.* Management of atrial fibrillation: discrepancy between guideline recommendations and actual practice exposes patients to risk for complications. *Eur Heart J* 2001;22:1954–9
 29. Origasa H, Goto S, Uchiyama S *et al.* The Japan Thrombosis Registry for Atrial Fibrillation, Coronary or Cerebrovascular Events (J-TRACE): a nation-wide, prospective large cohort study; the study design. *Circ J* 2008;72:991–7
 30. Kakkar AK, Lip GYH, Breithardt G. The importance of real-world registries in the study of AF-related stroke. 2010. <http://www.theheart.org/documents/sitestructure/en/content/programs/1003241/transcript.pdf>. Accessed March 2011