



Rheumatic Heart Disease and Stroke

Stroke occurs when a part of the brain does not receive adequate blood supply. Depending on the size and area of brain affected, stroke can cause death or significant disability. Often this disability is profound and life-long. The most recent data suggests that 25.7 million people have stroke each year, causing 6.5 million deaths.¹ Stroke affects people of all ages, including young adults and children, and can have a devastating impact on families – particularly in countries where access to care is limited. Between 1990 and 2013, there was an increase of almost 40% in the total number of young adults dying from stroke in developing countries.¹

Strokes can be ischaemic (from a blocked blood vessel) or haemorrhagic (from a burst blood vessel).

People living with rheumatic heart disease (RHD) can be at increased risk of both kinds of stroke. Ischaemic stroke can occur when clots form in the heart - from heart failure, around damaged heart valves, or from heart valve infections. Clots can also form in the heart when it is pumping in an abnormal rhythm. People with RHD are at risk of this heart rhythm problem, known as atrial fibrillation. These clots can travel up the arteries of the neck and block blood flow to parts of the brain.



People with RHD are also at increased risk of haemorrhagic stroke as a result of medication some people need following heart surgery. When mechanical heart valve replacements are used during surgery, clots can form around the valve – blood thinning medication is used to prevent this. However, without close monitoring, there is a risk of haemorrhagic stroke from bleeding into the brain.

Some estimates suggest that up to 10% of stroke in low and middle income countries may be attributable to underlying RHD.² Stroke caused by RHD occurs at a younger age and causes more death and severe disability than stroke from other causes.^{3 4}

Preventing RHD and treating people living with RHD is important for reducing the global burden of stroke. However, many people living with RHD in low income countries are not receiving adequate care. In one study, only 70% of people who needed blood thinning medication had been prescribed it.⁵ Of people prescribed blood thinners, most do not receive adequate monitoring of the medication.⁵

Action to reduce stroke from RHD is needed at many levels:

- Clinical guidelines are needed to strengthen safe use and monitoring of anticoagulation medication.
- More research is needed to quantify exactly how many strokes are caused by RHD, which can then help countries monitor whether reduction strategies are working.
- More research is needed to identify the most safe and effective anticoagulation for people living with RHD. A large global study, INVICTUS, is underway to answer this question.⁶



What can be done?

RHD Action offers technical support to researchers, clinicians, and policy makers addressing RHD in all settings. Further information is available at rhdaaction.org

1. Feigin V, Norrving B, Mensah G. Global Burden of Stroke. *Circulation Research* 2017; **120**: 439-48.
2. Carapetis J. The current evidence for the burden of Group A Streptococcal Diseases. Geneva: World Health Organization, 2005.
3. Wang D, Liu M, Hao Z, et al. Features of acute ischaemic stroke with rheumatic heart disease in a hospitalized Chinese population. *Stroke* 2012; **43**: 2853 - 7.
4. Liu J, Wang D, Tan G, et al. Predicting the outcomes of acute ischaemic stroke with rheumatic heart disease the values of CHADS2, CHA2DS2-VASc and HAS-BLED Scores. *Journal of Stroke and Cerebrovascular Disease* 2016; **25**(3).
5. Zühle L, Engel M, Karthikeyan G, et al. Characteristics, complications and gaps in evidence-based interventions in rheumatic heart disease: the Global Rheumatic Heart Disease Registry (the REMEDY study). *European Heart Journal* 2015; **36**(18): doi: 10.1093/eurheartj/ehu449.
6. INVestigation of rheumatic AF Treatment Using Vitamin K Antagonists, Rivaroxaban or Aspirin Studies, Superiority (INVICTUS-ASA). 2016. <https://clinicaltrials.gov/ct2/show/NCT02832531>.
7. Rossi G. Call for preventative care for rheumatic heart disease in refugee children. *British Medical Journal* 2016; **352**: i484.

