

Policy Brief

Saving lives from strokes – gearing towards better prevention and management of stroke

Put simply, a stroke is a medical emergency when an artery to the brain gets blocked or bursts. Stroke shares a set of risk factors and a pathological pathway similar to the one that cause a heart attack. Hence, stroke is often called as “brain attack”.¹ Although strokes are preventable and manageable, low- and middle- income countries (LMICs) including countries in the South-East Asia Region are facing a growing burden of a stroke epidemic; occurrence of stroke increased by 100% over the last four decades and there is a higher level of mortality in LMICs.² Of the 5.7 million deaths due to stroke in 2005, 87% occurred in LMICs.³ The economic consequences of stroke in LMICs are obvious as more lives are affected with stroke and often at a younger age.⁴ Prevention of stroke has become a public health priority. Addressing risk factors for stroke and strengthening health systems to provide credible stroke services can greatly reduce the burden of stroke.

Why is there a high stroke burden and mortality in South-East Asia Region?

The high burden of stroke in the South-East Asia Region reflects inadequate prevention programmes and weak health systems. Stroke care in the Region varies widely. Stroke care delivery also varies depending on patients’ location, socioeconomic status, education, and cultural beliefs. The capability of the primary health care system to detect and manage hypertension, diabetes and dyslipidemia and other risk factors is weak. Although stroke units that provide acute stroke care is a gold standard for acute management,⁵ services cannot be made available

across the health systems and rural areas have even more limited access.⁶ Limited capacity to provide acute and emergency stroke care,⁷ weak referral systems and inadequate post-stroke rehabilitation services in many countries are the major obstacles facing health systems. Furthermore, information on stroke occurrence and burden of stroke are not readily available to inform policy and programmatic decisions in a timely manner.⁸

Risk factors

Stroke shares risk factors with heart diseases and other chronic diseases. Common upstream risk factors for stroke include low intake of fruits and vegetables, high fat and high salt diet, physical inactivity, tobacco use and harmful use of alcohol⁹ that require behavioural modification. These lifestyle factors in turn contribute towards metabolic changes such as unhealthy weight gain, raised cholesterol, high blood pressure and raised blood sugar which increases risk for stroke.^{9,10,11} A single or combination of these risk factors can, influence the individual’s likelihood of suffering a stroke. It is estimated that over 60% of stroke mortality is attributed to the joint effects of tobacco use, raised blood pressure, and poor diet.³ In the South-East Asia Region, high prevalence of lifestyle risk factors,¹² coupled with untreated hypertension, diabetes, and raised cholesterol due to health system issues¹³ increases occurrence of stroke.

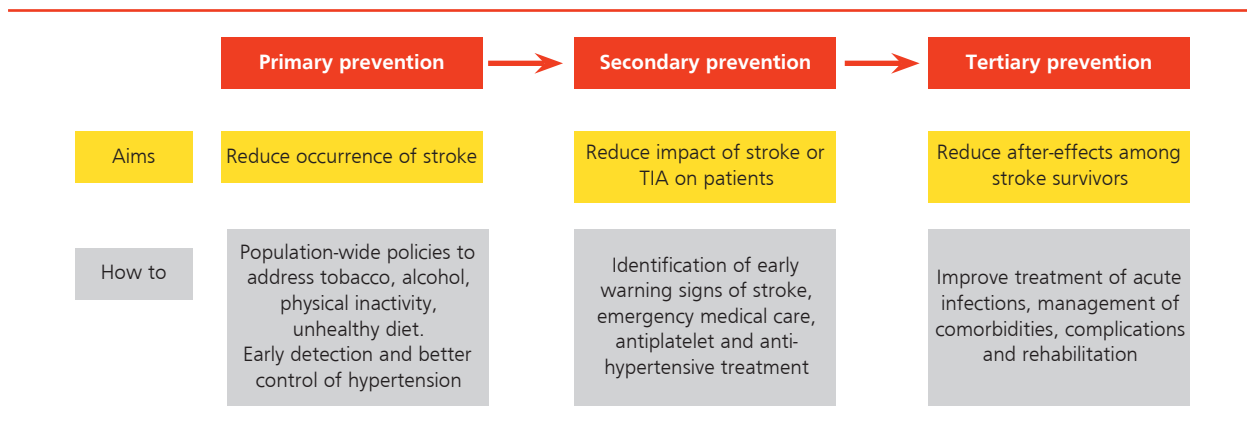
Approach to stroke prevention and care

Nearly 80% of strokes can be prevented¹⁴ and those that cannot, can be managed. From a policy

response, three common pathways to address stroke include: a) population-wide approaches to reduce stroke risk factors, (b) early detection of high-risk individuals with metabolic conditions,

and (c) management of stroke patients to prevent deaths and reduce the impact of stroke. A holistic response to the stroke epidemic can be mounted when all the policy streams are implemented as shown in Figure 1.

Figure 1: Prevention, aims and strategies



Government actions regulating tobacco, alcohol and unhealthy diet and support for enabling physical environment complemented by promotion of health literacy are crucial to reduce exposure to risk factors for stroke. Improvement of health services targeting early identification and management of hypertension, diabetes and provision of tobacco cessation and alcohol use are cost-effective stroke prevention measures. A good example of an integrated approach to stroke prevention is the implementation of the WHO package of essential interventions for NCDs in low-resource settings that promotes risk-based management of cardiovascular diseases, diabetes and hypertension at the primary health care level.

The primary health care level should be complemented with reliable services for acute and long-term stroke care. Quality of stroke care has a positive outcome for individuals as well as population health.¹⁵ Early aspirin use in patients with acute ischaemic cerebrovascular events, prescription of blood-pressure-lowering drugs for patients with stroke can reduce the impact of stroke. Stroke care requires sophisticated intervention and well equipped diagnostics and infrastructure.^{15,16} Multidisciplinary teams consisting of medical, nursing, physiotherapy, occupational therapy, speech therapy and social work staff providing patient-centered care working through the recovery goals of patients are required.⁵

What can be done?

Stroke is a medical emergency. Every second counts. The longer the normal blood flow to the brain is reduced, the greater the chance for damage. Damage to the brain can be reduced or reversed if proper treatment (either medicines or surgery) is started early. This is why it is important to act quickly if you suspect a stroke. Diagnostic tests should be done as soon as possible and if medicines to dissolve or treat clots are needed and available they should be started within three hours of experiencing the stroke for the greatest chance of recovery. Countries in the South-East Asia Region will need to undertake decisive steps to reduce stroke burden comprehensively tackling prevention at the population level and paying attention to the health systems response. The two broad policy recommendations are detailed in the following sections.

Stroke prevention and education

Stroke education momentum should be built by using community education, mass media and mass communication. Information should focus on improving stroke awareness on early warning signs of stroke and removing stigma associated with stroke. A network of stroke survivors, caregivers, and other stroke partners to share experiences, challenges, and needs with policy makers should be included in advocacy for change.

Stroke prevention education requires innovation. Engagement of community volunteers for stroke prevention education and case identification has been found to be successful. In Ludhiana, India, Accredited Social Health Activist (ASHA) workers were engaged as informants of stroke events in the community. The registration of stroke events significantly improved leading to an improvement in survival of stroke patients.

Even a modest change in population level factors can contribute to significant reduction in stroke at population level.² Community-based efforts and well-designed national programmes to reduce excessive salt intake, promotion of physical activity, community-based tobacco cessation services and a ban on smoking in public places, and alcohol use prevention programmes should be prioritized.

Strengthening health systems for stroke prevention and management

Strengthening health systems to improve early detection and provision of care is the overarching purpose in improving stroke prevention and control. A holistic and systems level intervention is required for scaling up stroke services in countries in South-East Asia. Firstly, governance for stroke should be improved to develop a well-regulated care. National stroke management standards and guidelines should be developed by recognized experts to address local issues on the basis of the best available evidence. Once available, efforts should be made to ensure that the standards and level of quality of services are adhered to.

Stroke care services in public hospitals should be improved and stroke care should be explicitly included within the performance framework. Governments can also promote collaborative mechanisms between public and private hospitals to share resources for expensive diagnostic services.

In terms of service delivery models of care, national stroke prevention and control services should be integrated as core functions of health systems. Graded levels of clearly defined stroke care pathways should be instituted within the country's health system. At national level, national centre/s of excellence with a multidisciplinary team led by specialist and super specialist consultants possibly with a full-time or part-time designated stroke coordinator should be established. At the

secondary level, hospitals should provide services for stroke prevention and care. The primary health care system should be fully utilized as the entry point for stroke prevention and providing initial life support for stroke patients. Stroke patients often seek health services using private transportation without lifesaving support.⁶ Access to proper ambulance services and rapid transportation among various tiers of health facilities should be linked through a well-knitted referral mechanism to provide timely stroke care.¹⁶

Building health systems competencies in stroke prevention and management include ensuring infrastructure, uninterrupted supply of basic diagnostics and technologies for screening, early management and referral systems and appropriate skills of primary health care workforce. Stroke prevention and treatment should be integrated within the health services to make it cost-effective rather than making it a vertical programme.

Human resource capacity development is a critical component to improve stroke prevention and management. A cadre of health professionals ranging from super-specialty to support staff is needed for acute and chronic care of stroke. Countries with low human resources should include long-term human resource plans and make continuous efforts to achieve the human resource needs. Countries with adequate human resources should ensure better deployment strategies so that skilled human resources are available for service provision.

Diagnostic capability including neuro-imaging through CT scan and MRI, ultrasound and vascular angiogram facilities are necessary¹⁰ but are beyond any government's means to expand everywhere. Locations should be prudently chosen to ensure better distribution and access to expensive diagnostic services. A 24-hour emergency room, intensive care unit, vascular intervention and thrombolytic facilities should be developed or identified as designated stroke care centres.

Even though stroke is treatable to a large extent, effects of stroke can be disabling. Stroke patients and their families face a huge risk of financial catastrophe. Clear policies of financial protection for stroke should be included within the national health schemes for citizens.

Evidence such as incidence, case fatality and outcome of stroke is vital for planning for health

services, rehabilitation and community care. Population-based surveillance of stroke using the existing standardized WHO STEPs is a good starting point to build population-based stroke information to document first-ever stroke events, survival rates and stroke-related disabilities.⁸ Local translational research on stroke should be prioritized in countries to build evidence-base and new knowledge in stroke prevention and management. Potential topics of research include treatment outcomes, survival and community-based programmes for stroke prevention and care. A summary of health systems approach to stroke prevention and management is provided in the Table below:

Conclusion

Although a preventable and treatable health problem, as in most LMICs, countries in the South-East Asia Region face a heavy burden of premature deaths and disability due to stroke. A combination of fiscal policies and public health interventions to control use of tobacco and alcohol, promotion of healthy diet and physical activity – the key population-level interventions to prevent stroke should be rigorously implemented by countries. Concurrently, health systems need to be strengthened both in competence and structure of services in order to enable early detection and identification of individuals with high risk for stroke, improve stroke care and rehabilitation.

Table 1: Integration of stroke in health systems

Health system building blocks	Actions
Governance	Develop national standardized care protocol for stroke
Financing	Include stroke care within the package of universal health package and other social insurance schemes
Human Resources	Build multidisciplinary team at designated stroke centres and train primary health care workers on treatment of NCDs and management through stratified NCD risk management
Information	Set up stroke registries and conduct stroke STEPs surveys
Medicines and technologies	Increase access to aspirin, tissue plasminogen activator (tPA), thrombolytic therapy, ICU care
Service Delivery	Strengthen primary health care management of diabetes, hypertension and other CVDs, designate referral centers for acute management of stroke, strengthen emergency referral systems , post-stroke care and rehabilitation

References

1. Alberts MJ, Latchaw RE, Selman WR, Shephard T, Hadley MN, Brass LM, et al. Recommendations for comprehensive stroke centers: a consensus statement from the Brain Attack Coalition. *Stroke*. 2005 Jul;36(7):1597-616.
2. Feigin VL, Krishnamurthi R. Stroke prevention in the developing world. *Stroke*. 2011 Dec;42(12):3655-8.
3. Strong K, Mathers C, Bonita R. Preventing stroke: saving lives around the world. *Lancet Neurol*. 2007 Feb;6(2):182-7.
4. Feigin VL, Forouzanfar MH, Krishnamurthi R, Mensah GA, Connor M, Bennett DA, et al. Global and regional burden of stroke during 1990–2010: findings from the Global Burden of Disease Study 2010. *Lancet*. 2014 Jan 18;383(9913):245-54.
5. Langhorne P, de Villiers L, Pandian JD. Applicability of stroke-unit care to low-income and middle-income countries. *Lancet Neurol*. 2012 Apr;11(4):341-8.
6. Pandian JD, Padma V, Khurana D. Prevention and control of stroke: a public health perspective. 323-339. – In: Thakur JS. *Public health approaches to noncommunicable diseases*. Wolter Kluwer, 2015. Pp. 323-9.
7. Wasay M, Khatri IA, Kaul S. Stroke in South Asian countries. *Nat Rev Neurol*. 2014 Mar;10(3):135-43.
8. Pandian JD, Singh G, Bansal R, Paul BS, Singla M, Singh S, et al. Establishment of Population-Based Stroke Registry in Ludhiana City, Northwest India: feasibility and methodology. *Neuroepidemiology*. 2015;44(2):69-77.
9. Gupta R, Joshi P, Mohan V, Reddy KS, Yusuf S. Epidemiology and causation of coronary heart disease and stroke in India. *Heart*. 2008 Jan;94(1):16-26.
10. Suwanwela NC, Pongvarin N; Asian Stroke Advisory Panel. Stroke burden and stroke care system in Asia. *Neurol India*. 2016 Mar-Apr;64 Suppl:S46-51.
11. Bronner LL, Kanter DS, Manson JE. Primary prevention of stroke. *N Engl J Med*. 1995 Nov 23;333(21):1392-400.
12. World Health Organization, Regional Office for South-East Asia. *Noncommunicable diseases risk behaviours among adults in the South-East Asia Region, findings from STEPS and GATS*. New Delhi, 2016.
13. Suwanwela NC. Stroke epidemiology in Thailand. *J Stroke*. 2014 Jan;16(1):1-7.
14. American Stroke Association. *Together to end Stroke: Stroke Treatments*. 2013. <http://www.strokeassociation.org/STROKEORG/AboutStroke/Treatment/> - accessed 28 September 2016.
15. Asplund K. What MONICA told us about stroke. *Lancet Neurol*. 2005 Jan;4(1):64-8.
16. Langhorne P, Bernhardt J, Kwakkel G. Stroke rehabilitation. *Lancet*. 2011 May 14;377(9778):1693-702.