Policy Brief

Optimizing Stroke Care in Indonesia: A Policy Brief on Expanding Access to Thrombolysis for Improved Outcomes

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Stroke is a disease that leads to the number 1 long-term disability rate in the world.[1] Globally, the death rate due to stroke increased from 38.8 per 100.000 in 2018 to 41.8 per 100,000 in 2021.[2] Based on the Indonesia Basic Health Research data, the prevalence of stroke in Indonesia reached 10.9 per 1,000 population in 2018. Meanwhile, in 2019, the Indonesia National Health Insurance released data stating that there were 2,127,000 diagnosed cases of stroke.

Therefore, in 2022, the Ministry of Health of the Republic of Indonesia formulated decision of The Minister of Health of The Republic of Indonesia Number HK.01.07/ MENKES/1948/2022 concerning the Networked Stroke Care Hospital, where the regulation formulates a decentralized system and the provision process to all hospitals, especially Tertiary Hospitals and Regional General Hospitals. This policy is created to optimize services by enhancing the capabilities of resources, management, and referrals through the networked care in hospitals throughout Indonesia.

In the United States, there are 610,000 new cases of stroke per year.[3] When compared to the total population, the estimated number of new cases in Indonesia could reach 300,000 new stroke cases annually. From the estimated new cases, it is expected that there will be around 150,000 - 200,000 patients with ischemic stroke. In the reality is only about 500 - 1000 patients per year receive appropriate treatment, that is

thrombolysis. In comparison with myocardial infarction (MI), where the coverage of patients receiving Percutaneous Coronary Intervention (PCI) or Heparinization is quite extensive, the total number of ischemic stroke patients receiving appropriate treatment is still significantly below the expected standard. The difference between stroke and myocardial infarction lies in the fact that MI requires minimal diagnostic examination, such as EKG, which can be interpreted by cardiologists themselves, making it easier to make decisions of diagnose and definite therapy.[4] Meanwhile, for stroke, supportive examinations involve imaging such as MRI and CT-Scan, which must be interpreted by radiologists and approved by neurologists.[5,6]

The World Stroke Organization (WSO) has seven missions for stroke management, ranging from preventive measures to training at the patient and community level.[7] Indonesia itself needs improvement, especially in curative or intrahospital care. Some challenges faced in accelerating stroke patient care in Indonesia include facilities, the perception of fear of thrombolysis side effects by neurologists, Indonesian national health insurance program limits, and others.

Examining the challenges in facility availability, out of the 3,200 hospitals across Indonesia,[8] only 372 hospitals have CT-Scan facilities. Among them, 120 hospitals are capable of performing thrombolysis, but only 69 hospitals actively engage in this practice. In addition to facilities for thrombolysis, another crucial aspect of ischemic stroke management is neurointerventional facilities for thrombectomy procedures. From 3,200 hospitals, only 27 have conducted thrombectomy on patients with ischemic stroke.[9]

Nowaday, neurologists perceptions is unique challenge, as neurologists in Indonesia were just exposed to thrombolysis management between 2010 and 2014, and not all educational centers have implemented it. The aggressiveness of thrombolysis has only increased after the implementation of policies by the Indonesian Ministry of Health and the new thrombolysis limit financial policy since February 2023.

Further scrutiny may be needed o n neurologists' understanding and experience with stroke management and their apprehensions about thrombolysis.

Financial policy of thrombolysis also presents a challenge that requires special attention. The current Indonesia public health insurance limit only covers thrombolysis drugs without increasing overall claim rates. This needs further investigation because thrombolysis is a risky procedure, and separating the budget for drugs alone may create new concerns for hospitals. This fear stems from the potential financial loss for hospitals in case of complications or prolonged hospitalization. Before regulations on Indonesia public health limits related to thrombolysis, patients were only treated conservatively, and if deterioration or extended care was needed, they were referred to higher-tier hospitals.

The specific policies favoring Tertiary Hospitals or Regional General Hospitals by the Ministry of Health may impede the progress of stroke management development in Indonesia. It might shift from 1,000 cases per year to 2,000 cases per year, which is not proportionate to the government's expenditure strategy in building specialized stroke hospitals, purchasing cath labs, and providing hospital-based neurology education. With only 39 Vertical Hospitals and Regional General Hospitals depending on regional government policies as owners, efficient utilization becomes challenging. A bottom-up approach with additional incentives to the public health insurance care limit for stroke might be necessary, encouraging both government and private hospitals with CT-Scan facilities to compete to become stroke centers. Certification alone is not enough without offering more benefits to those who work hard to become stroke centers. The government has implemented similar incentives in cases of myocardial infarction and COVID, and hospitals have competed to establish these facilities.

We propose several measures to address these issues:

1. **Specialized training for neurologists in ischemic stroke management**

Incentivized neurology training, not just in the form of seminars but direct field engagement. The proposal includes using an online application for real-time transmission of courage, encouragement, and medical advice to neurologists dealing with stroke codes, ensuring they are trained and confident to proceed independently.

2. **"Brainwashing" the neurologist and healthcare teams about the preceptions of thrombolysis**
   Brainwashing efforts for neurologists to make stroke codes a routine aspect of daily medical practice. Once neurologists are accustomed to the stroke code system, the next step is to brainwash medical students.
3. **Improvement of the hospital system involving multidisciplinary work**
   An integrated system where each hospital with a stroke code system involves multiple disciplines, and understanding of the stroke code must be grasped by management, emergency room doctors, neurologists, radiologists, neurosurgeons, and cardiologists.
4. **Improvement of health facilities and infrastructure in Indonesia**
   Encouraging collaboration among district and sub-district hospitals with CT-Scan facilities to assist each other in stroke implementation. This should be promoted by local governments with support from the central government.

REFERENCE

1. Feigin VL, Brainin M, Norrving B, et al. World Stroke Organization (WSO): Global Stroke Fact Sheet 2022. *International Journal of Stroke*. 2022;17(1):18-29. doi:10.1177/17474930211065917
2. National Center for Health Statistics. Multiple Cause of Death 2018–2021 on CDC WONDER Database. Accessed February 2, 2023.
3. Tsao CW, Aday AW, Almarzooq ZI, et al. Heart Disease and Stroke Statistics—2023 Update: A Report From the American Heart Association. *Circulation.* 2023;147:e93–e621.
4. Birnbaum Y, Wilson JM, Fiol M, et al. ECG diagnosis and classification of acute coronary syndromes. Ann Noninvasive Electrocardiol. 2014 Jan;19(1):4-14. doi: 10.1111/anec.12130. Epub 2013 Dec 30. PMID: 24382164; PMCID: PMC6931956.
5. Arhami DA, Baratloo A, Rouhipour A, et al. Interpretation of Computed Tomography of the Head: Emergency Physicians versus Radiologists. Trauma Mon. 2013 Sep;18(2):86-9. doi: 10.5812/traumamon.12023. Epub 2013 Aug 14. PMID: 24350159; PMCID: PMC3860675.
6. Baig MU, Bodle J. Thrombolytic Therapy. [Updated 2023 Aug 28]. In: StatPearls [Internet]. Treasure Island (FL): StatPearls Publishing; 2023 Jan-. Available from: https://www.ncbi.nlm.nih.gov/books/NBK557411/
7. Feigin VL, Brainin M, Norrving B, et al. World Stroke Organization (WSO): Global Stroke Fact Sheet 2022. Int J Stroke. 2022 Jan;17(1):18-29. doi: 10.1177/17474930211065917. Erratum in: Int J Stroke. 2022 Apr;17(4):478. PMID: 34986727.
8. Data Rumah Sakit 2023. Kementrian Kesehatan Reppublik Indonesia. Available from: https://sirs.kemkes.go.id/fo/home/dashboard_rs?id=0
9. Kementrian Kesehatan Republik Indonesia. Power point "Advancing Stroke Care: Role of Stroke Centers and Workforce Development in Indonesia". Jakarta. 2023.