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IRANIAN STROKE MODEL-HOW TO INVOLVE HEALTH POLICYMAKERS

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Stroke in Iran, with more than 83 million population, is a leading cause of disability and mortality in adults. Stroke has higher incidence in Iran comparing the global situation and unfortunately the onset age of first ever stroke is dropping about 10 years.¹ Intravenous thrombolysis, as an approved treatment in ischemic stroke, has been used only in some university or private hospitals in Iran since 2008.² The main limit for this therapy in Iran was the lack of coverage by health insurance companies for tPA. A project for situation analysis of stroke cases entering to Imam Reza Hospital, a tertiary university hospital in North-West of Iran, was performed in 2010 by Neurosciences Research Center. The percentage of cases referring on time and eligible for thrombolysis, barriers, pitfalls and delay gaps in the hospital were detected.³ After analyzing and involving all the related authorities & departments of the Tabriz University of Medical Sciences and performing a maneuver, thrombolysis in all eligible stroke cases was systematically started as pilot in the hospital since 2010. Other centers such as Firoozgar Hospital in Tehran, Ghaem Hospital in Mashhad, Namazi Hospital in Shiraz, and Alzahra Hospital in Isfahan were active in thrombolysis but non-systematically.

After the first International and the sixth National Iranian Stroke Congress-2013 in Tabriz, a WSO endorsed meeting and report of the pilot center results, a statement was distributed to offer more motivation and assistance to stroke programs by health policy makers.⁴ Finally by Iranian Stroke Association (IRSA) and Iranian Neurological Society follow up, Ministry of Health detected stroke as a main health crisis and decided to design and run a program for improving the stroke care in Iran. National stroke committee was organized in 2014 by inviting stroke experts throughout the country. A road map and national strategy were planned to arrange stroke treatment network in Iran reflecting national needs.⁵ "724" hospitals (means active hospitals for stroke service every 7 days of week and 24 hours a day) were defined for those covering at least 300,000 population around it with basic requirements for acute stroke services including thrombolysis. The plan implemented in 2016 in 54 hospitals in the early phase. The requirements, characteristics and protocols for primary and comprehensive stroke care units were defined for 724 hospitals. Meanwhile, a plan for pre-hospital emergency system education to increase their knowledge about stroke and upgrade the system to transfer the stroke cases to 724 hospitals was activated. This new stroke plan was presented in the 10th World Stroke Congress, 2016.² A special national document for acute stroke treatment was published by Ministry of Health. This plan led to coverage of tPA for eligible stroke cases by insurances companies and finally the decrease of its cost.

The main components of Iranian Stroke Program 724 are as follows:⁵

1- **Public Awareness:**

Information regarding the various aspects of stroke including the main alarming signs (FAST), stroke risk factors, lifestyle improvement and primary prevention were considered to public education with stress on FAST in the first phase. We used the different ways to distribute the messages such as media, cyberspace, stroke campaigns, journalism organizations, and health centers to promote community awareness. Special programs such as the World Stroke Day celebrations, National Health Week ceremony, public lectures, question & answer sessions with experts in public places were provided nationwide. For knowledge transfer, we used some animations, posters, banner, short films, and pamphlets involving some special famous persons.

2- **Training of Stroke Team:**

All personnel involved in the treatment of acute stroke patients and relevant departments and systems, senior and middle level managers, emergency staffs, neurologists (individuals introduced for 724 plan), emergency medicine specialists, 724 hospitals managers; nursing, emergency Lab, blood banks, imaging unit

staffs; and selected rehabilitation centers were trained for the protocols to implement the plan. A liaison was appointed in the participating hospital to monitor and report to the national center.

3- Coordination between Systems for Rapid Transfer of Stroke Patients:

A stroke pre-notification code called SAMA was defined in 724 plan for emergencies, hospitals, and universities when the stroke is suspected based on FAST examination. As soon as a patient with suspected acute stroke symptoms called the Dispatch Center within 4.5 hours from onset, SAMA code was activated and announced to all related components (the emergency service and stroke unit staffs in 724 hospital) for being ready to emergency admission, imaging and other processes.

4- Establishment of Acute Stroke Care Units (SCU):

SCUs were defined and launched in all 724 hospitals and managed by neurologists trained about stroke. The units should be well equipped by continuous ECG & BP monitoring facilities and medications needed for stroke management. Public insurance for thrombolytic treatment was provided to all eligible stroke cases. The important time especially 'door-to-needle' time was monitored and tried to keep it under 60 minutes. Preventive measures against complications were implemented in SCUs including swallowing test, DVT prophylaxis and integrated stroke rehabilitation team (occupational therapists, physiotherapists, and speech & language pathologists).

5- National "724" Stroke Registry:

A brief national system was designed to register patients' information in the 724 hospitals. Number of the hospitals increased from 54 centers in 2016 to 120 in 2022 and they continue to increase. This database showed that during the first six years of the 724 plan, >66 000 acute stroke patients have been registered and treated. Among them about 13,148 cases have been treated by intravenous thrombolysis and more than 400 cases of endovascular thrombectomy have been performed. Data monitoring showed that the door to-needle time is going to be decreased every year (from a mean of 69 minutes in 2016 to less than 50 minutes in 2022), and the number of patients receiving tPA was increased (from 784 in 2016 to >13,000 in 2022).

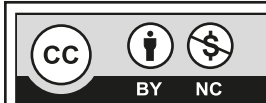
Hopefully, Iran is going to have a major progress in stroke management and thrombolysis of acute ischemic stroke to cover more eligible cases. Fortunately, based on recent WSO-WHO survey, situation of Iran regarding acute stroke services is very good.⁶ However, we need more progress to cover more patients and implement more new advanced treatments and promote other aspects of stroke patients' management.

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