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Roles of general physicians in proper utilizing stroke rapid response team Review

Dr.Albara munir dahlawi[1], Dr.Ali Hassan Almaqsudi[2], Dr.Ahmed Labib Almanzalawi[3], Dr.Eyaad talat ghallab[4], Dr. Majed Ahmed Almogbel[5], DR.Moayad Yahya Mohammed Zakari[6], Dr.Rawan ezzi Abufaia[7], Mohammad Saleh helwan AlGhamdi[8], Abdullah Ali Babaalghayth[9], Atallah Murshid Al-Budhaili[10], Dr. Bassam Mohammed Maghram Assiri[11], Dr.Abdulaziz Sharif Adam[12], Dr.Dina qabbani[13], Dr.Naif Saeed Ali Dakhilallah[14]

[1]King faisal hospital makkah Consultant (infectious diseases and medical consultants)
[2]Tobacco control program-Aseer Health Cluster, Consultant of Preventive Medicine
[3]King abdullah medical complex jeddah, General practice
[4]General practice at King abdullah medical complex jeddah
[5]Family Medicine Registrar at The Second Jeddah Health Cluster - Management of the Health Control Center at King Abdulaziz International Airport in Jeddah Health Care
[6]Family Medicine consultant -The Second Jeddah Health Cluster Management of the health control center at king AbdulAziz International Airport In Jeddah (King AbdulAziz International Airport)
[7]Asfan primary health care, General physician
[8]Emergency Medical Services – Technician at The Second Jeddah Health Cluster - Management of the Health Control Center at King Abdulaziz International Airport in Jeddah
[9]Paramedics at King Abdulaziz Hospitial, Makkah-Saudi Arabia
[10]Khulais Hospital, Emergency ambulance services technician
[11]General Practitioner at Tobacco control program-Aseer Health Cluster
[12]General Practitioner, Durma General Hospital
[13]Medical student, Ibn senia medical college
[14]Aseer Health Cluster, (Al maddah General Hospital), General physician

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ABSTRACT
Stroke patients require prompt treatment due to the time-sensitive advantages of reperfusion treatments. The percentage of patients qualified for reperfusion therapy is restricted, as numerous patients do not promptly alert healthcare professionals. The selection of healthcare system access affects the time of hospital arrival. The active participation of the primary team affects the activation processes of Rapid Response Teams. The RRT position need to complement, rather than replace, an active and attentive primary care team. Rapid response systems (RRS) are established to enhance the safety of hospitalized patients experiencing rapid deterioration by promptly identifying early signs of decline, mobilizing a team of responders equipped to deliver critical care resources and interventions at the patient's location, facilitating swift intervention by the response team, and continuously assessing the system's efficacy and hospital-wide care processes. This approach aims to prevent deterioration that could result in life-threatening events, ensure timely therapy and resuscitation as necessary, and facilitate transfer to a higher level of care while fostering education and a culture of patient safety.

Keywords: location, facilitating, hospital, treatments.

INTRODUCTION

Stroke is a prevalent and alarming medical issue globally due to the disabilities and fatalities it causes. It is a significant source of mortality in both urban and rural regions of India. It is anticipated that, in the forthcoming years, the burden will predominantly escalate in developing nations relative to developed nations [1].

Time is critical in the management of both hemorrhagic and ischemic acute strokes. Timely intervention for stroke patients correlates with improved outcomes, including reduced rates of symptomatic cerebral bleeding, enhanced discharge destinations, and decreased in-hospital mortality rates [2]. Nonetheless, considerable delays frequently occur in the management of patients with acute stroke, particularly in resource-constrained environments. Thrombolysis for stroke patients presents some restrictions, especially at tertiary care facilities. The delay in hospital care can be mitigated through the implementation of a systematic method. Continuous

efforts are undertaken to minimize the time interval between patient arrival and the commencement of therapy. The "Stroke Code" (SC) is a rapid response mechanism designed for this purpose [3].

In individuals with acute ischemic stroke, intravenous thrombolysis (IVT) and endovascular treatment (EVT) are efficacious, and the therapeutic advantages of both reperfusion therapies are significantly time-sensitive. Consequently, it is imperative to evaluate and manage acute stroke patients promptly. Prior research indicates that the majority of treatment delays transpire before hospital admission (prehospital delay). The majority of studies concentrated on patients' help-seeking behavior regarding the recognition, interpretation, and perception of illness intensity. There is a paucity of data regarding the factors that affect a patient's selection of their initial primary healthcare provider. However, this is significant as research indicates that delays in hospital arrival are prolonged when healthcare providers other than emergency medical services (EMS) are the first to respond after stroke onset [4,5].

Review

In December 2004, the Institute for Healthcare Improvement suggested that US hospitals implement rapid reaction teams (RRTs) as one of six key strategies in the 100000 Lives Campaign [6]. Rapid response teams, often known as medical emergency teams, were initially established in Australia in the 1990s. They are the efferent arm of a rapid response system (RRS). The goal of these teams is to deliver critical care knowledge and capabilities to the bedside of a patient who has been identified as having failing health, allowing for timely intervention and avoiding poor outcomes.

In the subsequent decade of experience, RRTs have produced mixed results. Two major meta-analyses found no net effect for RRTs, despite significant heterogeneity in trial design and low study quality [7,8]. Despite the lack of concrete data on how to best create or implement an effective RRS, the concept's face validity is natural and compelling. The RRT has been described as a prime example of "the tension between needing to improve care and knowing how to do it" and is still a source of active quality improvement and discussion.

The role of the primary service in an RRS has not been extensively researched in the literature. The majority of programs and publications have focused on team composition, which mostly entails the employment of intensivists or ICU midlevel doctors to staff the RRT. These models can put teams at a disadvantage because their understanding of the patient is frequently poor. Importantly, coordination among primary care providers can assist overcome this restriction. Benin et al [9] noted many potential conflicts between the primary service, RRT, primary nurse, or a mix of the three, owing to concerns about the decision-making process and the autonomy of the various participating teams. Interestingly, a recent study employing the primary service as the RRT discovered a connection with lower mortality rates, adding to the debate over the actual role of the primary team within an RRS [9].

Staff education (nurses, medicine residents, EMS staff, and intensivists), a dedicated SC number, prioritizing patients for imaging, and keeping a stroke kit on hand in the emergency and radiology units all contribute to minimize door-to-needle time (DTN). Elyar Sadeghi-Hokmabadi also used similar basic approaches to reduce DTI time [9].

The hospital's stroke protocol recommends rapid sequence MRI as the recommended imaging approach for acute stroke patients. The quick sequence MRI procedure includes the localizer, DWI, swipe, and fluid-attenuated inversion recovery sequences. The MRI sequences for AIS patients were completed in 5 minutes. The MRI sequence was similar to that employed by Paolini et al [10].

Another study found a previously recognized phenomena known as "Parkinson's law," which asserts that decisions take longer when physicians have more time. This tendency was noticed in the link between faster STD and slower DTN times [11].

To help optimize GP triage, GPs should be able to immediately call the EMS when the slightest possibility of an acute stroke is suspected in a patient without first physically evaluating the patient. This should be incorporated into current guidelines to improve the rapid hospital arrival of these patients and to reduce time delays caused by the GP's physical evaluation before calling the EMS. According to the review, past stroke experience or stroke knowledge did not result in more frequent EMS calls. Another intriguing conclusion was that 54% of the patients were aware of public stroke awareness efforts that advised them to contact the EMS directly. Despite this knowledge, patients continued to contact their general practitioner first. A prior review found that public campaigns to increase stroke awareness had no impact on behavior; however, the causes behind these findings were not investigated. Thus, it appears that patients prioritize other parameters (such as perceived severity of symptoms) above stroke information [12].

The preexisting relationship between primary care services and patients most likely enabled discussions about care goals. According to other researchers, the existence of a past relationship enhances code status adjustments and their acceptance [13]. Primary teams may have started the conversation and then continued to engage with patients on their decision-making prior to the acute decompensation status, and their participation, whether by phone or in person, provides critical information to the RRT about how to carry out this discourse. The introduction of the RRT without the primary service results in an opinion based on inadequate knowledge.

Importantly, changes in code status were not related with a lower probability of ICU transfer, implying that discussions regarding goals of care did not prevent ICU transfers.

Two recent research examined the role of RRTs in facilitating goals-of-care talks [14,15]. Both investigations discovered that nearly one-third of RRT activations were related to end-of-life issues or inquiries concerning medical treatment restrictions, showing that the RRS plays an essential role in facilitating these discussions. At our institution, main services are in charge of addressing code status, and while the RRT has the authority to do so, this is a topic of continuing controversy. Other institutions may assign major responsibility for this step to the RRT or ICU teams, but our results suggest that this role might be expanded further through improved cooperation and coordination with primary services.

The effect on ICU transfer was large, but the mechanism by which primary team presence influenced this cannot be fully explained with the data we have. We hypothesize that the primary service, which saw the patient before to the RRS, is more sensitive to small changes in the patient's clinical presentation. This theory is validated by both prospective and retrospective data sets, which show that physical presence has a greater influence on increasing transfer rates. However, we cannot rule out other explanations, such as changes in practice over time and disparities across services in the comfort of caring for failing patients outside the ICU. The role of such variable practices restricts generalizability beyond our hospital context, necessitating additional research [15].

The foundations of acute care for in-hospital stroke are the same as for stroke that occurs in the community. Treatment is dependent on prompt examination to rule out stroke mimics, assessing contraindications, and administering thrombolysis and other urgent therapeutic treatments. The rate of intravenous (IV) thrombolytic therapy for in-hospital stroke varies between 2.6% and 11%. The research shows two important disparities in therapy delivery for this population. The first is that patients with in-hospital stroke frequently have medical or surgical contraindications for IV thrombolysis. The second is that in-hospital stroke evaluation and treatment times surpass quality requirements and are longer than for community-onset strokes [16,17].

A Colorado stroke database analysis revealed a significantly higher proportion of medical contraindications to IV thrombolysis (68% vs 37%; P <.0001). Many patients with in-hospital stroke are taking anticoagulants, have had previous bleeding, or have had a recent invasive operation. Physicians and those in charge of in-hospital stroke response system design should be aware of the increased risk of contraindication to IV thrombolysis [17].

Patients with in-hospital stroke who are appropriate for IV thrombolytic treatment appear to benefit equally from the treatment as patients with community-onset stroke. A retrospective assessment of patients with in-hospital strokes who received IV thrombolysis revealed comparable rates of neurologic improvement to treated community-onset strokes. There was no significant difference between in-hospital and community-onset strokes, with NIHSS drop ≥8 points at 7 days (63% vs 52%; P = nonsignificant) and mRS decrease ≤2 at 90 days (56% vs 55%; P = nonsignificant). Safety looks to be similar. In a national registry, patients with in-hospital stroke who are treated with IV thrombolysis have similar rates of intracranial hemorrhage (ICH; 4.5% vs 5.3%; P =.0988) and serious bleeding (1.6% vs 1.2%; P =.0871), but have slightly higher rates of "other serious complications" (3.2% vs 2.5%; P =.0288) compared to community-onset strokes after IV thrombolysis [18].

Although the prehospital period, which accounts for the majority of the time between stroke onset and treatment in the community, is not defined, delays in hospital-based evaluation for in-hospital strokes have been reported.18 According to a 2008 study from Spain, just 25% of in-hospital stroke cases were treated as an emergency by neurologists. A third of patients in a 2010 research were not seen by a neurologist during the thrombolytic window, and delays in contacting the neurologist prevented IV thrombolytic therapy for half of eligible patients [19]. In the statewide Michigan Stroke Registry, only 3.1% of patients with in-hospital stroke had brain imaging within the recommended 25 minutes of symptom detection. In the American Heart Association/American Stroke Association national Get-With-The-Guidelines database, the average time to treatment for in-hospital strokes was 100 minutes, and only one in every five patients with in-hospital stroke met the goal of 60 minutes from hospital staff recognizing symptoms to treatment [20].

CONCLUSION

The selection of a healthcare provider is influenced by patient-related factors, as the majority of patients initially contact their general practitioner (GP) rather than the emergency medical services (EMS). There is a threshold at which patients who alarm their general practitioner may either underestimate their symptoms or burden the emergency medical services. Thus, strategies that optimize public awareness campaigns, GP triage, and adjust current guidelines to reduce prehospital delays can still yield substantial and pertinent improvements. These strategies include the immediate involvement of the EMS upon the suspicion of acute stroke.

The data indicate that the primary team's participation in collaboration with the RRT is advantageous in that it facilitates discussions regarding the patient's clinical course at our institution and provides insight into the patient's objectives of care. The function of the RRT should be an adjunct to, rather than a substitute for, a present and engaged primary care team.

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