REVIEW & SPECIAL ARTICLE

Fast Track of Stroke in the Care of Anesthesia Providers

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Stroke, a devastating medical emergency, requires rapid intervention to mitigate its severe consequences. Anesthesia providers, as frontline healthcare professionals in various perioperative settings, are uniquely positioned to play a vital role in the swift management of stroke patients. The present article explored the concept of fast-tracking stroke care within the purview of anesthesia providers, emphasizing the critical aspects of early recognition, interdisciplinary collaboration, and evidence-based interventions.

The present article underscored the urgent need for anesthesia providers to develop a heightened awareness of stroke symptoms and risk factors, enabling them to expedite the diagnosis and initiation of appropriate interventions. Furthermore, it delved into the significance of establishing robust communication channels and cooperation between anesthesia providers, neurologists, and emergency teams to ensure a seamless and efficient care continuum for stroke patients.

The integration of evidence-based practices into anesthesia protocols was central to this discussion, with a focus on optimizing perioperative strategies that minimized the risk of stroke occurrence and enhanced post-stroke recovery. Additionally, the present article highlighted the potential impact of fast-tracking stroke care on patient outcomes, emphasizing the role of anesthesia providers in improving stroke survival rates and reducing long-term disabilities.

Keywords: Anesthesia providers; Fast track approach; Perioperative management; Stroke care

Received 26 April 2024 | Revised 11 July 2024 | Accepted 15 July 2024

J Med Assoc Thai 2024;107(9):739-47

Website: http://www.jmatonline.com

Timely management of stroke is of paramount importance in reducing morbidity and mortality associated with this medical emergency. Stroke is a leading cause of death and long-term disability worldwide, requiring urgent intervention to maximize outcomes. Anesthesia providers play a crucial role in the comprehensive care of stroke patients, particularly in the perioperative and intraoperative settings. The present article aimed to provide and explore the important concept of the fast-track approach in stroke management, highlight the specific role of anesthesia providers in stroke care, and explore the concept of the fast-track approach for optimizing outcomes in stroke patients.

Stroke is a medical condition characterized by the sudden disruption of blood flow to the brain, leading to cellular injury and neurological deficits. It can be classified into ischemic and hemorrhagic stroke, with ischemic stroke being the most common form. Time is of the essence in stroke management, as the brain's oxygen and nutrient supply is compromised during an acute stroke event. The sooner blood flow can be restored to the affected area, the greater the chances of minimizing brain damage and improving functional recovery[1,2].

Anesthesia providers play a vital role in stroke care by ensuring the rapid assessment, stabilization, and appropriate management of stroke patients. They are often involved in the initial evaluation of patients presenting with stroke symptoms, assisting in the diagnosis and triage process. Anesthesia providers possess the clinical expertise to recognize the signs and symptoms of stroke, conduct a thorough neurologic assessment, and determine the most appropriate course of action. It aims to minimize delays in stroke diagnosis, evaluation, and treatment by implementing efficient protocols and coordinated efforts among various healthcare providers, including anesthesia professionals. By highlighting the benefits and challenges associated with the fast-track approach, the present article seeks to improve the

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How to cite this article:

Pandomrong K, Parakkamodom S, Yangan K, Hortrakul P, Noipitak S, Vichitvejpaisal P. Fast Track of Stroke in the Care of Anesthesia Providers. J Med Assoc Thai 2024;107:739-47.

DOI: 10.35755/jmedassocthai.2024.9.739-747-800

understanding and implementation of time-critical stroke care strategies.

Understanding stroke

Stroke is a medical condition characterized by the sudden interruption of blood flow to the brain, resulting in the deprivation of oxygen and nutrients to brain cells. This interruption can lead to the rapid onset of neurological deficits and, if not promptly treated, can cause significant disability or even death. There are two main types of strokes, ischemic stroke and hemorrhagic stroke.

Ischemic stroke is the most common type, accounting for approximately 80% of all strokes. It occurs when a blood vessel supplying the brain becomes blocked or narrowed, usually due to a blood clot. The clot may form within the blood vessel, for thrombotic stroke, or travel from another part of the body and get lodged in a brain artery, for embolic stroke[1-3].

Hemorrhagic stroke occurs when a blood vessel in the brain ruptures, causing bleeding into or around the brain. This type of stroke accounts for approximately 20% of all strokes. There are two subtypes of hemorrhagic stroke, intracerebral hemorrhage, which involves bleeding directly into the brain tissue, and subarachnoid hemorrhage, which involves bleeding in the space between the brain and the surrounding membranes[1-4].

Common symptoms and risk factors[1,5-7]

Recognizing the symptoms of stroke is paramount for prompt intervention. Stroke symptoms encompass:

Sudden numbness or weakness, typically on one side of the body, affecting the face, arm, or leg.

Sudden onset of confusion, speech difficulties, or trouble understanding speech.

Sudden vision problems affecting one or both eyes.

Sudden, severe headache with no apparent cause.

Sudden dizziness, loss of balance, or coordination difficulties.

Time plays a pivotal role in delivering effective stroke treatments. The window for optimal intervention narrows, with the best outcomes achievable when stroke symptoms are identified and diagnosed within three hours of their onset. Employ the F.A.S.T. acronym[6-8].

F: Assess for facial drooping. Ask the individual to smile and check for asymmetry.

A: Observe arm strength. Request the person to raise both arms and look for any drifting downward.

S: Evaluate speech. Have the person repeat a simple phrase and listen for slurred or unusual speech.

T: Time is of the essence. If any of these signs were present, immediately call for a mobile stroke unit (MSU) or an ambulance.

Additionally, if someone experiences sudden numbness or weakness in their face, arm, or leg, particularly on one side, sudden confusion, speech difficulties, vision issues, balance problems, dizziness, or coordination challenges, there is a potential for a stroke.

It was important to note that certain risk factors increase the likelihood of experiencing a stroke. These risk factors can be categorized into two main types:

Non-modifiable risk factors. These risk factors cannot be changed and include age as stroke risk increases with age, gender as men have a slightly higher risk, and family history of stroke or certain genetic conditions.

Modifiable risk factors. These risk factors can be controlled or managed through lifestyle modifications or medical interventions. Common modifiable risk factors for stroke include high blood pressure, smoking, obesity, physical inactivity, high cholesterol, diabetes, excessive alcohol consumption, and illicit drug use.

Enhancing acute stroke care and minimizing delays[7,9,10]

Efforts to reduce delays in acute stroke care have become increasingly important in improving patient outcomes. Healthcare providers play a significant role in addressing these delays, and the use of emergency medical services (EMS) is crucial in minimizing prehospital delays. To achieve this, a systematic approach is needed, encompassing various strategies:

Community-based interventions: These include mass media campaigns and public education programs to raise awareness about stroke symptoms and the importance of seeking immediate medical attention.

Professional education programs: Ensuring that healthcare professionals are well-informed and trained in stroke care is essential. These involve continuous education and the establishment of stroke teams and protocols within healthcare facilities.

Ambulance protocols: Implementing specific protocols for ambulance services to streamline the process of identifying and treating stroke patients during transport to the hospital.

A significant advancement in stroke care is the

introduction of MSUs, which provide prehospital stroke treatment. MSUs have rapidly expanded globally and aim to initiate stroke treatment during the critical "golden hour" when thrombolysis is most effective. Recent landmark trials, such as B_PROUD and BEST-MSU, have provided compelling evidence that MSUs lead to significantly reduced disability compared to conventional ambulance care. MSUs can deliver faster tissue plasminogen activator (tPA) treatment and swiftly transport stroke patients to centers equipped with endovascular capabilities. This approach increases the proportion of patients receiving treatment within 60 minutes of stroke onset and demonstrates a positive trend toward better clinical outcomes at the three-month mark[11,12].

Impact of delayed treatment on patient outcomes

In the realm of acute ischemic stroke management, the importance of time cannot be overstated. The critical factor influencing patient outcomes is the swift initiation of treatment. Research from the National Institute for Neurological Disorders and Stroke (NINDS) underscores the significance of this time-sensitive approach. Treating acute ischemic stroke within the first few hours of symptom onset can significantly reduce infarct size and improve outcomes. Specifically, intravenous fibrinolysis is most effective when administered within 90 minutes of symptom onset, and treatment within three hours is highly beneficial[13,14].

A key target in stroke therapy is the ischemic penumbra, a region of threatened but salvageable tissue surrounding the infarct core. However, the window of opportunity to save this tissue is brief, lasting only a few hours in human patients. For each minute that treatment is delayed, an ischemic stroke patient may lose approximately 1.9 million neurons[15].

The urgency of timely intervention becomes even clearer when considering the potential consequences of untreated strokes. Acute ischemic strokes can lead to cognitive impairment and various deficits. For instance[15]:

- Approximately 23% of patients experience dysphasia, or language impairment.
- Around 77.4% exhibit an acute upper limb motor deficit.
- 18.7% have an altered level of consciousness.

These deficits not only diminish the patient's quality of life but also contribute to delays in receiving medical care, often requiring assistance from another individual. As such, rapid intervention is essential to maximize survival and minimize disability in acute ischemic stroke cases.

The "time window" from the onset of a stroke to treatment is pivotal. Brain-imaging studies reveal that irreversibly injured brain tissue rapidly expands during an ischemic stroke, causing the loss of millions of neurons each minute until blood flow is restored. Research consistently emphasizes the importance of faster treatment. A mere 15-minute reduction in treatment time can lead to substantial improvements in outcomes, including higher chances of patients returning home, walking at discharge, and reduced risks of experiencing hemorrhagic symptoms or death[16].

The NINDS recommends thrombolytic therapy within one hour of admission for acute ischemic stroke patients, yet healthcare providers often struggle to meet these standards, resulting in low compliance rates, even in developed countries[17].

Swift interventions, such as thrombolytic therapy or mechanical clot retrieval, can restore blood flow and mitigate brain injury. However, the time window for these interventions is limited, with thrombolytic therapy's effectiveness diminishing significantly beyond the first few hours of symptom onset. Consequently, delays in seeking medical attention or initiating appropriate treatment can significantly worsen outcomes for stroke patients.

The consequences of delayed treatment are extensive and severe, encompassing long-term disability, loss of independence, cognitive impairment, speech and language difficulties, and even death. To mitigate these outcomes, timely recognition of stroke symptoms, immediate activation of EMS, and prompt evaluation and treatment at specialized stroke centers are vital to minimize the impact of stroke and optimize patient outcomes.

The fast-track approach in stroke care

The fast-track approach in stroke care involves the implementation of streamlined protocols and coordinated efforts among healthcare providers to expedite the diagnosis, evaluation, and treatment of stroke patients. The primary goals of the fast-track approach are to minimize delays in stroke management and optimize patient outcomes[18].

The fast-track approach aims to reduce the time from stroke symptom onset to treatment initiation, with a specific focus on time-sensitive interventions such as thrombolytic therapy and endovascular procedures. By reducing treatment delays, the fast-track approach seeks to maximize the effectiveness of

interventions, minimize brain damage, and improve functional recovery and long-term outcomes for stroke patients.

Implementing streamlined protocols is a crucial aspect of the fast-track approach. These protocols include standardized procedures and guidelines that enable rapid assessment, diagnosis, and treatment of stroke patients. They help healthcare providers efficiently navigate through the various steps involved in stroke care, ensuring timely intervention, and minimizing unnecessary delays. The details regarding the fast-track approach are:

Rapid assessment and diagnosis: The fast-track approach emphasizes the importance of promptly assessing and diagnosing stroke patients. This involves recognizing stroke symptoms, conducting a focused neurological examination, and utilizing imaging techniques such as computed tomography (CT) or magnetic resonance imaging (MRI) to confirm the diagnosis and determine the type and extent of brain injury. Rapid assessment and diagnosis enable healthcare providers to initiate appropriate treatment as quickly as possible.

Prompt administration of thrombolytic therapy. Thrombolytic therapy, such as the administration of PA, is a time-sensitive intervention for eligible ischemic stroke patients. The fast-track approach emphasizes the importance of promptly initiating thrombolytic therapy within the therapeutic time window. This requires efficient coordination between the stroke team, emergency department, and pharmacy to ensure the rapid preparation and administration of the medication.

Coordination with interventional radiology for endovascular procedures: In cases where thrombolytic therapy is not sufficient or feasible, endovascular procedures, such as mechanical thrombectomy, may be indicated for eligible patients. The fast-track approach involves close coordination between the stroke team and interventional radiology to expedite the transfer of patients to the angiography suite for these specialized procedures. This coordination ensures that eligible patients receive timely access to endovascular interventions.

Continuous monitoring and support. Throughout the treatment process, the fast-track approach emphasizes the need for continuous monitoring and support. This includes close monitoring of vital signs, neurological status, and response to treatment. Anesthesia providers and critical care teams play a crucial role in ensuring patient stability, managing potential complications, and providing ongoing care and support during the acute phase of stroke management.

Benefits and impact

The fast-track approach in stroke care brings benefits and has a significant impact on patient outcomes, healthcare delivery, and overall stroke management.

Improved patient outcomes and reduced disability. The primary goal of the fast-track approach is to optimize patient outcomes by minimizing treatment delays. By expediting the diagnosis and initiation of time-sensitive interventions, such as thrombolytic therapy and endovascular procedures, the fast-track approach can help reduce brain damage and improve functional recovery. Timely treatment has been associated with better outcomes, including reduced disability and improved quality of life for stroke patients.

Reduction in treatment delays and associated complications. The fast-track approach is specifically designed to minimize treatment delays in stroke care. By implementing streamlined protocols, improving processes, and enhancing collaboration among healthcare providers, the time from symptom onset to treatment initiation can be significantly reduced. This reduction in treatment delays has a direct impact on patient outcomes, as it helps to minimize brain injury and prevent the progression of stroke-related complications.

Enhanced collaboration and communication among healthcare providers. The fast-track approach fosters a collaborative and multidisciplinary approach to stroke care. It encourages effective communication and coordination among various healthcare providers, including emergency department staff, neurologists, radiologists, anesthesiologists, neuro-interventionalists, and critical care specialists. By working together, healthcare teams can streamline workflows, share information and expertise, make timely treatment decisions, and ensure continuity of care throughout the stroke management process.

Efficient resource utilization: The fast-track approach can contribute to more efficient utilization of healthcare resources. By reducing treatment delays and optimizing patient flow, unnecessary hospital stays can be minimized, leading to cost savings and improved resource allocation. The fast-track approach helps ensure that stroke patients receive appropriate and timely interventions, reducing the need for prolonged hospitalization and subsequent healthcare costs.

Increased awareness and education: Implementing the fast-track approach raises awareness about the importance of timely stroke management among healthcare providers and the general public. It highlights the significance of recognizing stroke symptoms, seeking immediate medical attention, and understanding the available treatment options. Through education and awareness campaigns, the fast-track approach can help improve community knowledge about stroke prevention, early recognition, and the importance of rapid treatment.

Challenges and considerations

While the fast-track approach in stroke care offers benefits, it also presents challenges and considerations that need to be addressed.

Resource allocation and staffing implications. Implementing the fast-track approach requires careful consideration of resource allocation and staffing implications. This approach may increase the demand for healthcare resources, including personnel, equipment, and infrastructure. Adequate staffing levels, especially in emergency departments and stroke centers, are crucial to ensure timely assessment, diagnosis, and treatment. Healthcare organizations need to plan and allocate resources effectively to accommodate the increased workload associated with the fast-track approach.

Ensuring ongoing training and education for anesthesia providers: Anesthesia providers play a vital role in stroke care within the fast-track approach. It is essential to ensure that these providers receive ongoing training and education to stay updated with the latest guidelines and advancements in stroke management. Continuous professional development programs and regular training sessions can help anesthesia providers enhance their knowledge and skills, enabling them to deliver high-quality care to stroke patients effectively.

Addressing potential risks and complications. The fast-track approach involves expediting the fast-track treatment of stroke patients, which may increase the potential risks and complications. For example, thrombolytic therapy carries the risk of bleeding complications, and endovascular procedures have associated risks such as vessel dissection or perforation. Healthcare providers need to be vigilant in monitoring for and promptly managing these potential complications. Clear protocols, guidelines, and standard operating procedures should be in place to address potential risks, ensure patient safety, and minimize adverse events.

Interdisciplinary collaboration and communication: Effective interdisciplinary collaboration and communication are essential components of the fast-track approach. However, achieving seamless communication and coordination among various healthcare providers can be challenging. Ensuring open lines of communication, establishing clear roles and responsibilities, and implementing efficient communication systems such as electronic health records and telemedicine, are crucial for effective collaboration and information sharing. Regular multidisciplinary meetings and case discussions can also facilitate the exchange of knowledge and enhance teamwork.

Patient and family education. Engaging and educating patients and their families about the fast-track approach is crucial. Providing information on stroke symptoms, the importance of seeking immediate medical attention, and the potential treatment options can empower patients to actively participate in their care. Clear communication regarding the risks, benefits, and expected outcomes of the fast-track approach can help patients and their families make informed decisions and actively participate in the treatment process.

Ethical and legal considerations: The fast-track approach may raise ethical and legal considerations. For instance, decisions regarding treatment eligibility and prioritization within the fast-track approach may pose ethical dilemmas. Healthcare providers need to ensure that decisions are made based on transparent and ethical principles, considering the best interests of the patients and the available resources. Compliance with legal regulations and documentation requirements is also crucial to ensure patient safety and mitigate potential legal implications.

Perioperative stroke

Stroke is the fifth leading cause of death in the United States, accounting for one out of every 20 deaths per year. Perioperative stroke refers to a stroke occurring within 30 days following surgery. The overall incidence of diagnosed stroke after non-cardiac and non-neurologic surgery is between 0.1% and 0.8%[19].

The primary goal of early therapy in acute ischemic stroke is to restore cerebral blood flow and minimize infarct size, as these factors significantly impact patient outcomes. General anesthesia during endovascular stroke treatment has been associated with poorer outcomes, with studies showing that patients who receive general anesthesia have a higher

rate of adverse outcomes compared to those who receive local anesthesia, also known as conscious sedation (CS).

A meta-analysis by Brinjikji et al. included nine studies with 1,956 patients that 814 came with general anesthesia and 1,142 with CS. The analysis revealed that patients under general anesthesia had a higher risk of death (odds ratio [OR] 2.59) and lower odds of achieving a good functional outcome (OR 0.43) compared to those under CS. Additionally, patients under general anesthesia had a higher risk of pulmonary complications (OR 2.09), but there was no significant difference in procedure time[20].

Another study presented at the International Stroke Conference by Berkhemer showed that non-general anesthesia (CS) was associated with a more favorable outcome at 90 days, with a higher percentage of patients achieving a modified Rankin Scale score of 0 to 2 at 38% versus 23%. Furthermore, general anesthesia was linked to delayed initiation of interventional therapy compared to CS, with longer time intervals at 162±69 minutes versus 134±60 minutes. Lastly, there was a conversion from non-general anesthesia to general anesthesia in 4.4% of cases[21].

Preventing and managing perioperative strokes

Though the incidence of diagnosed stroke after non-cardiac and non-neurologic surgery ranges is low, the clinically unrecognized strokes, known as "covert strokes", can be as high as 7% for patients aged 65 and older[6].

Perioperative strokes carry significant risks for morbidity and mortality, so it was crucial for healthcare providers to focus on prevention and detection. Anesthesia providers have a vital role in this process, starting with evaluating patients' risk factors for stroke, which can be exacerbated in a surgical setting due to factors like age, gender, ethnicity, heredity, obesity, and medical conditions.

For patients who previously had strokes, it may be advisable to delay elective surgery for one to three months to reduce the risk of another stroke. During surgery, anesthesia professionals should take steps to protect the brain, such as careful positioning, maintaining adequate hydration, controlling blood glucose levels, stabilizing hemodynamics, administering blood transfusions when necessary, ensuring proper ventilation, and using beta blockers when appropriate.

Postoperative monitoring of vital signs is crucial for detecting signs of stroke, and immediate action should be taken if a stroke was suspected. A 2018 NeuroVISION clinical trial revealed that neuropathologic abnormalities were a significant contributor to the incidence of new covert strokes, which were diagnosed through postoperative MRI in patients aged 65 and older[22].

The role of anesthesia practitioners

Anesthesia providers play a crucial role in the comprehensive care of stroke patients, contributing their expertise and training to ensure optimal outcomes. Their involvement spans various stages of stroke management, from the initial evaluation and triage to the perioperative and intraoperative settings.

Expertise and training. Anesthesia providers, including anesthesiologists and nurse anesthetists, undergo extensive education and training in the management of critical and perioperative care. They possess in-depth knowledge of cardiovascular physiology, airway management, hemodynamic monitoring, and pharmacology, which are all essential in the management of stroke patients. Their expertise extends to the administration of anesthesia, sedation, and pain management, which are often required during diagnostic or therapeutic interventions for stroke.

Collaborative approach. Anesthesia providers work closely with other healthcare professionals, forming a multidisciplinary team to provide comprehensive stroke care. This collaborative approach involves close coordination with emergency medicine physicians, neurologists, neuro-interventionalists, radiologists, critical care specialists, and nursing staff. By working together, these healthcare professionals can ensure prompt and effective management of stroke patients, optimize treatment decisions, provide ongoing care, and monitor throughout the patient's journey.

Acute phase of stroke management. The choice of anesthesia for endovascular treatment of acute ischemic stroke has a significant impact on patient outcomes and should be administered promptly, given the critical importance of time in stroke management. It was essential to carefully monitor arterial pressure during anesthesia induction, avoiding a sudden drop and allowing for a controlled reduction in arterial pressure upon recanalization. The selection of the anesthesia technique, whether it was general anesthesia, monitored anesthesia care, or local anesthesia, should be based on an individualized assessment of the patient's specific risks and benefits[23].

In the acute phase of stroke management, anesthesia providers play a critical role in several aspects[17].

1) Initial evaluation and triage. Anesthesia providers are often involved in the initial evaluation of stroke patients present to the emergency department. They contribute to the rapid assessment and diagnosis of stroke, assisting in the recognition of symptoms, performing a neurological assessment, and facilitating appropriate triage decisions.

2) Airway management. Stroke patients may have compromised airways due to neurological deficits, altered mental status, or associated medical conditions. Anesthesia providers are skilled in airway management techniques, ensuring adequate oxygenation and ventilation during the acute phase. They may intervene with techniques such as endotracheal intubation or use advanced airway devices to secure the airway and maintain optimal respiratory function.

3) Hemodynamic management. Maintaining stable blood pressure and hemodynamic parameters is crucial in stroke care. Anesthesia providers monitor and manage blood pressure, heart rate, and fluid balance to optimize cerebral perfusion and minimize the risk of secondary brain injury. They are experienced in the administration of vasoactive medications and titrating their dosages to achieve appropriate hemodynamic targets.

4) Sedation and pain management. During diagnostic procedures or interventional therapies, anesthesia providers may be responsible for providing sedation or anesthesia to ensure patient comfort and cooperation. They are trained to administer medications safely and effectively while closely monitoring vital signs and patient response.

5) Surgical interventions. In cases where surgical interventions, such as decompressive craniectomy or vascular procedures, are required for stroke management, anesthesia providers play a crucial role in the perioperative and intraoperative settings. They optimize the patient's physiological status, ensure anesthesia induction and maintenance, monitor vital signs, and manage any intraoperative complications that may arise.

Future directions in stroke care

The field of stroke care and the role of anesthesia providers are continually evolving, with ongoing advancements and potential future directions. Below are some potential areas of advancement in stroke care and anesthesia provider involvement.

Advancements in imaging and diagnosis. The development of advanced imaging techniques, such as multiparametric MRI and advanced CT angiography, may further improve the accuracy and efficiency of stroke diagnosis. These advancements can assist anesthesia providers in better identifying the type and extent of brain injury, guiding treatment decisions, and optimizing patient outcomes.

Personalized medicine and biomarkers. Future research may focus on identifying biomarkers or genetic markers that can help predict individual patient responses to specific stroke treatments. This personalized approach to stroke care can assist anesthesia providers in tailoring interventions and medications to each patient's unique characteristics, optimizing treatment outcomes.

Neuroprotective strategies. Further research and development of neuroprotective strategies with the aim to minimize secondary brain injury and enhance neurologic recovery in stroke patients is being done. Anesthesia providers can play a vital role in the administration and monitoring of neuroprotective agents, as well as optimizing anesthesia techniques to support neuroprotection during surgical interventions or endovascular procedures.

Telemedicine and remote consultation. The use of telemedicine and remote consultation is likely to expand in stroke care. Anesthesia providers can leverage telemedicine technology to provide remote assessment and consultation, enabling access to specialized stroke expertise for patients in underserved areas. This can enhance the efficiency and accessibility of stroke care, particularly in rural or remote regions.

Importance of continued research and innovation

Continued research and innovation are vital for advancing stroke care and optimizing anesthesia provider involvement. Ongoing research can help identify novel therapeutic approaches, refine treatment protocols, and improve patient outcomes. Furthermore, innovative technologies and techniques can enhance the delivery of anesthesia and critical care during stroke interventions, ensuring patient safety and optimizing outcomes[23].

Research and innovation should also focus on evaluating the long-term effects of the fast-track approach and other time-critical stroke care strategies. Comparative studies, clinical trials, and outcome assessments can provide valuable insights into the effectiveness, sustainability, and cost-effectiveness

of these approaches, guiding future implementation and quality improvement efforts.

Conclusion

Timely stroke management is crucial to mitigate its devastating impact on patients' lives. Stroke, a leading global cause of death and disability, demands urgent intervention for optimal outcomes. Delayed treatment consequences in acute ischemic stroke are profound, with each minute of delay resulting in significant neuronal loss. Timely intervention is particularly critical since untreated strokes can lead to cognitive impairment and various deficits. The fast-track approach in stroke care, focusing on minimizing treatment delays and streamlining protocols, offers substantial benefits, including improved patient outcomes, reduced disability, and enhanced resource utilization.

Anesthesia practitioners are pivotal in comprehensive stroke patient care, from initial evaluation and triage to the perioperative and intraoperative settings. They play a significant role in stroke care, utilizing their expertise to ensure rapid assessment, stabilization, and appropriate management. The choice of anesthesia technique during endovascular stroke treatment is pivotal, with general anesthesia linked to poorer outcomes compared to CS. To address perioperative stroke risk, anesthesia professionals play a crucial role in evaluating patients' risk factors, protecting the brain during surgery, and monitoring postoperative complications.

The ongoing advancement of imaging techniques, personalized medicine, and neuroprotective strategies holds promise for further improving stroke care. Continued research and innovation are essential to drive progress in stroke management and anesthesia provider involvement. Through collaborative efforts and a focus on optimizing the fast-track approach, healthcare providers can better serve stroke patients, minimize disability, and enhance their quality of life.

What is already known on this topic?

Prior research has established the critical importance of timely intervention in stroke management, emphasizing that delays can lead to increased disability and mortality. The "golden hour" for stroke treatment, particularly thrombolysis, has been well-documented. Additionally, the role of healthcare providers, including anesthesia professionals, in recognizing stroke symptoms and coordinating rapid care has been acknowledged. The implementation of MSUs has also shown promise in reducing delays and improving patient outcomes. However, the existing knowledge underscores the need for ongoing efforts to minimize delays further and enhance the efficiency of stroke care.

What does this study add?

This article adds to the existing body of knowledge by highlighting the significant impact of the fast-track approach in stroke care, which focuses on streamlining protocols and optimizing coordination among healthcare providers, including anesthesia professionals. It emphasizes the benefits of reducing treatment delays, such as improved patient outcomes and reduced disability, while also addressing potential challenges and considerations in implementing this approach.

Furthermore, the article underscores the evolving landscape of stroke care, with advancements in imaging, personalized medicine, and neuroprotective strategies offering promising avenues for enhancing patient care. By emphasizing the vital role of anesthesia providers and the importance of continued research and innovation in stroke management, this study contributes to the ongoing efforts to optimize stroke care and minimize its devastating consequences.

Conflicts of interest

The authors declare no conflict of interest.

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