E7 - Interventional Radiologic Technologists and Stroke Care: Roles, Preparation, and Materials

2026 Spring Symposium

Abstract

Strokes are a serious medical emergency that require rapid, well-coordinated treatment to reduce the risk of permanent brain damage or death. Strokes occur when a bleed is present in the brain, preventing the tissue from receiving oxygen. Interventional Radiology (IR) has become a vital component in the treatment of strokes. IR teams play a critical role not only during the procedure itself, but also in procedure preparation, advanced imaging, and interdisciplinary collaboration throughout the patient's care. Responsibilities include preparing the procedure room and trays, utilizing specialized equipment, and ensuring clear communication among team members to promote efficiency and safety. This paper explains the two types of strokes and highlights how advanced medical technology and strong teamwork are essential in stroke care.

Interventional Radiologic Technologists and Stroke Care: Roles, Preparation, and Materials

Introduction

As healthcare systems continue to enhance rapid-response protocols, Interventional Radiology has become a key component of modern stroke management. The role of the IR suite during a stroke extends far beyond the procedure itself. It requires seamless coordination, advanced imaging, and highly trained technologists who support every phase of the intervention. Understanding IR's contribution to stroke care highlights not only the use of advanced medical technology, but also the critical teamwork necessary to provide timely, life-saving treatment. This paper will define what a stroke is, outline the responsibilities of the interventional radiologic technologist during stroke care, describe the tray preparation, and explain equipment used during these procedures.

Discussion

What is Stroke?

A stroke is a serious medical emergency that occurs when blood flow to the brain is suddenly interrupted, either by a blockage or bleeding within the brain. When the brain is deprived of adequate blood flow, oxygen, and nutrients, brain cells begin to die within minutes (Brown, 2024). With this rapid progression, recognizing stroke symptoms and seeking immediate medical attention is critical.

Common signs of a stroke include difficulty speaking or understanding, vision problems, severe headache, trouble walking, numbness or weakness in the face, arm or leg (Brown, 2024). Anyone experiencing these symptoms should seek medical care immediately.

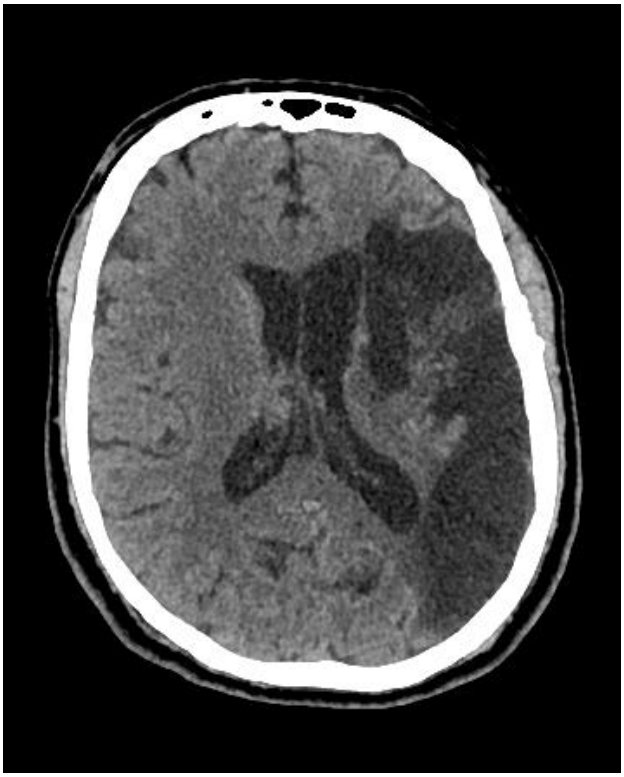
To help identify stroke symptoms quickly, many hospitals use the acronym “BE FAST”. Each letter represents a key warning sign: “B” for balance loss, “E” for eyesight changes, “F” for face drooping, “A” for arm weakness, “S” for speech difficulty, and “T” for time to call 911 or stat team (Penn State Health, 2017).

There are two main types of strokes that can occur in the brain: ischemic stroke and hemorrhagic stroke, each requiring rapid and specialized treatment.

Ischemic Stroke

An ischemic stroke occurs when a blood clot blocks a blood vessel supplying the brain, reducing or completely stopping blood flow to affected brain tissue (Cleveland Clinic, 2024). This interruption can quickly lead to permanent brain damage or death if not treated promptly. Several conditions increase the risk of ischemic stroke, including clotting disorders, atrial fibrillation, structural heart defects such as atrial or ventricular septal defects, and microvascular ischemic disease, which involves blockage of smaller blood vessels within the brain. The symptoms of an ischemic stroke often align with the BE FAST warning signs, including facial drooping, arm weakness, speech difficulties, and balance or vision changes. In some cases, patients may also experience nausea and vomiting, which can help distinguish ischemic strokes from other types of strokes (Elamir, 2023). Ischemic strokes are the most common type of stroke, accounting for approximately 87% of all stroke cases (American Stroke Association, 2024). Although they are generally considered less immediately catastrophic than hemorrhagic strokes,

ischemic strokes remain a medical emergency and require rapid intervention to minimize brain injury and improve patient outcomes.



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Hemorrhagic Stroke

The second major type of stroke is a hemorrhagic stroke, which occurs when a blood vessel in or around the brain ruptures, leading to bleeding within the brain or surrounding tissues (Stanford, n.d.). This bleeding increases pressure on brain tissue and can cause significant neurological damage. Hemorrhagic strokes are more likely to occur in individuals with chronic high blood pressure or atherosclerosis, a condition characterized by plaque buildup within the arterial walls (Cleveland Clinic, 2024). During a hemorrhagic stroke, blood leaks from the damaged vessel into the brain tissue or the spaces surrounding the brain, disrupting normal brain

function (Stanford, n.d.). Patients experiencing a hemorrhagic stroke often report a sudden, severe headache—commonly described as intense pain in the back of the head—along with other symptoms identified in the BE FAST acronym, such as facial drooping, arm weakness, and speech difficulties (Elamir, 2023). Although hemorrhagic strokes are less common and account for approximately 13% of all stroke cases, they are often more severe and require immediate medical attention. Prompt recognition of symptoms and rapid intervention are critical to reducing the risk of serious complications or death (American Stroke Association, 2019).

Introduction to Radiology

What are the Responsibilities of the IR Tech During a Stroke?

During a stroke intervention, the interventional radiologic technologist (IR tech) plays a critical role in ensuring that treatment begins promptly and proceeds safely. Their responsibilities

begin with preparing the procedure room, setting up all necessary equipment, maintaining strict sterile technique, organizing procedure trays, and verifying that imaging systems are fully operational. Upon the patient's arrival, the IR technologist assists with patient positioning and supports the physician and nursing staff with immediate needs to help stabilize the patient. Throughout the procedure, IR technologists operate fluoroscopy and angiography equipment to provide the interventional radiologist with clear, real-time images essential for accurate diagnosis and treatment. Stroke procedures typically require two IR technologists to ensure efficiency and patient safety. One technologist works in the sterile field alongside the physician, assisting directly during the intervention, while the second technologist functions as the circulating or monitoring technologist. This role includes operating imaging systems, managing documentation, and obtaining additional supplies as needed to support the procedure. Together, these responsibilities help ensure a smooth, coordinated, and effective stroke intervention.

Scrub Technologist

The technologist scrubbed in alongside the physician during a stroke intervention, plays a vital role in ensuring the procedure is performed safely and efficiently. This technologist assists by preparing and handling catheters, guidewires, contrast media, and other devices used during clot retrieval or treatment. Prior to the procedure, the scrub technologist is responsible for assembling and organizing the procedure tray, ensuring that all necessary supplies are readily available and properly arranged. A critical aspect of tray preparation, particularly during stroke interventions, is the removal of air from all syringes and tubing. Eliminating air bubbles reduces the risk of introducing air into the bloodstream, which could result in an air embolism (The Scientists, 2008). Once the patient is transferred to the procedure table, the scrub technologist

prepares the access site by shaving, cleaning, and draping the area using sterile technique to maintain a sterile field throughout the procedure (Whitlock, 2025). During the intervention, "The scrub tech does not just hand the instruments to the surgeon; they must know what instruments, tools, and sutures are needed for a wide variety of procedures, the names of the instruments, and have them ready at a moment's notice" (Whitlock, 2025, para. 5). Throughout the procedure, the scrub technologist also tracks all instruments and materials used to ensure that no foreign objects remain in the patient at the conclusion of the exam (Whitlock, 2025). Given the time-sensitive nature of stroke treatment, efficiency, precision, and constant awareness are essential responsibilities of the scrub technologist.

Circulate/Monitor Technologist

During a stroke intervention, the second technologist present in the procedure room is commonly referred to as the circulating or monitoring technologist. While job titles and specific responsibilities may vary by facility, this technologist plays a key role in supporting the procedure and maintaining a safe, efficient environment. Working outside the sterile field, the circulating technologist assists physicians and other healthcare professionals by ensuring the procedure room remains clean and organized, preparing for interventions, monitoring staff and equipment, and obtaining additional supplies as needed. Effective communication, attention to detail, professionalism, and patient advocacy are essential skills for a circulating technologist, particularly during time-sensitive procedures such as stroke interventions (Indeed, 2025). In addition to these responsibilities, the circulating technologist supports the imaging component of the procedure by ensuring that all imaging equipment is functioning properly to provide continuous, real-time visualization. Following the procedure, the circulating technologist

completes all required documentation and imaging tasks. These responsibilities include labeling images accurately, verifying proper orientation, and ensuring that all images and data are correctly archived and sent to the appropriate systems (Slyter, 2022). Through these duties, the circulating technologist plays a crucial role in supporting both patient care and procedural efficiency.

What Supplies are Needed for a Tray?

A wide range of supplies are required to prepare a neuro tray, particularly for stroke interventions. Most hospitals that offer Interventional Radiology, especially Neuro IR, utilize a Neuro Angiography Pack as the foundation for tray setup (Stepwards, 2022). These packs provide a standardized and efficient starting point and contain many of the essential supplies needed during the procedure. While the contents of each pack may vary based on hospital protocols and physician preference, they are designed to support rapid and organized preparation. Typical setup supplies included in a Neuro Angiography Pack consist of one large blue platform tray, two CSR wraps, four reinforced back table covers, four blue XL Level 3 surgical gowns, surgical towels, and four blue SMS drapes with adhesive strips. These items help establish and maintain a sterile environment throughout the procedure. The pack also includes a variety of sharps and instruments commonly used during neurointerventional procedures. These may include one Adson tissue forceps; four 4½-inch floor-grade straight iris scissors with large loops; one 5½-inch floor-grade Mayo straight scissors; one 5-inch curved floor-grade mosquito hemostat with large loops; two 5½-inch curved floor-grade Kelly hemostats; two 5½-inch straight floor-grade Kelly hemostats; and one 6-inch Mayo-Hegar needle holder. Additional supplies provided in the pack typically include ten sets of 4 × 4-inch gauze sponges, one band

bag with tape, one Surgimate kit with paper band, one isopropyl alcohol prep swab stick, one PVP prep swab stick, one DuraPrep or ChloraPrep applicator, two 48-ounce specimen containers with lids, and one 8-ounce cup with a translucent lid (Busse Hospital Disposables, n.d.). Having these supplies readily available allows the IR team to work efficiently and minimize delays during time-sensitive stroke interventions.

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What Equipment is Used for a Stroke?

During a stroke intervention, a variety of imaging and procedural equipment is essential for both visualization and treatment. In neurointerventional radiology, a key imaging system is the biplane angiography unit, which produces X-ray images simultaneously from two angles, front to back and side to side, allowing detailed, three-dimensional visualization of the blood vessels supplying the brain (St. Mary's, 2019). This system is highly efficient and fast, two critical factors in time-sensitive stroke care. Ultrasound imaging is another important tool in

Interventional Radiology. Ultrasound allows clinicians to visualize both the patient's anatomy and the supplies being used in real time, making it ideal for guiding vascular access and other interventions (Kongkuo Lu, 2014). In addition to imaging, suction thrombectomy devices are among the most important procedural tools used in stroke interventions. These devices use vacuum aspirations to remove blood clots from blocked vessels. They are portable, quick to set up, and allow the procedure to be performed efficiently, which is crucial when restoring blood flow to the brain (Saver & Raychev, 2012). Together, these tools: the biplane imaging system, ultrasound, and suction thrombectomy devices, play complementary roles in stroke care. Imaging provides real-time visualization of the patient's vasculature, while thrombectomy devices enable the physician to remove the clot and restore blood flow effectively and rapidly.

Conclusion

In conclusion, this paper explored the nature of strokes, the responsibilities of interventional radiologic technologists during stroke care, and the preparation and use of trays and specialized equipment. Interventional Radiology is a critical component of modern stroke management, combining advanced technology with precise teamwork. From rapid identification of the stroke to preparation of the procedure tray and operation of specialized devices, each step relies on the skill, efficiency, and coordination of the IR team. Understanding these processes highlights not only how IR interventions save lives but also the essential role of collaboration in providing patients with the best possible outcomes and recovery potential.

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