

## Raising the Ante: Migrating to Multi-Use Interventional Space in the Development of Stroke Programming

By David Fuller

Stroke remains a largely undertreated vascular condition, but the proven efficacy of mechanical thrombectomy in reducing both mortality and longterm disability in ischemic stroke is poised to finally positively impact the troubling statistics — but only if the healthcare industry can keep pace with the time-sensitive clinical delivery processes necessary.

Before the first successful clot retrieval procedure in 2004, ischemic stroke was largely treated in a supportive fashion. Complications were prevented when possible and rehabilitation offered when indicated, but aggressive treatment and full recovery didn't often occur. As science advances, recognition of the importance of timely treatment for ischemic stroke, or 'brain attack,' has paralleled the benefits of coronary intervention in treating a 'heart attack'. With this medical evolution, the use of thrombolytics, both intravenous and intra-arterial, as well as mechanical thrombectomy, have become standard in the arsenal for stroke treatment — and, similar to coronary intervention, time is of the essence.

The value of immediate intervention offers promise to a large percentage of patients with ischemic stroke (roughly 85% of all strokes in the United States each year). With this recognition, the need for research funding and greater government attention in order to advance prevention and effective treatment for stroke has now moved to center stage.

### Modernizing Stroke Care

The treatment of stroke presents unique challenges to the existing healthcare system. Just as the cardiovascular care delivery model was reconfigured in the 1980s to incorporate new treatment options, existing stroke protocols and processes must be evaluated and revamped to achieve better outcomes. At present, treatments are available that exceed our ability to consistently deliver them within the required time parameters.

Nationally, the system for stroke care and prevention remains fragmented, with uneven access. As evidence of this and despite advances in emergency treatment, in many regions, it continues to be true that nearly half of the deaths from stroke occur before victims are admitted to the hospital. While stroke incidence rates and mortality rates have seen some modest improvement, the long-term disability scores in this patient population have not improved.

A 'perfect storm' of sorts is developing: the prevalence of stroke is increasing as the population grows and ages; medical science is providing new treatment possibilities, regulatory agencies and the federal government are paying more attention to stroke and presenting new regulation, and the number of certified specialists and designated centers is not keeping pace with the growing demand for stroke care. As these multiple factors converge, organizations are well advised to prepare with modern methods and trained manpower to provide a competent, structured, and accessible system of treatment.

### The Dual Nature of Interventional Treatment

Timely treatment for stroke has evolved from a mainly reactionary and supportive response to a very aggressive and time-sensitive interventional model. When comparing the current models of stroke care with those already employed in cardiology, "time is brain" when you have cerebrovascular anomalies that reduce blood flow.

Recent clinical studies have indicated that there are greater cross-sections of stroke patients (ie, either by blood vessel[s] affected and/or time of presentation to treatment) that would benefit from more immediate interventional therapy.

Neurovascular interventional treatments maintain the same goal seen in cardiology: to re-establish blood flow to the tissue as fast as possible. A leading stroke medical expert has touted that every minute of disrupted blood flow equals one week of lost life for the patient.

In order to provide these neurointerventional treatments, the stroke team must be able to access an interventional laboratory with state-of-the-art, fixed fluoroscopy (imaging) units. Of course, similarities can be drawn between these procedural suites and those used in interventional cardiology with some differences in imaging (ie, single vs bi-plane). In some organizations, providers have realized the benefits of co-locating these interventional labs, thereby leveraging the skill sets of interventional teams.

Savvy organizations already offering advanced cardiac care (percutaneous coronary intervention and/ or open-heart surgery) are leading the way by implementing multi-use interventional suites that combine both cardiac and neuro services into one area. And while such an approach requires significant planning and operational coordination due to the combining of two or more emergent services,

the efficiencies gained are well worth the upfront investment in planning and coordination required, including:

- Increased utilization of procedural space;
- Shared call teams and responsibilities; and
- Increased opportunities for cross-service collaboration between specialties.

Even with all of the complexities of emergent patients requiring immediate procedural treatment, many facilities perform this task very well and have been able to retain a very collegial model between specialties utilizing the interventional platforms. But how?

First, there is open dialogue during the planning process between the specialists and hospital leadership. The function of the interventional platform should be designed to support multiple specialties, including interventional cardiology, neurology, and radiology. This planning process should include consideration for varied needs, such as hemodynamic monitoring and documentation systems that support a multitude of case types.

Second, processes and protocols need to be established prior to the completion of the procedural area(s) so that there is solid understanding related to scheduled and emergent cases, and associated “bumping” protocols.

Third, real-time data should be shared with the care teams to demonstrate the effectiveness of an integrated interventional patient care model. In short, the care teams cannot operate in a vacuum if there is to be trust established related to procedural room utilization.

Whether just initiating this process with a goal of shared interventional space or moving more towards a fully-integrated clinical service with an advanced “Stroke Center of Excellence,” this model can work well to optimize not only the space, but the physician and clinical staff talent as well. Further shared utilization of supplies and ancillary can lead to ever more benefits of this approach.

## **Collaboration Across Specialties**

Whether adding to a fully-functioning service line or creating a stand-alone program, the proper creation and implementation of a Stroke Center of Excellence, including interventional care, will have an impact across the organization. The decision to pursue a thrombectomy-capable or comprehensive stroke center will require an extraordinary degree of coordination across departments, medical specialties, and clinical staff. It is essential that such an initiative be approached with absolute transparency, committed physician leadership, and management discipline.

Identifying appropriate physician leadership is the first, and perhaps most important, decision that must be reached to ensure success. The ideal physician champion must be committed to the Stroke Center of Excellence concept,

especially with the expanding emergency medical services (EMS) regulations related to mandatory bypass of non-accredited stroke facilities. This physician leader must possess formal training, demonstrated clinical expertise, and quantifiable experience in stroke treatment that will garner respect from peers and colleagues, particularly with disciplines that may be impacted by this stroke initiative.

The physician champion of a stroke center must be politically savvy, with a management approach that assures fair and objective decision-making surrounding equipment selection and use, credentialing criteria, and space considerations, among other things. This role will interact with a multitude of medical and surgical specialties within an organization.

The increased acuity of stroke victims and the rigorous response time for treatment can pose a significant challenge to acceptance and compliance by the medical staff, especially in terms of a requirement for 24/7 call responsibility or in-house coverage. This change in ‘normal business hours’ may drive an unwelcome change in lifestyle and longstanding department protocols. This is especially true for community hospitals that may currently lack tertiary-level services.

In Corazon’s experience, the key ingredients for creating a successful model for collaboration within a shared space for an advancement in stroke treatments include:

1. A clear understanding of the interest of all parties involved;
2. Full review of what is required to meet certification standards;
3. Research and dissemination of the clinical merits of a certified stroke program;
4. Communication of the potential to positively impact patient outcomes.

If followed, this recipe for success can go a long way in garnering active support from all involved in developing a Center of Excellence approach in the care of stroke patients.

## **Where Do We Go From Here?**

Recent advances in stroke care mean that more communities can be afforded the expertise, technology, and meticulously-designed protocols that can immediately and effectively treat victims of a stroke. A well-coordinated emergency response within the stroke ‘window of opportunity’ for a patient can mean the difference between a return to a fully functioning, independent lifestyle or a lifetime of dependence on people and support services due to long-term disability. It is incumbent upon hospital and physician leadership alike to utilize the tools at hand, and ensure the best emergency treatment and preventative care for heart attack AND stroke events. Each organization will begin from a unique vantage point, but the availability of intervention for both will lead to better

overall care for the patient population that often overlaps. In this way, we can be assured that patients receive the best care, at the right time and in the right place.

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