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Kathy J. Morrison, MSN, RN, CNRN, SCRN, is a certified neuroscience nurse, a certified stroke nurse, and recipient of the prestigious Pennsylvania State Nightingale Award for Clinical Nursing. As the stroke program manager for the Pennsylvania State Hershey Medical Center, she oversees all aspects of stroke care from prehospital through stroke clinic follow-up. Kathy played a pivotal role in Pennsylvania State Hershey Medical Center attaining The Joint Commission Comprehensive Stroke Center certification and has mentored many stroke program coordinators through the process of attaining Primary Stroke Center certification. Ms. Morrison serves on The Joint Commission Expert Panel for Comprehensive Stroke Center Certification standards.

Ms. Morrison’s published works have appeared in nursing journals and neuroscience course curricula. In addition to speaking nationally on stroke-related topics, she is active in community stroke screenings and awareness lectures, and facilitates a regional stroke survivor support group. She established the Stroke Coordinators of Pennsylvania in 2010. She is a member of the American Heart Association Stroke Council and a board member of the Susquehanna Valley American Association of Neuroscience Nurses.
FAST FACTS FOR STROKE CARE NURSING
An Expert Guide in a Nutshell

Kathy J. Morrison, MSN, RN, CNRN, SCRN
I dedicate this book to my husband, John, for his loving support, encouragement, and endless patience.
—Kathy J. Morrison

Much love and gratitude to my entire family for always supporting me and my endeavors.
—Susan J. Pazuchanics
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Contributor

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Stroke is the fourth leading cause of death and leading cause of disability in the United States today. As our aging population increases in number, we can expect to see a corresponding increase in the number of patients presenting in emergency departments with stroke.

We have seen a dramatic improvement in stroke management in the past 2 decades, particularly since the early 2000s, and nurses have been racing to stay abreast of the changes and their increasing educational needs, as well as those of their patients. From the recognition of stroke signs in prehospital care, to the guidelines for inpatient care, diagnostics and interventions, and rehabilitation programs, we now have to consider evidence-based practice guidelines and Food and Drug Administration–approved interventions for the clinician, patient, and the family. A quick reference text to guide nurses is a “must-have” as this disease tests our health care delivery system.

Kathy Morrison is a well-known contributor to the stroke community. She has been actively involved in lecturing, publishing, and research related to stroke patient management. Kathy currently is the stroke program manager at Pennsylvania State Hershey Medical Center and holds a position as adjunct faculty at Pennsylvania State School of Nursing. She also serves on the American Heart Association’s
Stroke Council and the Expert Panel of The Joint Commission Comprehensive Stroke Center Standards Committee.

Developing a reference book on a topic that has seen such momentum in recent years is challenging because there is so much new information. The information needs to be relevant, but not overburden the reader who is in need of an answer to a pressing question or situation. Kathy has done an excellent job keeping this book appropriate for everyday use.

*Fast Facts for Stroke Care Nursing* provides a succinct yet comprehensive review of the evolution of stroke patient management. The text starts with a brief overview of the anatomy and physiology of the brain and cerebrovascular system, tying them to types of strokes, assessment, and diagnostic tools. Acute measures and prevention of secondary injury are outlined and lead us to review the potential complications and finally the rehabilitation of stroke, as well as patient/family education. Particularly helpful is the inclusion of the Brain Attack Coalition, The Joint Commission, and Centers for Medicare & Medicaid Services core measures. Each chapter has helpful Fast Facts in a Nutshell that offer the reader a quick reminder.

Nursing plays a pivotal role in recognizing changes in the patient and coordinating care for the patient along with the other team members. There will be many more nurses joining the specialty of stroke patient care and this book will provide invaluable support to them. Thank you for adding to our knowledge, Kathy!

Linda Littlejohns, MSN, RN, FAAN, CNRN  
President, Integra Foundation  
VP Clinical Development, Integra Neurosurgery
Preface

For the busy nurse who cares for stroke patients and wants to know that she or he is providing the best evidence-based care possible, this book should be a welcome resource. It is designed to be a practical guide, starting with a brief background on the phenomenon of stroke care improvements, moving through acute care to post-acute care, and finishing with practical pointers for using data to drive performance improvement.

For years I have wondered why there were so few concise reference sources for nurses caring for stroke patients. Nurses want to provide the best care possible, but have lacked practical resources to make that possible. With very little neuroscience content in nursing school, too many professional nurses are intimidated by stroke patients. I feel certain that the more nurses understand about the brain, the less intimidated they will be, and the more great nurses will embrace neuroscience nursing. In addition, once nurses understand the rationale for stroke care standards, they will become strong advocates for following the guidelines. When that happens, the world will be a better place—cared for by passionate, smart neuroscience nurses.

Kathy J. Morrison
PART I

Foundations of Stroke Care
Stroke Care Evolution: How We Got Here

Although health care professionals have been caring for stroke patients for hundreds of years, the past 15 years have been marked by dramatic changes in the way care is delivered. Seemingly overnight, stroke care changed from an essentially rehabilitation focus to a true emergency focus. This coincides with the acceptance of evidence-based practice as the cornerstone of the nursing profession. This convergence of nursing professional growth and research-guided evidence has ignited a revolution in stroke care nursing. Although the specialty of neuroscience nursing has been well established for over 40 years, it has shown remarkable growth with the surge of interest in cerebrovascular nursing. Along with advances in neuro-electrophysiology and neuro-oncology, cerebrovascular nursing has contributed to the phenomenon of neuroscience nursing as the new frontier in nursing.
In this chapter, you will learn:

1. The origin of the Primary Stroke Center standards and the certifying organizations
2. The impact of tissue plasminogen activator (tPA) on stroke care
3. The connection between stroke performance measures and stroke core measures
4. Nursing certifications related to stroke care expertise

BRIEF HISTORY OF STROKE CARE

Stroke care nursing is not new. The first time the term stroke was noted in English literature to refer to a health condition was in 1689 by William Cole. Hippocrates is credited with coining the word apoplexy in 400 B.C.E. to represent episodes of convulsions and paralysis, typically on the opposite side of the body from the injury. He also described episodes of impaired speech, similar to what is known today as aphasia. The ancient Greeks believed that someone suffering a stroke had been struck down by the gods (Webster’s New World Dictionary, 2008).

Stroke care first appeared in nursing texts in 1890, but with only brief discussions (Nilsen, 2010). The treatment then was supportive care and rehabilitation, but only if the patient survived the stroke and avoided the multitude of secondary injuries that could occur.

The World Health Organization (WHO) defined stroke in 1970 as “rapidly developing clinical signs of focal or global disturbance of cerebral function, lasting more than 24 hours or leading to death, with no apparent cause other than that of vascular origin” (p. 2065). This definition is still used today; but with advances in knowledge about the nature, timing, recognition, and imaging of stroke, an update to this definition is needed (Sacco et al., 2013).

Advent of tPA

The year 1996 could be considered the watershed moment for acute stroke care. It is the year the Food and Drug
Administration (FDA) approved intravenous (IV) tPA as the first—and still only—medication for the treatment of acute ischemic stroke. The research outcome was that patients who received IV tPA would have 30% better functional outcomes at 3 months than those who did not receive it. The FDA’s approval of IV tPA has become known as the turning point for acute stroke care. Stroke was now an emergency, a “brain attack.”

Introduction of the Brain Attack Coalition

The Brain Attack Coalition (BAC) was established in 1991 by a group of neurosurgeons who conceptualized improving stroke care through standardization and evidence-based guidelines. They were inspired by the improved patient outcomes seen with trauma guidelines. The BAC has grown to include membership from 17 professional organizations. This group of highly educated professionals, passionate about stroke care, reviewed over 600 research articles related to stroke care, and in 2000, published Recommendations for the Establishment of Primary Stroke Centers in the *Journal of the American Medical Association*. These recommendations, coming just 4 years after FDA approval of IV tPA, contributed to the buzz that was developing in the more progressive health care organizations around the country; that is, stroke patients should receive care that had been proven through research to improve outcomes. This meant that hospital organizations had the opportunity and responsibility to support evidence-based practice for stroke care.

*BAC Member Organizations (Brain Attack Coalition, 2013)*

- American Academy of Neurological Surgeons
- American Academy of Neurology
- American Association of Neuroscience Nurses
- American College of Emergency Physicians
- American Society of Neuroradiology
- American Stroke Association
- Centers for Disease Control and Prevention
• Congress of Neurological Surgeons
• National Association of Chronic Disease Directors
• National Association of EMS Physicians
• National Association of State EMS Officials
• National Institute of Neurological Disorders & Stroke
• National Stroke Association
• Neurocritical Care Society
• Society of NeuroInterventional Surgery
• Stroke Belt Consortium
• Veterans Administration

NURSING’S LEADERSHIP ROLE IN STROKE CARE

Despite the unfortunate fact that the BAC did not mention the importance of having nurse coordinators to oversee the immense job of implementing evidence-based standards in acute care hospitals, the majority of organizations came to that conclusion eventually, and a whole new category of neuroscience nurses was born—stroke program coordinators. The BAC made amends for that omission with their 2005 Recommendations for Comprehensive Stroke Centers. In this they detailed the importance of not only educated and competent bedside nurses, but also the importance of having advanced practice nurses (APNs) as well.

Primary Stroke Certification Oversight

Between 2000 and 2004, numerous hospitals reviewed the BAC’s Primary Stroke Center (PSC) recommendations and determined for themselves whether all the criteria were met. Many then advertised themselves as PSCs, but who could attest to whether that level of care was actually provided? In 2003, in a study published in the journal Neurology, 77% of nearly 1,000 respondents indicated that they met the criteria for PSC, but only 7% actually met all the criteria (Kidwell et al., 2003). It was time for an oversight body for stroke care,
similar to the Trauma Systems Foundation. The Joint Commission (TJC) was the first organization to provide PSC certification based on the BAC recommendations, with others following.

**Organizations That Provide PSC Certification**

**The Joint Commission**

- Founded in 1951 with the mission of improving health care
- Oldest and largest accrediting and standards-setting organization in health care
- First organization to establish a program for PSC certification in 2003 through its Disease-Specific Care Division
- Certification is valid for 2 years
- [www.jointcommission.org/about_us/history.aspx](http://www.jointcommission.org/about_us/history.aspx)

---

**FAST FACTS in a NUTSHELL**

Many nurses have the misconception that TJC is responsible for coming up with the standards for PSCs, probably because they were the first to offer certification, coupled with their reputation as an authority on hospital accreditation. However, it was the BAC that established these standards.

**Healthcare Facilities Accreditation Program**

- Created in 1945 for the purpose of review of osteopathic hospitals
- Broadened its scope to all hospitals in 1965
- Providing PSC certification since 2008
- Certification is valid for 1 year
- [www.hfap.org/about/overview.aspx](http://www.hfap.org/about/overview.aspx)
Det Norse Veritas

- Founded in Norway and established an American presence in 1897 with the initial focus of risk-management consulting for the maritime industry
- Health care division approved by Centers for Medicare & Medicaid Services (CMS) in 2007 as an accrediting organization
- Certification is valid for 3 years
- www.dnvusa.com/industry/healthcare/index.asp

FAST FACTS in a NUTSHELL

Several states provide stroke center certification either by adopting TJC, Healthcare Facilities Accreditation Program (HFAP), or Det Norse Veritas (DNV) criteria, or through their own distinct processes and criteria. In 2004, Florida, New Jersey, Massachusetts, and New York became the first states to enact legislation or to develop regulations for state-level PSC designation.

CORE MEASURES OR PERFORMANCE MEASURES . . . WHICH CAME FIRST?

Performance measures came first. In November 2004, the BAC, in collaboration with the American Heart Association/American Stroke Association (AHA/ASA), developed 10 performance measures for DSC Certification for Primary Stroke Centers. These 10 measures were based on evidence from the research of processes that resulted in improved outcomes for stroke patients. Organizations pursuing PSC certification and recertification had to demonstrate compliance with—or performance improvement strategies toward—all 10 of the following measures:

<table>
<thead>
<tr>
<th>STK-1</th>
<th>Deep Vein Thrombosis (DVT) Prophylaxis</th>
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<tbody>
<tr>
<td>STK-2</td>
<td>Discharged on Antithrombotic Therapy</td>
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<tr>
<td>STK-3</td>
<td>Patients With Atrial Fibrillation/Flutter Receiving Anticoagulation Therapy</td>
</tr>
</tbody>
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(continued)
WHY ONLY EIGHT CORE MEASURES?

Core measures have been in place since 2001 as part of the CMS Hospital Quality Initiative aimed at improving the health care delivery process. The original set included only four measures: acute myocardial infarction (AMI), heart failure (HF), pneumonia (PN), and pregnancy and related conditions (PR). In 2008, eight of the 10 stroke performance measures were endorsed by the National Quality Forum (NQF) as core measures and were aligned with the CMS’s measures. The two that were not endorsed were dysphagia screening and tobacco-cessation counseling. Dysphagia screening was not endorsed due to the lack of a valid, reliable, standardized screening tool or process supported by research (Alexandrov, 2012), although it is recognized as an important aspect of prevention of aspiration pneumonia. Smoking cessation was not endorsed as it was deemed to have already been met by organizational initiatives and documentation of teaching or counseling provided.

NURSING CERTIFICATIONS

Certifications in nursing signify the attainment of a higher level of knowledge and competence in a specialty area. Unlike licensure requirements, certifications are optional, although the popularity—and number—of nursing certifications continue to grow. As far back as 1997, Barbara Stevens Barnum wrote, “We are in the throes of a love affair with certification in this country, and virtually every RN has a string of (possibly) inexplicable certification initials following
their signature” (Barnum, 1997). Certification requirements ensure that continuing education and clinical experience are maintained, a practice proven to raise the level of nursing professional practice. Some of the most popular stroke-related nursing certifications are:

- **CNRN**—Certified Neuroscience Registered Nurse, established in 1978 by the American Board of Neuroscience Nursing (ABNN)
- **SCRN**—Stroke Certified Registered Nurse, established in 2012 by the ABNN
- **NVRN**—Neurovascular Registered Nurse, established in 2007 by the Association of Neurovascular Clinicians
- **CRRN**—Certified Rehabilitation Registered Nurse, established in 1984 by the Association of Rehabilitation Nurses

**FAST FACTS in a NUTSHELL**

The 1990s were designated as the Decade of the Brain by President George W. Bush in collaboration with the Library of Congress, the National Institute of Neurological Disorders and Stroke, and the National Institute of Mental Health. Numerous programs were developed to bring increased awareness about brain research to the members of Congress and the general public. The 1990s is when acute stroke care got rolling, with the foundation of the BAC, the American Stroke Association, and the National Stroke Association, and approval of IV tPA. Even more has been accomplished since 2000; perhaps the 21st century should be designated as the Century of Stroke Innovation (Figure 1.1).
FIGURE 1.1 Acute stroke milestones.
CSC, Comprehensive Stroke Centers; DRG, diagnosis-related group; GWTG, Get With The Guidelines; NINDS, National Institute of Neurological Disorders and Stroke; NQF, National Quality Forum; PSC, Primary Stroke Center; TJC, The Joint Commission; tPA, tissue plasminogen activator.