



Hemispheres 3.0

STROKE COMPETENCY SERIES

Course Description and Outline



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Level I – Brain Anatomy and Physiology

Course Description

Level I of Hemispheres 3.0 provides a review of basic brain anatomy including brain structures and functions, cranial nerves, and cerebral arteries. Knowledge of specific sensory-motor functions of brain areas along with the cerebral arteries that perfuse them are key elements required to pair with expected injury site deficits. This foundational look at brain anatomy supports competent, effective care of the stroke patient by the healthcare team.

Course Objectives

At the conclusion of this educational activity, the participant should be able to:

1. Identify basic brain areas and describe their main functions.
2. Recall cranial nerves and bodily functions each control.
3. Relate cerebral arteries to the areas perfused.

The screenshot displays the Hemispheres 3.0 educational interface. The top navigation bar includes a 'LEVELS' dropdown, a pause button, a volume icon, a full-screen icon, a chat icon, a search icon, a bookmark icon, an information icon, a lightbulb icon, and a key icon. Below the navigation bar, the main content area is titled 'Protective Layers' and contains the text: 'From the external barriers of the skin and skull to the specialized layers of the cranial meninges, the brain is protected in the cranial vault.' Three interactive buttons are visible: 'Physical Protection' (red), 'Cranial Meninges' (blue), and 'Brain Tissue' (green). The 'Brain Tissue' button is selected, and a callout box provides details: 'Brain tissue - Composed of gray and white matter and regulatory protective tissue'. The callout box lists: 'Gray matter' (Nerve cell bodies that form the thinking part of the brain and spinal cord), 'White matter' (Myelinated nerve fibers involved with nerve conduction of the brain and spinal cord), and 'Blood-brain barrier' (Located between capillaries and interstitial fluid, it selectively regulates what substances circulating in the blood reach brain tissue.). A 3D anatomical diagram of a human head in cross-section shows the brain's internal structures, with lines connecting the callout box to the corresponding parts of the brain.

Level II – Stroke Pathophysiology

Course Description

Level II of Hemispheres 3.0 reviews the pathophysiology of ischemic and hemorrhagic stroke. Underlying causes and associated risk factors are explained, preparing the healthcare team to recognize the typical clinical presentation of stroke. An overview of stroke syndromes combines knowledge of brain anatomy with stroke pathophysiology to discuss expected deficits based on stroke location.

Course Objectives

At the conclusion of this educational activity, the participant should be able to:

1. Explain the pathophysiology of ischemic and hemorrhagic stroke.
2. Describe the main causes and risk factors for ischemic and hemorrhagic stroke.
3. Differentiate major stroke syndromes and associated deficits.

Hemispheres 3.0
STROKE COMPETENCY SERIES
LEVEL II
Stroke Pathophysiology

Prior to Beginning
Course Overview
Course Objectives
Stroke Epidemiology
Main Stroke Classifications
▶ Ischemic Stroke Patho
▼ Hemorrhagic Stroke Patho
Hemorrhagic Stroke Classifications
Intracerebral Hemorrhage Patho
Subarachnoid Hemorrhage Patho
Cerebral Aneurysms
Vascular Malformations
Increased Intracranial Pressure
- Check Learning
▶ Stroke Syndromes
Bibliography
Test Out

LEVELS
PREV | NEXT | REPLAY

Subarachnoid Hemorrhage Pathophysiology

Most subarachnoid hemorrhages (SAH) are caused by a ruptured intracranial aneurysm. An estimated 12-15% of deaths occur before hospital admission.

Mechanism
Presentation
Location
Risk Factors

Level III – Stroke Assessments

Course Description

Level III of Hemispheres 3.0 instructs on stroke screening tools, neurologic assessments, and severity and impairment scales used in stroke care. From urgent prehospital and emergency care through inpatient and rehabilitation, these tools aid in stroke triage, assessment, diagnosis, and treatment planning. Relevant clinical grading scales and dysphagia screening and evaluations facilitate timely best practice interventions across the continuum. Proper use of these assessment resources also allows for sharing of standardized information regarding the patient's status between members of the multidisciplinary stroke team.

Course Objectives

At the conclusion of this educational activity, the participant should be able to:

1. Discuss stroke recognition and assessment screening tools.
2. Explain how to perform neurologic and stroke severity assessments and interpret findings.
3. Compare specific stroke grading scales and additional assessment tools necessary to guide optimal stroke care.

The screenshot displays the Hemispheres 3.0 educational interface. The top navigation bar is red and contains icons for play, volume, full screen, chat, search, bookmark, info, lightbulb, and a key icon. Below the navigation bar, the course title 'Hemispheres 3.0 STROKE COMPETENCY SERIES LEVEL III' is shown. The left sidebar lists the course content, with 'Dysphagia Overview' selected and highlighted in red. The main content area is titled 'Dysphagia Overview' and features a text box stating: 'Dysphagia is a common complication of stroke impacting 40 - 78% of patients. While the majority of swallowing function spontaneously returns within 1 week, up to 50% of stroke patients may experience persistent swallowing difficulties for 6 months or more.' Below the text box are five interactive buttons: 'Swallowing Process' (purple), 'Dysphagia Etiology' (pink), 'Signs Symptoms' (teal), and 'Complications' (green). A 'Care Note' icon is visible in the top right corner of the content area. The background of the content area shows a 3D illustration of a patient lying in a hospital bed, with a pink anatomical diagram of the head and neck highlighting the swallowing process.

Level IV – Rapid Stroke Response

Course Description

Level IV of Hemispheres 3.0 examines the stroke chain of survival for patients with suspected ischemic or hemorrhagic stroke or transient ischemic attack (TIA) from detection in the community, through emergency care with appropriate disposition. Prehospital care and routing or transfer to an appropriate facility is critical to quickly accessing skilled, stroke-ready care. Emergency stroke assessment, imaging, diagnosis, and interventions, including reperfusion, are examined with considerations to optimize patient outcomes. This guideline-based course concludes with a case study to help you put your knowledge into practice.

Course Objectives

At the conclusion of this educational activity, the participant should be able to:

1. Describe prehospital care of the acute stroke patient and appropriate destination routing.
2. Relate urgent assessments and diagnostics required in the emergency setting for the acute stroke patient.
3. Examine guideline-based interventions and reperfusion options used to treat acute ischemic stroke.

The screenshot displays the Hemispheres 3.0 course interface. At the top, a red navigation bar contains icons for pause, volume, full screen, chat, search, bookmark, information, lightbulb, and a key icon. Below this is a grey bar with 'PREV', 'NEXT', and 'REPLAY' buttons. The main content area is titled 'Initial on Scene' and features a text box stating: 'With a goal of less than 15 minutes on scene, EMS must quickly perform prehospital stroke screens and obtain a focused medical history so stroke patients are transported to the appropriate facility in time to receive treatment.' To the right of this text is a blue circular icon with the number 3 and the text 'Delivery of Prehospital Care', a blue 'Care Note' icon, and a red 'Teaching Tip' icon. Below the text is a 3D rendering of an ambulance interior. In the foreground, a hand holds a tablet displaying a checklist of items: 'ABCs', 'Medical History', 'Prehospital Stroke Screen', 'POC Blood Glucose', and 'Prehospital Stroke Severity Tool'. The 'Medical History' section on the tablet lists: 'Any recent trauma, surgeries, procedures, prior stroke', 'Current medication list (especially anticoagulants)', 'Illicit drug use', 'Comorbid conditions (especially bleeding problems)', and 'Preexisting disabilities (chair or bed bound)'. On the left side of the interface is a vertical table of contents with a red header 'LEVEL IV Rapid Stroke Response'. The table of contents includes: 'Delivery of Prehospital Care (EMS)', 'Initial on Scene', 'Care and Rapid Transport', 'Mobile Stroke Unit', '- Check Learning', 'Door Transport Routing (EMS)', 'Stroke Center Designations', 'EMS Time Goals', 'EMS Destination Plans', 'EMS Alert to Receiving Facility', '- Check Learning', 'Data from Workup (ED)', 'Decision from Stroke Expertise (ED)', 'Brain Imaging Introduction', 'Initial Imaging', 'CT Basics', 'CT Interpretation', '- Check Learning', and 'ASPECTS Scoring'.

Level V – Ischemic Stroke - Inpatient

Course Description

Level V of Hemispheres 3.0 begins with admission of the ischemic stroke patient and the multidisciplinary team approach required to achieve specific care goals. Initial assessments, monitoring, and diagnostics are examined, and key rehabilitation and palliative care needs are identified. With the addition of expanded treatment options, clinical practice updates are presented so healthcare teams can continue to improve outcomes, reduce complications, restore function, prevent secondary stroke, and optimize quality of life after stroke.

Course Objectives

At the conclusion of this educational activity, the participant should be able to:

1. Discuss key inpatient admission assessments and required post-reperfusion monitoring and care.
2. Identify potential complications and best practice interventions in the care of inpatient ischemic stroke patients.
3. Examine the roles of team members and how each contributes to the care of the ischemic stroke inpatient.

The screenshot displays the Hemispheres 3.0 interface. The top navigation bar is red and contains icons for play/pause, volume, full screen, chat, search, bookmark, information, lightbulb, and a key icon. Below this is a grey bar with navigation controls: 'PREV', 'NEXT', and 'REPLAY'. The main content area is titled 'Inpatient Care Goals' and features a paragraph: 'As the patient progresses through the continuum of care, specific goals are set for optimal patient recovery and best quality of life. Shared decision making with the patient and caregivers should be established for smooth transition through each level of care to discharge.' Below the text is a large graphic of a winding road with several icons placed along its path: 'Improve' (teal plus icon), 'Reduce' (pink minus icon), 'Provide' (green hand icon), 'Restore' (yellow circular arrow icon), 'Prevent' (purple shield icon), and 'Optimize' (orange upward arrow icon). A green house icon is at the end of the road. On the left side, there is a vertical menu with the following items: 'Ischemic Stroke - Inpatient', 'Diagnostic Testing', 'Early Complications', 'In-hospital Code Stroke- Ischemic', '- Check Learning', 'Ongoing Inpatient Ischemic Stroke Care' (expanded), 'Inpatient Care Goals' (highlighted), 'Ongoing Care and Potential Complications', 'Ongoing Diagnostics and Drug Therapies', 'Nutritional Care', '- Check Learning', 'Activity', 'Rehabilitation Services', '- Check Learning', 'Consults', 'Palliative Care', '- Check Learning', 'Bibliography', and 'Test Out'.

Level VI – Hemorrhagic Stroke - Inpatient

Course Description

Level VI of Hemispheres 3.0 begins with lifesaving care of the intracerebral and subarachnoid hemorrhagic stroke patient. Endovascular, surgical, and medical interventional options are examined. Best practices for ongoing assessments and management of potential complications, such as rebleeding, vasospasms, increased intracranial pressure, delayed ischemia, and blood pressure abnormalities are outlined for the interdisciplinary team.

Course Objectives

At the conclusion of this educational activity, the participant should be able to:

1. Discuss assessments and interventions pertinent to stabilization of the patient with hemorrhagic stroke.
2. Summarize endovascular and surgical interventions and medical management options for hemorrhagic stroke patients.
3. Outline complications associated with hemorrhagic stroke and apply management strategies.

Hemispheres 3.0
STROKE COMPETENCY SERIES
LEVEL VI
Hemorrhagic Stroke - Inpatient
- Check Learning

LEVELS
PREV | NEXT | REPLAY

Intracranial Pressure Overview

When volume in the cranium increases, intracranial pressure (ICP) can increase causing cerebral edema, ischemia, and eventual herniation if untreated. Monitor for signs and symptoms, implement preventative strategies and anticipate formal monitoring and emergency treatment.

Causes S/S Monitor Prevent

Hemorrhage

Level VII – Discharge Considerations & Stroke Prevention

Course Description

Level VII of Hemispheres 3.0 describes discharge strategies related to the stroke patient along with stroke prevention education. Expected needs and how to adequately prepare patients and caregivers for discharge are presented to help the healthcare team formulate a successful, individualized discharge plan. Guideline-based stroke prevention recommendations, based on causes of stroke, are presented to promote primary and secondary prevention awareness.

Course Objectives

At the conclusion of this educational activity, the participant should be able to:

1. Identify discharge considerations to support successful patient transitioning to post-acute care.
2. Relate strategies to address challenges and barriers to patient and caregiver education.
3. Distinguish guideline-based stroke prevention recommendations based on atherosclerotic cardiovascular disease risk and other specific causes.

The screenshot displays the Hemispheres 3.0 interface. At the top, there is a red navigation bar with icons for levels, play/pause, volume, full screen, chat, search, bookmark, info, lightbulb, and a key icon. Below this is a grey bar with 'PREV', 'NEXT', and 'REPLAY' buttons. The main content area is titled 'Additional Risk Factors' and contains the following text: 'Many other conditions increase the risk of stroke. Guideline-based recommendations to prevent primary or recurrent stroke for some of them are listed. Future research is needed to establish treatment and benefits for some less common stroke causes.' Below the text is a 3D illustration of a patient in a hospital bed with a caregiver. Six colored callout boxes point to different risk factors: Vasculitis (orange), Arterial Dissection (red), Fibromuscular Dysplasia (green), Sickle Cell Disease (teal), Inflammation & Infection (yellow), and Obstructive Sleep Apnea (blue). On the left side of the interface, a sidebar menu shows the course structure, with 'LEVEL VII Discharge & Prevention' selected. The sidebar items include: Check Learning, Stroke Prevention (with a dropdown arrow), Primary / Secondary Prevention, ASCVD Risk, Physical Activity, Nutrition and Obesity, Alcohol, Drug, and Tobacco Use, Check Learning, Hypertension, Hyperlipidemia, Diabetes, Check Learning, Atrial Fibrillation, Other Cardioembolic Risks, Large Artery Atherosclerosis Risks, Check Learning, Additional Risk Factors (highlighted in red), Bibliography, and Test Out.

Level VIII – Excellence in Stroke Care

Course Description

Level VIII of Hemispheres 3.0 focuses on those wishing to provide excellence in stroke care and achieve or maintain designation as a stroke center. An overview of the multidisciplinary team approach, its members, and their roles are key to excellence. Knowledge of the specific capabilities of each stroke center designation is required to coordinate care within a regional stroke system of care. Data-driven quality improvement techniques are presented to meet objectives for reducing care delays, improving organizational performance, and successfully meeting certification requirements.

Course Objectives

At the conclusion of this educational activity, the participant should be able to:

1. Identify stroke program best practices, stroke program team members, and their specific roles.
2. Illustrate the capabilities of various stroke center designations and the advantages of alignment with regional stroke systems of care.
3. Outline useful strategies for reducing care delays and improving performance related to quality measures.

Hemispheres 3.0
STROKE COMPETENCY SERIES
LEVEL VIII
Excellence in Stroke Care

Prior to Beginning
Course Overview
Course Objectives
Introduction to Excellence
▼ Stroke Systems of Care
Stroke Interdisciplinary Team
Stroke Best Practices
EMS Key Strategies
ED Key Strategies
ED Teamwork
- Check Learning
Transitions of Care
Regional Stroke Systems of Care
Telestroke Networks
- Check Learning
▶ Stroke Center Certifications
▶ Quality of Care
Bibliography

LEVELS
PREV | NEXT | REPLAY

Telestroke Networks

Telestroke improves care by providing stroke expertise to facilities with limited availability. Implementation of telestroke networks ensure 24/7 neurological expertise for stroke patients at facilities with insufficient resources.

Network Locations
Originating Site
Distant Site

Network Models
Hub-and-Spoke
Distributed or Third Party
Hybrid

Originating Site
Distant Site
Hub
Hub-and-Spoke Network
Distributed or Third-Party Network

Level IX – Recognize & Respond to Stroke - Support Staff

Course Description

Level IX of Hemispheres 3.0 provides basic stroke education for the support staff (clinical and nonclinical) to recognize stroke and rapidly respond. This level explains what a stroke is, warning signs of stroke, and the importance of urgently seeking help. Content is presented in understandable terms and includes key information on stroke risk factors and how to prevent stroke.

Course Objectives

At the conclusion of this educational activity, the participant should be able to:

1. Describe stroke including the two basic types.
2. Recognize stroke signs and symptoms and the importance of quickly seeking medical care.
3. Identify risk factors and describe ways to prevent stroke.

The screenshot displays the user interface for the 'Hemispheres 3.0 Stroke Competency Series Level IX' course. The interface is divided into several sections:

- Header:** 'Hemispheres 3.0 STROKE COMPETENCY SERIES LEVEL IX' with a red navigation bar containing icons for play, volume, full screen, chat, search, bookmark, info, lightbulb, key, and help.
- Navigation:** 'LEVELS' dropdown, 'PREV', 'NEXT', and 'REPLAY' buttons.
- Course Menu (Left):** A list of course topics including 'Recognize & Respond - Support', 'Prior to Beginning', 'Course Overview', 'Course Objectives', 'Important Note', 'What is a Stroke', 'Two Types of Stroke', 'Signs and Symptoms', 'Stroke = Emergency', 'Risk Factors', 'Facts and Figures', 'Prevent Stroke', 'Recognize & Respond FAST' (highlighted), 'Stroke Time Times Two', 'Highlights to Remember', '- Check Learning', 'Bibliography', and 'Test Out'.
- Main Content Area:** Titled 'Recognize and Respond FAST', it contains the text: 'How can you tell if someone is having a stroke? What should you do? Think F-A-S-T: Face, Arm, Speech, Time!' followed by a red underline and the note: 'A person may not realize they are having a stroke and may be unable to ask for help.' Below the text is a video player showing a man with a clock overlay and the text 'You can'.

Hemispheres 3.0

Continuing Education Information

	Levels	Testing Min.	CNE	CME	CPE	CEH	FL CEH	CCH	CE
I	Brain A&P	60	3.75	3.75	3.75	3.50	4.00	3.75	3.75
II	Stroke Patho.	60	3.75	3.75	3.75	3.50	4.00	3.75	3.75
III	Stroke Assessments	60	4.50	4.50	4.50	4.50	4.00	4.50	4.50
IV	Rapid Stroke Response	60	5.00	5.00	5.00	4.50	5.00	5.00	5.00
V	Ischemic Stroke - Inpatient	60	2.75	2.75	2.75	2.00	3.00	2.75	2.75
VI	Hemorrhagic Stroke - Inpatient	60	3.50	3.50	3.50	3.25	3.50	3.50	3.50
VII	Discharge Considerations & Stroke Prevention	60	3.50	3.50	3.50	2.50	3.50	3.50	3.50
VIII	Excellence in Stroke Care	60	3.25	3.25	3.25	2.25	3.00	3.25	3.25
IX	Recognize & Respond to Stroke	60	-	-	-	-	-	-	-
	TOTAL	375	30.00	30.00	30.00	26.00	30.00	30.00	30.00

JA. In support of improving patient care, Apex Innovations is jointly accredited by the Accreditation Council for Continuing Medical Education (ACCME), the Accreditation Council for Pharmacy Education (ACPE), and the American Nurses Credentialing Center (ANCC) to provide continuing education for the healthcare team.

30 CNE. Apex Innovations designates this enduring material for 30 ANCC contact hours for nurses.

30 CME. Apex Innovations designates this enduring material activity for a maximum of 30 *AMA PRA Category 1 Credits™*. Physicians should claim only credit commensurate with the extent of their participation in the activity.

30 CPE. Apex Innovations designates this knowledge-based enduring material for 30 ACPE contact hours for pharmacists.

26 CEH. This CE activity is accredited for 26 CEH by Apex Innovations, an organization accredited by Commission on Accreditation for Prehospital Continuing Education (CAPCE).

30 FLCEH. Apex Innovations has been approved by the Florida Emergency Medical Services as an educational provider for EMS and Paramedics continuing education hours and have course completion roster and tracking number available on the CE Broker website.

30 CCH. Apex Innovations is recognized by the Physical Therapy Board of California as an approved reviewer and provider of continuing competency courses for The State of California.

30 CE. Apex Innovations is recognized by the Ohio Physical Therapy Association as an approved CE sponsor for this activity.

30 CE. Apex Innovations has received CE course approval by the Pennsylvania State Board of Physical Therapy for this educational activity.