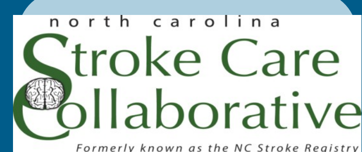

Quality Quarterly

A newsletter focused on improving the quality of acute stroke care in North Carolina brought to you by the North Carolina Stroke Care Collaborative.

VOLUME 5, ISSUE 1 JANUARY 2010

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Welcome to:

-Angel Medical Center

-Duplin General Hospital

-Wilson Regional Medical Center

-Hugh Chatham Memorial Hospital

Welcome!

Dear NCSCC Members,

We hope that all of you had a pleasant holiday season with family and friends! With the start of the New Year, there will be some major changes in the NC Emergency Medical Services (EMS). The focus of this quarter's newsletter will be NC EMS Systems and the EMS Triage and Destination Plan, effective March 31, 2010. We hope that this newsletter provides useful and interesting information for all!

Regards,

The NC Stroke Care Collaborative Team

EMS Triage and Destination Plan Overview:

What Are the Basic Requirements?

* Definition of the patient for which the plan will be implemented.
* List of objectives the plan is aiming to accomplish.
* Definitions of healthcare facilities, including Specialty Centers, Stroke Capable Hospitals, Community Hospitals, and Specialty Care Transport Programs. Each EMS System must work with the hospitals and specialty centers in the area to identify the capabilities of each healthcare facility based on the definitions provided in the EMS Stroke Plan.

Healthcare Facilities Defined:

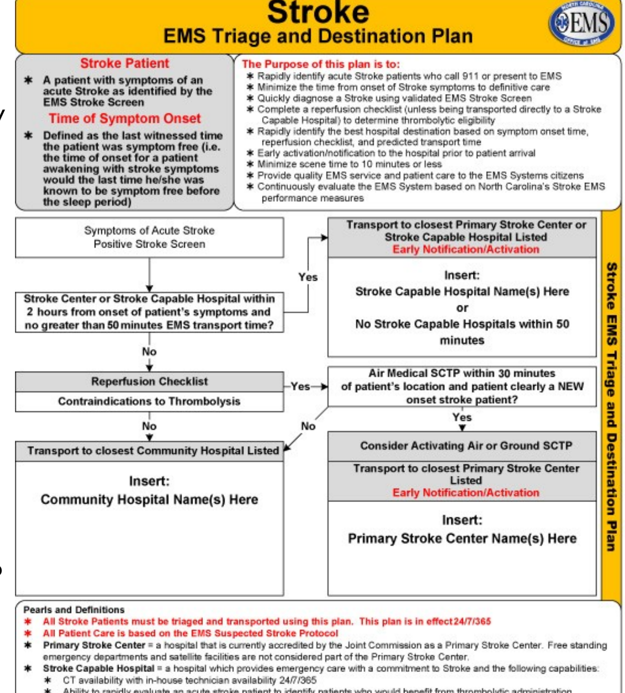
Primary Stroke Center – a hospital that is currently accredited by the Joint Commission as a Primary Stroke Center.

Stroke Capable Hospital – a hospital which provides emergency care with a commitment to stroke and the following capabilities:

* CT with in-house technician availability 24/7/365
* Ability to rapidly evaluate an acute stroke patient to identify patients who would benefit from thrombolytic administration
* Ability and willingness to administer thrombolytic agents to eligible acute Stroke patients
* Accepts all patients regardless of bed availability
* Provides outcome and performance measure feedback to EMS including case review

Community Hospital – a local hospital within the EMS System's service area which provides emergency care but does not meet the criteria for a Primary Stroke Center or Stroke Capable Hospital

Specialty Care Transport Program – an air or ground-based specialty care transport program which can assume care of an acute stroke patient from EMS or a hospital and transport the patient to a primary stroke center



Stroke
EMS Triage and Destination Plan

Stroke Patient
* A patient with symptoms of an acute Stroke as identified by the EMS Stroke Screen

Time of Symptom Onset
* Defined as the last witnessed time the patient was symptom free (i.e. the time of onset for a patient awakening with stroke symptoms would the last time he/she was known to be symptom free before the sleep period)

The Purpose of this plan is to:
* Rapidly identify acute Stroke patients who call 911 or present to EMS
* Minimize the time from onset of Stroke symptoms to definitive care
* Quickly diagnose a Stroke using validated EMS Stroke Screen
* Complete a reperfusion checklist (unless being transported directly to a Stroke Capable Hospital) to determine thrombolytic eligibility
* Rapidly identify the best hospital destination based on symptom onset time, reperfusion checklist, and predicted transport time
* Early activation/notification to the hospital prior to patient arrival
* Minimize scene time to 10 minutes or less
* Provide quality EMS service and patient care to the EMS Systems citizens
* Continuously evaluate the EMS System based on North Carolina's Stroke EMS performance measures

Symptoms of Acute Stroke
Positive Stroke Screen

Stroke Center or Stroke Capable Hospital within 2 hours from onset of patient's symptoms and no greater than 50 minutes EMS transport time?

Yes → **Transport to closest Primary Stroke Center or Stroke Capable Hospital Listed**
Early Notification/Activation
Insert:
Stroke Capable Hospital Name(s) Here
or
No Stroke Capable Hospitals within 50 minutes

No → **Reperfusion Checklist**
Contraindications to Thrombolysis

Yes → **Air Medical SCTP within 30 minutes of patient's location and patient clearly a NEW onset stroke patient?**

Yes → **Consider Activating Air or Ground SCTP**
Transport to closest Primary Stroke Center Listed
Early Notification/Activation
Insert:
Primary Stroke Center Name(s) Here

No → **Transport to closest Community Hospital Listed**
Insert:
Community Hospital Name(s) Here

Stroke EMS Triage and Destination Plan

Pearls and Definitions
* All Stroke Patients must be triaged and transported using this plan. This plan is in effect 24/7/365
* All Patient Care is based on the EMS Suspected Stroke Protocol
* **Primary Stroke Center** = a hospital that is currently accredited by the Joint Commission as a Primary Stroke Center. Free standing emergency departments and satellite facilities are not considered part of the Primary Stroke Center.
* **Stroke Capable Hospital** = a hospital which provides emergency care with a commitment to Stroke and the following capabilities:
  * CT availability with in-house technician availability 24/7/365
  * Ability to rapidly evaluate an acute stroke patient to identify patients who would benefit from thrombolytic administration
  * Ability and willingness to administer thrombolytic agents to eligible acute Stroke patients
  * Accepts all patients regardless of bed availability
  * Provides outcome and performance measure feedback to EMS including case review
* **Community Hospital** = a local hospital within the EMS System's service area which provides emergency care but does not meet the criteria for a Primary Stroke Center or Stroke Capable Hospital
* **Specialty Care Transport Program** = an air or ground based specialty care transport program which can assume care of an acute Stroke patient from EMS or a Hospital and transport the patient to a Primary Stroke Center.

(Insert Name Here) EMS System 2009
This protocol has been developed by the North Carolina Office of EMS (Final Version 11-1-2009)

**EMS Triage and Destination Plan templates can be found at www.ncems.org

* Announcements *

- Blackboard Resources recently added!
- NCSCC Website updated !
- New NCSCC team members!
- Upcoming Regional workshops!
- 2010 Innovative QI Grant winners to be announced in the next newsletter!

Moses Cone Memorial Hospital's Second Annual Stroke Bowl: Making Stroke Education Fun!

Moses H. Cone Memorial Hospital held their Second Annual Stroke Bowl on November 20, 2009. The Stroke Bowl is similar to the trivia game show Jeopardy, and was a fun and creative way for health care team members to get involved in stroke care, while also earning continuing education credits!

Great idea, Moses Cone!

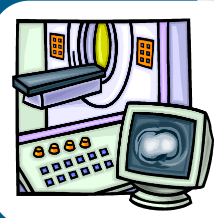
Winners! ***(from left to right):***
Rachel Fountain, Peggy Daniello, & Barbara Smock
Staff Nurses in the Med-Surg Intensive Care Unit (MSICU) at Moses Cone

The Final Question

Learning Objectives:

- Review current clinical practice guidelines related to ischemic and hemorrhagic stroke
- Discuss the standards of stroke care for a certified stroke center
- Describe JCAHO core measures for evaluation of care of the stroke patient
- Review best practices for educating patients and families on primary and secondary stroke prevention

Recent NCSCC Publications!



Asimos, A. W. A Multicenter evaluation of the ABCD2 score's accuracy for predicting early ischemic stroke in admitted patients with transient ischemic attack. *Annals of Emergency Medicine, February, 2010; 55(2): 201-210.e5.*

Asimos, A. W. Early diffusion weighted MRI as a negative predictor for disabling stroke after ABCD2 score risk categorization in TIA patients. *Stroke, 2009; 40: 3252-3257.*

George, M. G. Paul Coverdell national acute stroke registry surveillance – four states, 2005-2007. *Morbidity and Mortality Weekly Report, 2009; 58 (SS-7): 1-28.*

Albers, G. W., Giles, M. F. Addition of brain infarction to the ABCD2 score (SBCD2-I): a collaborative analysis of published and unpublished data on 3,690 patients. Submitted to *Lancet Neurology.*

Turner-Lawrence, D. E. A Feasibility study of the sensitivity of emergency physician dysphagia screening in acute stroke patients. *Annals of Emergency Medicine, September, 2009; 54 (3): 344-348.e1.*

O'Brien, E. Clinical outcomes among ischemic stroke patients receiving tissue plasminogen activator therapy outside of the recommended time window: The North Carolina Stroke Care Collaborative. *Abstract accepted by the Joint Conference - 50th Cardiovascular Disease Epidemiology and Prevention - and - Nutrition, Physical Activity and Metabolism – 2010.*

Patel, M. Hospital pre-notification by emergency medical services may reduce delays in stroke evaluation. *Abstract accepted by the AHA Cardiovascular Disease Epidemiology and Prevention Conference in March, 2010.*

Featured Site: Carteret General Hospital

Treating Stroke, One Patient at a Time

Mrs. G at symptom onset. (Right hand going limp)

Over 750,000 strokes occur in the US each year. We all know the significance of these statistics, but in order to improve quality of stroke care, we need to focus on the number "one." That one person having a stroke is someone's mother or father, sister, son, best friend; and that one person is the most important statistic of stroke. Treating stroke, one patient at a time, makes all the difference in the world. This is the mission integral to the North Carolina Stroke Care Collaborative (NCSCC) and Carteret General Hospital.

This is the story of Mrs. G, a North Carolina stroke survivor. The precision teamwork, and the quality and speed of care provided by both the Carteret County EMS team and the staff at Carteret General Hospital, made all the difference in Mrs. G's successful outcome.

"Without their prompt response and quick action, my mother could have been heading for a nursing home instead of a normal life."

Attending a large family reunion on Emerald Isle, NC this past July, stroke was the last thing on anyone's mind. After a day filled with love and fun, Mrs. G's symptoms began at 7:45pm, right after the family pictures were taken. Emerald Isle EMS was called, dispatched at 7:49pm and arrived at the scene at 7:55pm. The EMS team initiated a Stroke Alert and departed at 8:13pm, arriving at Carteret General Hospital (CGH) at 8:30pm. By the time she arrived at the hospital, Mrs. G was completely aphasic, with no movement on the right side of her body. She had lost her ability to communicate.

The EMS team's stroke awareness and knowledge, and its constant communication and collaboration with CGH, were vital factors that led to Mrs. G's recovery. When the EMS Stroke Alert was issued, the CT tech, ED nurse and MD were all notified, and so the patient went directly for a CT scan upon arrival. CT scan results were given to the ED physician at 8:52pm, just 23 minutes from the time of arrival. The physician consulted with Pitt County Memorial Hospital, a Joint Commission Certified Primary Stroke Center, discussed options with the family, and t-PA was administered at 10:16pm, 2 hours and 26 minutes after stroke onset. Mrs. G was transferred to Pitt County Memorial Hospital where she regained function and made a full recovery. That full recovery is a direct result of the cooperation and expertise of many individuals who placed quality stroke care as the highest priority.

Symptoms recognized & EMS called.

Carteret's Stroke Coordinator, Bob Thomas, RN, explains: "Carteret's participation in the NC Stroke Care Collaborative gave us the data to see where improvement was needed, and receiving the grant providing the means to make the necessary changes." Since Carteret joined the NCSCC in March of 2006, administrative and medical staff have worked persistently to improve stroke care and promote stroke education at their hospital and in the county. In March 2009, Carteret was awarded funding for an Innovative QI Grant from the NCSCC.

The grant was focused on "Front End" Processes, specifically, community education, EMS dispatch and transport, ED care, order set use, and staff and patient education. With the grant support, Carteret was able to employ a stroke coordinator three days per week. Availability to view data in "real time," and the support from grant funding, contributed to recognition of the need to decrease door to CT time, develop a "Stroke Alert," enforce EMS calls enroute, and thus, notification of ED physician, nurses, and CT technician, so that the patient goes directly to CT upon hospital arrival.

"ED and CT staff have been working hard to streamline processes to expedite acute stroke treatment in an effort to increase the number of patients who may qualify for treatment with t-PA. They have managed to cut the time by 2/3."

Mrs. G's successful outcome is "a direct result of the cooperation of many individuals who placed quality stroke care as the highest priority."

The dedication and persistent hard work of Carteret General Hospital staff and the EMS team led to the outstanding communication and stroke response readiness that saved Mrs. G from disability. The day Mrs. G was discharged from Pitt County Memorial Hospital, she was functioning as if she never had a stroke. On this same happy day, Mrs. G's daughter wrote a heart-felt letter of gratitude to those at Carteret, which closed with this acknowledgment: "Without your prompt response and quick action, my mother could have been heading for a nursing home instead of a normal life."

Bob Thomas reflects, "Carteret is a small hospital with a big heart. We work hard to give our patients the best care." Thank you to Bob Thomas, Carteret General Hospital, Carteret County EMS, and Mrs. G and her family for allowing us to share this amazing story with our readers. It is stories like this that keep us all inspired to improve stroke care.

Spotlight: Duplin General Hospital (DGH) & Duplin County EMS

Interviews with Carolyn Ezzel, Community Service Coordinator & Dave Cuddeback, Duplin EMS Training Officer

Interview with Dave Cuddeback:

How long have you been working with Duplin County's EMS?

Three years on January 13, 2010, at Duplin County; Ten years in EMS.

What is your background in stroke care?

My background in stroke care prior to Duplin County can best be described as frustration. Many in EMS focus on the "saving lives" aspect; my focus has always been giving patients a second chance. In the case of strokes, there wasn't a second chance. My new position in Duplin County offered me a "better way."

The concept of finding a "better way" was adopted from our Medical Director, Dr. Kornegay, in the late 70's when EMS did not exist. A funeral hearse was called to transport a teenage girl in hypovolemic shock to the hospital. As the hearse pulled away, Dr. Kornegay thought there had to be a "better way." He later helped create the Paramedic service in Duplin County.

When did the EMS team up with DGH to improve stroke care?

The date was March 9, 2009 when we hosted our first Advanced Stroke Life Support (ASLS) class directed to EMS and in-hospital providers. The day began with a split auditorium- hospital providers on the left and EMS providers on the right. Before starting the class, I reviewed a couple of objectives: 1) everyone would buy into a new approach for stroke management; 2) there is a "better way" to manage stroke patients; 3) without a team approach, our stroke patients will suffer. Everyone in the room was integrated, with EMS sitting next to hospital providers. We have been sitting next to each other since that day.

How did this plan emerge? What problems did you recognize that provoked action to be taken?

We were preparing for ASLS classes, and I was contacted by Duplin General Stroke Coordinator, Carolyn Ezzell. Carolyn indicated the hospital was working on a stroke plan and was interested in participating in the ASLS classes. This was perfect timing because, going into the ASLS class, I did not know exactly which hospital would be our Stroke Center. The difficulty with strokes is time sensitivity and missing the window for lytic therapy. Duplin General becoming a stroke ready was THE major piece to the puzzle.

How long did it take for EMS responders to transition to this system of communication and team-work?

We implemented stroke operations (EMS, Hospital) on March 10, 2009 when a gentleman was transported by one of our units to Duplin General where he received lytic therapy and had a return of neurological function. This was a monumental event with EMS and hospital staff seeing they were capable of working together and having a successful outcome. We strive to put our training into practice as soon as possible to avoid missing a patient for whom we could potentially have made a difference.

How has this collaboration with the hospital affected EMS? Have paramedics "bought in" to the process or has there been resistance? The collaboration with the hospital has been very positive. EMS generally misses out on the outcomes of the continuum of care. We deliver sick patients to a hospital and that is it. With the new stroke operations, our EMS crews take the patient directly to CT, we assist with moving the patient onto the CT table and then we step back for the scan. Following CT, we bring the patient back to the ED

and assist Hospital staff as needed. This has helped our employees buy into the process; it makes the care provided "ours" instead of "us" or "them." Following the transfer of patient care, we receive updates on the patient status, including our QI benchmarks.

What measurable changes (positive or negative) have occurred as a result of this team-work with DGH?

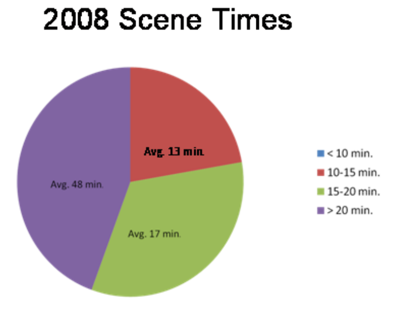
Every patient is an opportunity for quality improvement. We approach each case by asking, "Where could we have saved time?" The main measurable change that we have seen since March, 2009 is our on-scene times (See figures 1 & 2). Our crews have learned what is expected of them, and the improvement in numbers shows that. In regards to our relationship with Duplin General, it has become a quickly organized process. I was in Duplin General last week and had the luxury of watching this teamwork in action when a stroke patient arrived. The care was flawless, and I cannot tell you what that means to me.

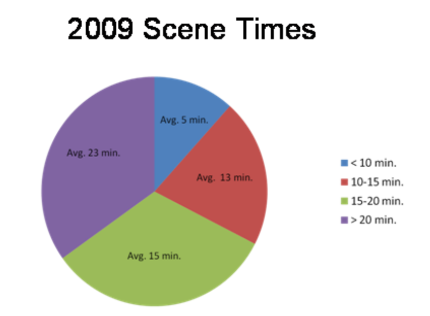
What do you hope EMS will gain from this collaboration?

Instead of dread, I see a new fire in our staff's eyes when they hear that they are going to a possible stroke. They know that they can make a significant difference, and understand that they are part of the solution. Across NC, I hope that EMS services will adopt the new practices for stroke management. One of the most important practices to adopt is the creation of a positive working relationship with hospital providers. It works and our patients reap the benefits.

(Interview cont. on page 5).

Duplin EMS On-Scene Times (figures 1 & 2)





**Data extracted from tracking software, EMS Charts (www.emscharts.com)

What words of advice or recommendations can you make for other EMS Systems looking to implement an EMS and ED Stroke protocol?

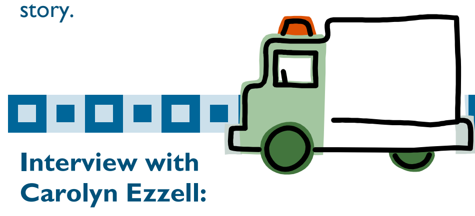
First and foremost, get together with your potential stroke center and create a game plan as a team. Teach ASLS to all parties involved. It is imperative that all parties involved understand that this process works. I have been involved in numerous classes that bring pre-hospital providers and in-hospital providers together. We have to work together, end of story.

What are your thoughts on the recently implemented NC EMS Triage and Destination Plan? Do you think it will be successful in improving patient stroke care?

I think the destination plan is a great idea. One of my passions is rural pre-hospital care. Many EMS practices originated in metro environments. Rural EMS is completely different: It takes longer to get to our patients; resources are limited, resulting in only two people transporting a critical patient; long transport times; transport to numerous hospitals, all with different capabilities. The destination plan takes that decision out of the equation.

How do you think this plan will affect your EMS team in particular? How do you think it will affect other EMS teams?

We have had our own destination plan since 2008, so it will not change our operations. I think that EMS agencies will need to implement new training guidelines; caring for a critical patient for 55 minutes is different than a 10 minute transport time. Technicians need the correct tools when managing patients for long periods. The most important tool is a well-rounded education. The destination plan is futile if we cannot properly manage a potential decline in our patient's status while in transit. Education is the key.



Interview with Carolyn Ezzell:

How long have you been working at Duplin General Hospital?

Seven years.

What is your background in stroke care?

Generalized nursing education. I had worked with stroke patients in MD offices and hospital settings but had never worked on a stroke or rehab unit until I was assigned the new role of "Community Service Coordinator" at Duplin General. Paramount to this position was improving stroke care at our hospital, thus I began educating myself on stroke. Duplin General Hospital is managed by University Health Systems (UHS) in Greenville, NC, and in the fall of 2008, I attended a UHS quality improvement meeting, specifically focused on improving stroke care. From there, DGH began looking at the formation of a stroke team to begin improvement of stroke care at our hospital. The stroke team met for the first time in January, 2009. That January, we met with Carol Murphy, of the NCSCC, and Elynor Wilson, of the Eastern NC Stroke Network, each of whom has proved to be an invaluable resource to DGH during our improvement process.

When did DGH team up with EMS to improve stroke care? How did this plan emerge?

In January 2009, I contacted Dave Cuddeback, to discuss improving stroke care in Duplin County. We listened to each other and addressed comments from each organization's staff members about what we were doing wrong. In March of 2009, in-hospital staff and EMS staff attended ASLS classes taught by Dave. The ASLS classes were a key component in helping in-hospital and EMS staff to understand and appreciate each other's role in improving patient care. Each organization's team began to determine how we could change patient flow and then developed protocols that reflected these changes.

How long did it take for hospital staff and EMS to transition to this system of communication and team-work?

Two days after our first ASLS class, EMS responded to a potential stroke victim. EMS issued the "Code Stroke Alert," as set up on newly developed protocols, notifying the "Code Stroke Team" in DGH's ED. The patient was evaluated and administered lytics within 40 minutes of arrival and showed immediate improvement. This set the standard for future patient evaluations and collaboration between the two organizations. We continue to grow by communicating with one another and addressing issues as they arise.

How has this collaboration with EMS affected the operations in your Emergency Department?

I think ED staff now view EMS as partners in the stroke patient's care, no longer with the attitude, "you did your job, now let us do ours." This is, in one way, illustrated by patient transport to the CT scanner: EMS now assists ED staff by transporting the patient on their own stretcher, instead of transferring the patient upon hospital arrival. They provide hospital staff with the patient symptom history and encourage family involvement as well. This collaboration helps save valuable time, resulting in improved patient care.

Has there been resistance from hospital staff? Please explain.

There has been no resistance. At times during the training process, Dave and I both had to encourage EMS and ED staff to have patience with each other. We saw frustrations rise when staff wanted to see immediate change, but there was never any resistance to the implementation of those changes.

What measurable changes (positive or negative) have occurred as a result of this team work with EMS?

We have seen a decrease in triage time, MD to bedside time, CAT scan results time, lab results time, and overall decrease in door to lytic time.

What words of advice or recommendations can you make for other hospitals trying to implement an EMS and ED stroke protocol?

Involve each other in stroke team meetings, planning of stroke education events (ASLS), and ongoing evaluation. Address issues as they arise as quickly as possible. Provide patient follow up information to each group as soon as possible.

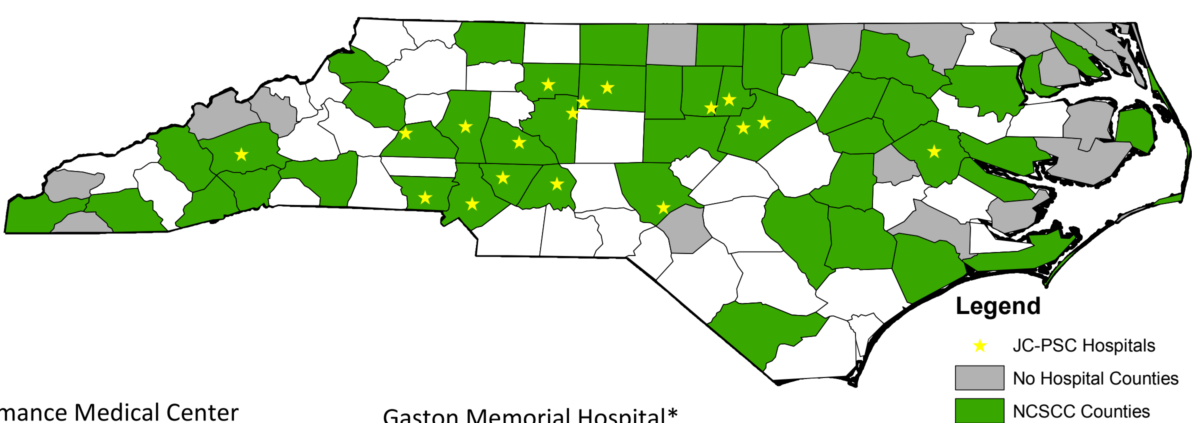
What are your thoughts on the soon to be mandatory NC EMS Triage and Destination Plan? Do you think it will be successful in improving patient stroke care?

I think it will encourage self-evaluation by hospital emergency departments and EMS systems. Hopefully, it will encourage the formation of team effort by EMS systems and their local hospitals to develop protocols to assist the acute stroke victim.

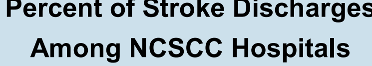
Is there anything else you would like to share?

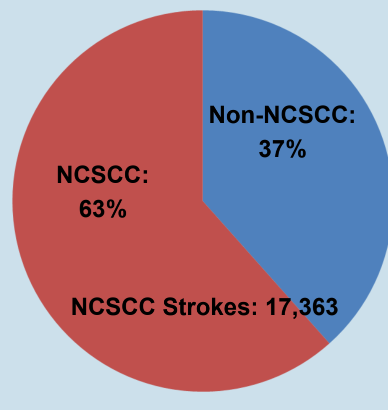
Each time a stroke victim is evaluated in our ED, our staff now feel confident they have done the best they can to decrease disability from this preventable disease. This is demonstrated by the continued team effort with each patient and how quickly EMS and the hospital stroke team staff allowed change in processes and attitudes toward each other occur.

NCSCC Participating Hospitals, 2010



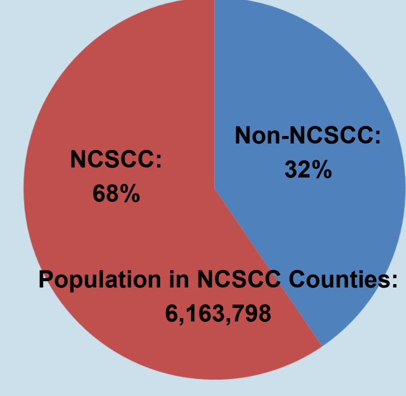
Alamance Medical Center
Albemarle Hospital
Angel Medical Center
Annie Penn Hospital
Beaufort Regional Health System
Bertie Memorial Hospital
Carolinas Medical Center *
CMC—Northeast*
Caldwell Memorial Hospital
Carteret General Hospital
Catawba Valley Medical Center
Chatham Hospital
Chowan Hospital
Columbus Reg. Health Care
Duke University Hospital *
Duplin General Hospital
First Health Moore Regional*
Frye Regional Medical Center*
Gaston Memorial Hospital*
Granville Medical Center
Halifax Regional Medical Center
Heritage Hospital
High Point Reg. Health System*
Hugh Chatham Memorial Hospital
Iredell Memorial Hospital *
Lake Norman Reg. Med. Center
Lexington Memorial Hospital
Margaret R. Pardee Mem. Hospital
Maria Parham Medical Center
Mission Hospitals *
Moses H. Cone Mem. Hospital *
Murphy Medical Center
Nash Health Care Systems
Onslow Memorial Hospital
Park Ridge Hospital
Person Memorial Hospital
Pitt County Memorial Hospital*
Rex Healthcare
Rowan Reg. Medical Center *
Rutherford Hospital Inc.
Sampson Reg. Medical Center
Stanly Regional Medical Center*
The Outer Banks Hospital
Thomasville Medical Center *
Transylvania Reg. Hospital
UNC Healthcare *
Wake Forest U. Baptist Med Ctr. *
Wake Medical Center– Raleigh*
Wake Medical Center- Cary*
Watauga Medical Center
Wayne Memorial Hospital
Wilson Medical Center





NC Strokes: 27,838

Percent of NC Population Served by NCSCC Hospitals

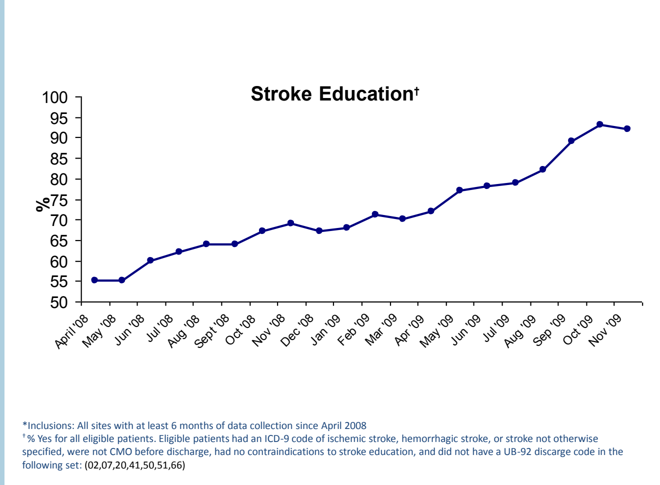


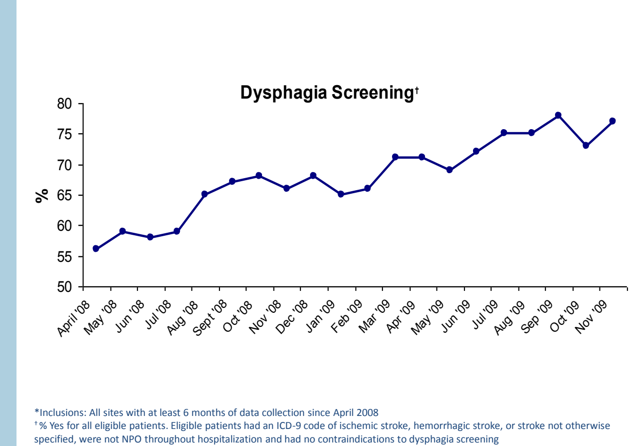
NC Population: 9,069,398

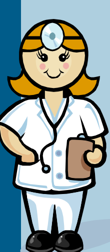
Quality Minute

Improvement in Selected Performance Measures

Time Period: April, 2008—November, 2009*





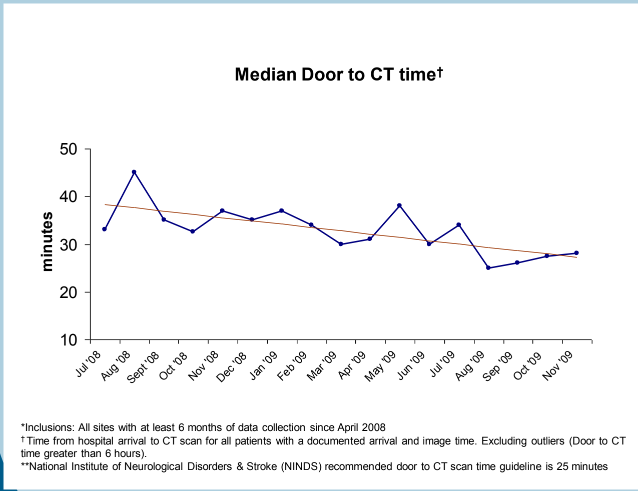


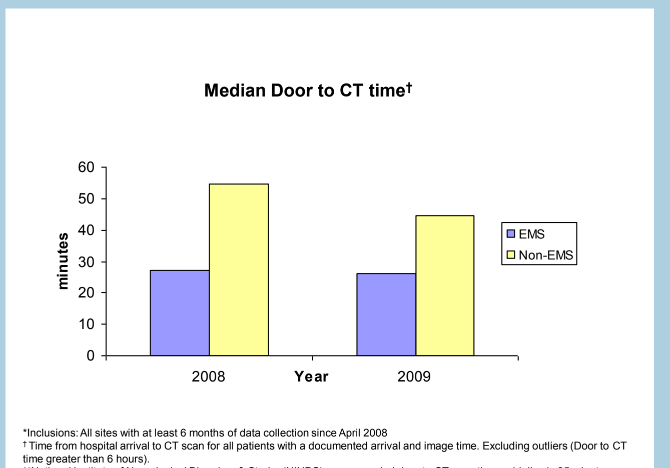
How do I obtain this data for my hospital?

Individualized hospital graphs and data charts are available upon request!

Median Door to CT Time

(Patients arriving within 2 hours of time last known well)





February 2010

Sun	Mon	Tue	Wed	Thu	Fri	Sat
	1	2	3	4		
7	8	9	10	11		
14		16	17	18	19	20
21	22			25		
28						

Western and South Central NC Regional Workshop hosted by Iredell Memorial

Feb 15: Stroke Advisory Council Meeting via video conference

Feb 23: QI Presentation: Update on the EMS plan of care and Jane Brice, "Coordination of EMS & ED Services"

Feb 24-26: International Stroke Conference, San Antonio, TX

March 2010

Sun	Mon	Tue	Wed	Thu	Fri	Sat
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7	8	9	10	119	12	
14		16	17	18	19	20
21	22	23		25	26	27
28	29	30	31			

March 5: Eastern NC Regional Workshop hosted by Pitt County Memorial

March 15: Stroke Advisory Council Meeting at NC Hospital Association

March 23: QI Presentation: Stroke DRG's & Implications for Cost Reimbursement

Join NCSCC and Participating Hospitals at our Quality Improvement Regional Workshops this Spring!

Western and South Central NC Regional Workshop
Hosted by Iredell Memorial Hospital
February 5th, Statesville, NC

Eastern NC Regional Workshop
Hosted by Pitt County Memorial Hospital
March 5th, Greenville, NC

Northeastern NC Workshop
Hosted by Nash General Hospital
May 6th, Rocky Mount, NC

Central NC Regional Workshop
Hosted by Moses Cone Memorial Hospital
Greensboro, NC
Date: TBD

Interested in attending one of our QI Regional Workshops? Contact Sylvia Coleman today at swcoleman@triad.rr.com to request a formal invitation!

We are proud to introduce the most recent additions to our NCSCC team!

Paige Bennett,
Quality Improvement Specialist,
Branda Watford,
Administrative Assistant, &
Kathryn O'Brien,
Social Research Assistant
(From left to right)

Contact Information:

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