



**STROKE
CENTER**

Improving EMS Stroke Care

Sean Kaye

EMS Specialist

EMS Performance Improvement Center

Improving EMS Stroke Care



West Virginia



North Carolina


South Carolina




www.emspic.org

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Continuum™ is now NEMSIS V3 Receive and Process Compliant

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News + Events

NC NewsSC NewsWV NewsMS News

**West Virginia Continuum™ Transition Timeline**
Posted: July 2, 2018
We are pleased to announce details regarding the West Virginia transition to Continuum™ and NEMSIS V.3.3.4 this summer! West Virginia EMS: please review this information carefully.

**North Carolina, South Carolina, and West Virginia All Win at NASEMSO**

Tweets by @EMSPIC



EMSPIC @EMSPIC
The EMSPIC brought two peds posters to #NAEMSP17

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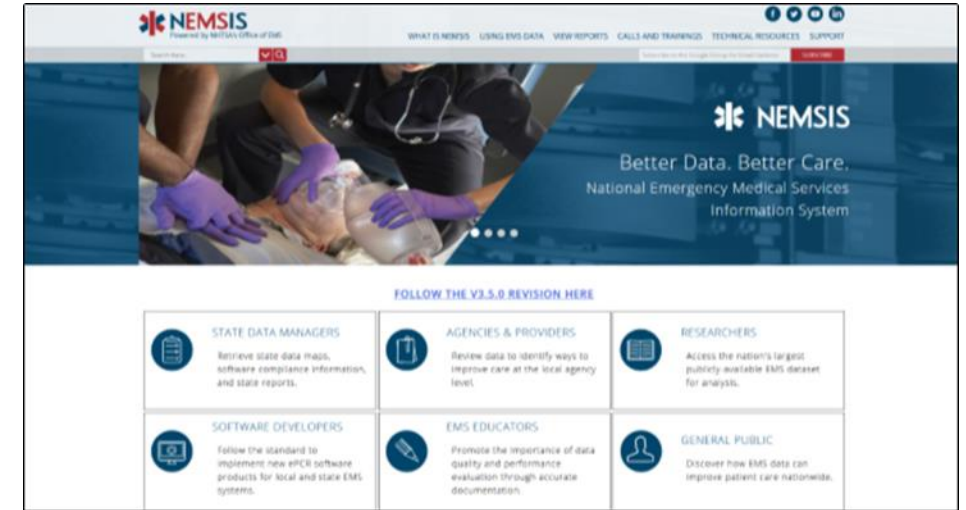
Set Benchmarks

Highlight Trends

Identify Weaknesses

Research New Treatments

To Identify Opportunities for Budget Savings or
Support for Grant Funding

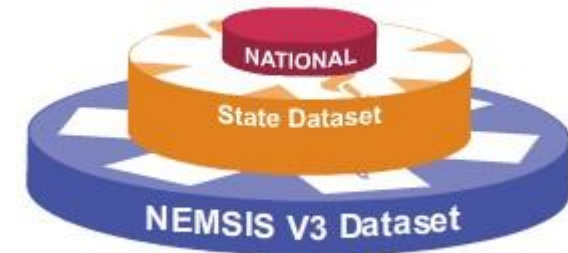
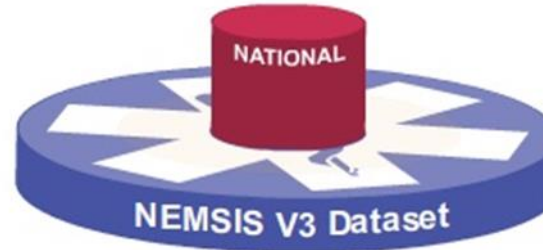
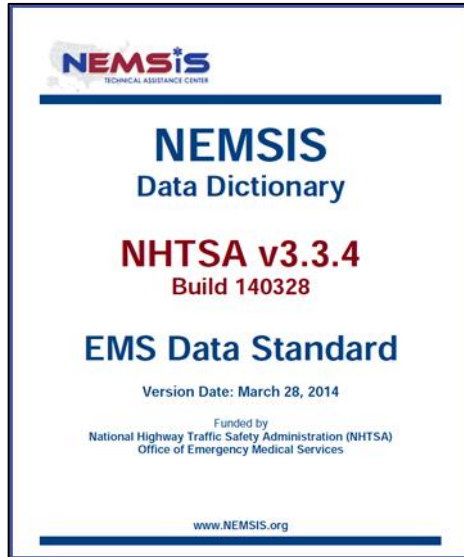


It Improves Care

Improving EMS Stroke Care



Improving EMS Stroke Care



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NEMSIS Version 3.3.4 Build 140328

eDisposition.24

State

National

eDisposition.24 - Destination Team Pre-Arrival Alert or Activation

Definition

Indication that an alert (or activation) was called by EMS to the appropriate destination healthcare facility team. The alert (or activation) should occur prior to the EMS Unit arrival at the destination with the patient.

National Element	Yes	Pertinent Negatives (PN)	No
State Element	Yes	NOT Values	Yes
Version 2 Element		Is Nillable	Yes
Usage	Required	Recurrence	1 : 1

Associated Performance Measure Initiatives

Cardiac Arrest STEMI Stroke Trauma

Attributes

NOT Values (NV)

7701001 - Not Applicable

7701003 - Not Recorded

Code List

Code	Description
4224001	No
4224003	Yes-Adult Trauma
4224005	Yes-Cardiac Arrest
4224007	Yes-Obstetrics
4224009	Yes-Other
4224011	Yes-Pediatric Trauma
4224013	Yes-STEMI
4224015	Yes-Stroke
4224017	Yes-Trauma (General)

Data Element Comment

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Response Demographics

eRecord.01 - Patient Care Report Number
eResponse.01 - EMS Agency Number
eResponse.05 - Type of Service Requested
eResponse.07 - Primary Role of the Unit
eResponse.08 - Type of Dispatch Delay
eResponse.09 - Type of Response Delay
eResponse.10 - Type of Scene Delay
eResponse.11 - Type of Transport Delay
eResponse.15 - Level of Care of This Unit
eResponse.23 - Response Mode to Scene
eResponse.24 - Additional Response Mode Descriptors



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Dispatch and Crew

eDispatch.01 - Complaint Reported by Dispatch

eDispatch.02 - EMD Performed

eDispatch.03 - EMD Card Number

eCrew.01 - Crew Member ID

eCrew.02 - Crew Member Level

eCrew.03 - Crew Member Response Role



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Time Intervals

- eTimes.01 - PSAP Call Date/Time
- eTimes.03 - Unit Notified by Dispatch Date/Time
- eTimes.05 - Unit En Route Date/Time
- eTimes.06 - Unit Arrived on Scene Date/Time
- eTimes.07 - Arrived at Patient Date/Time
- eTimes.08 - Transfer of EMS Patient Care Date/Time
- eTimes.09 - Unit Left Scene Date/Time
- eTimes.11 - Patient Arrived at Destination Date/Time
- eTimes.12 - Destination Patient Transfer of Care Date/Time



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Patient and Payment

ePatient.07 - Patient's Home County
ePatient.08 - Patient's Home State
ePatient.09 - Patient's Home ZIP Code
ePatient.13 – Gender
ePatient.14 – Race
ePatient.15 – Age
ePatient.16 - Age Units

ePayment.01 - Primary Method of Payment
ePayment.50 - CMS Service Level



NORTH CAROLINA



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Scene Information

eScene.08 - Triage Classification for MCI Patient
eScene.09 - Incident Location Type
eScene.11 - Scene GPS Location
eScene.18 - Incident State
eScene.19 - Incident ZIP Code
eScene.21 - Incident County



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Situation Illness/Injury

- eSituation.01 - Date/Time of Symptom Onset/Last Normal
- eSituation.02 - Possible Injury
- eSituation.03 - Complaint Type
- eSituation.04 – Complaint
- eSituation.05 - Duration of Complaint
- eSituation.06 - Time Units of Duration of Complaint
- eSituation.07 - Chief Complaint Anatomic Location
- eSituation.08 - Chief Complaint Organ System
- eSituation.09 - Primary Symptom
- eSituation.10 - Other Associated Symptoms
- eSituation.11 - Provider's Primary Impression
- eSituation.12 - Provider's Secondary Impressions
- eSituation.13 - Initial Patient Acuity



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Vitals and Exam

eExam.03 - Date/Time of Assessment
eExam.19 - Mental Status Assessment
eExam.20 - Neurological Assessment

eVitals.01 - Date/Time Vital Signs Taken
eVitals.02 - Obtained Prior to this Unit's EMS Care
eVitals.06 - SBP (Systolic Blood Pressure)
eVitals.10 - Heart Rate
eVitals.12 - Pulse Oximetry
eVitals.14 - Respiratory Rate
eVitals.16 - Carbon Dioxide (CO₂)
eVitals.18 - Blood Glucose Level
eVitals.19 - Glasgow Coma Score-Eye
eVitals.20 - Glasgow Coma Score-Verbal
eVitals.21 - Glasgow Coma Score-Motor
eVitals.22 - Glasgow Coma Score-Qualifier
eVitals.23 - Total Glasgow Coma Score
eVitals.26 - Level of Responsiveness (AVPU)
eVitals.29 - Stroke Scale Score
eVitals.30 - Stroke Scale Type
eVitals.31 - Reperfusion Checklist



NORTH CAROLINA

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Protocols, Medications, Procedures

eMedications.01 - Date/Time Medication Administered
eMedications.02 - Medication Administered Prior to Care
eMedications.03 - Medication Given
eMedications.09 - Medication Crew (Healthcare Professionals) ID

eProtocols.01 - Protocols Used
eProtocols.02 - Protocol Age Category

eProcedures.01 - Date/Time Procedure Performed
eProcedures.02 - Procedure Performed Prior to Care
eProcedures.03 – Procedure
eProcedures.05 - Number of Procedure Attempts
eProcedures.06 - Procedure Successful
eProcedures.09 - Procedure Crew Members ID
eProcedures.10 - Role/Type of Person Performing the Procedure



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Disposition

eDisposition.02 - Destination/Transferred To, Code

eDisposition.05 - Destination State

eDisposition.06 - Destination County

eDisposition.07 - Destination ZIP Code

eDisposition.12 - Incident/Patient Disposition

eDisposition.16 - EMS Transport Method

eDisposition.17 - Transport Mode from Scene

eDisposition.20 - Reason for Choosing Destination

eDisposition.21 - Type of Destination

eDisposition.23 - Hospital Designation

eDisposition.24 - Destination Team Pre-Arrival Alert or Activation

eDisposition.25 - Date/Time of Destination Prearrival Alert or Activation



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Outcome

eOutcome.01 - Emergency Department Disposition
eOutcome.02 - Hospital Disposition



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Challenges



Arrived on Scene



Arrived at Patient



Unit Left Scene

Time Intervals

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Challenges

eSituation.01 - Symptom Onset/Last Normal

The date and time the symptom began as it relates to this EMS event. This is described or estimated by the patient, family, and/or healthcare professionals.

eSituation.04 – Complaint

eSituation.05 - Duration of Complaint

eSituation.06 - Time Units of Duration of Complaint

The statement of the problem by the patient or the history provider.

What is Correct?

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Challenges

eDisposition.02 - Destination/Transferred To, Code

Duke
Duke ER
Duke Main Hospital
Duke Emergency Room
Duke University Medical Center

F00002477





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Challenges


Patient Care Report: PCR-10000419


Expand All



Response



Patient



Assessment


Interventions


Specialty


Disposition


Narrative



Finalize

County EMS

PCR-10000419

Tuesday, February 26, 2019 1:00:00 AM

Created By Patrick S Kaye P033830 SCsean WVsean

Narrative 

Arrived on scene and found pt sitting in chair w/ FR taking vital signs. Pt found with facial drooping and R sided weakness. Stroke assessment performed and found to be positive. BGL was 82. IV started. Stroke team notified. 12 lead performed en-route. Pt taken to Big Duke for stroke intervention capabilities.

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Opportunities

Dispatch Complaint \cong Primary Impression \cong Protocols \cong Outcome

eOutcome.01 - Emergency Department Disposition

eOutcome.02 - Hospital Disposition

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Opportunities

NEMSIS Version 3.3.4 Build 140328

eDispatch.01

State

National

eDispatch.01 - Complaint Reported by Dispatch

Convulsions/Seizure

Diabetic Problem

Headache

Sick Person

Unconscious/Fainting/Near-Fainting

Unknown Problem/Person Down

eOutcome.01 - Emergency Department Disposition

eOutcome.02 - Hospital Disposition

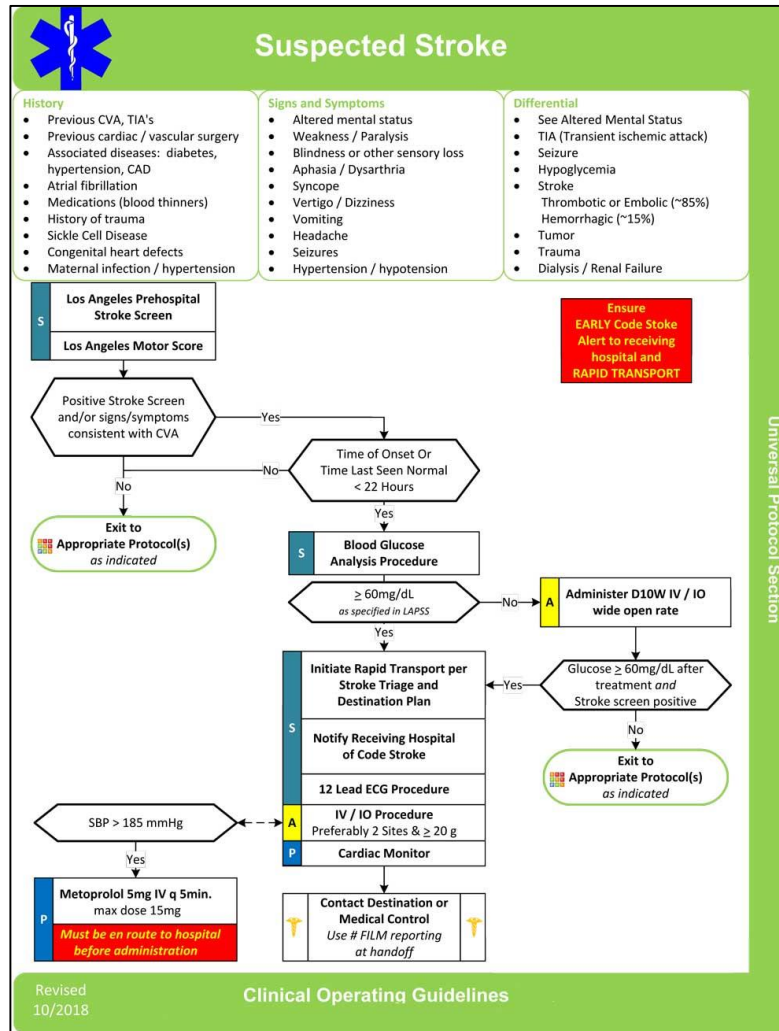
Code List

Code	Description
2301001	Abdominal Pain/Problems
2301003	Allergic Reaction/Stings
2301005	Animal Bite
2301007	Assault
2301009	Automated Crash Notification
2301011	Back Pain (Non-Traumatic)
2301013	Breathing Problem
2301015	Burns/Explosion
2301017	Carbon Monoxide/Hazmat/Inhalation/CBRN
2301019	Cardiac Arrest/Death
2301021	Chest Pain (Non-Traumatic)
2301023	Choking
2301025	Convulsions/Seizure
2301027	Diabetic Problem
2301029	Electrocution/Lightning
2301031	Eye Problem/Injury
2301033	Falls
2301035	Fire
2301037	Headache
2301039	Healthcare Professional/Admission
2301041	Heart Problems/AICD
2301043	Heat/Cold Exposure
2301045	Hemorrhage/Laceration
2301047	Industrial Accident/Inaccessible Incident/Other Entrapments
2301049	Medical Alarm
2301051	No Other Appropriate Choice
2301053	Overdose/Poisoning/Ingestion
2301055	Pandemic/Epidemic/Outbreak
2301057	Pregnancy/Childbirth/Miscarriage
2301059	Psychiatric Problem/Abnormal Behavior/Suicide Attempt
2301061	Sick Person
2301063	Stab/Gunshot Wound/Penetrating Trauma
2301065	Standby
2301067	Stroke/CVA
2301069	Traffic/Transportation Incident
2301071	Transfer/Interfacility/Palliative Care
2301073	Traumatic Injury
2301075	Well Person Check
2301077	Unconscious/Fainting/Near-Fainting
2301079	Unknown Problem/Person Down
2301081	Drowning/Diving/SCUBA Accident
2301083	Airmedical Transport



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Opportunities



Suspected Stroke

Pearls

- Recommended Exam: Mental Status, HEENT, Heart, Lungs, Abdomen, Extremities, Neuro
- **Utilize Stroke Destination Guidelines to drive decision-making.**
- **Time of Onset or Last Seen Normal:**
One of the most important items the pre-hospital provider can obtain, of which all treatment decisions are based.
Be very precise in gathering data to establish the time of onset and report as an actual time (i.e. 13:47 not "about 45 minutes ago.")
Without this information patient may not be able to receive thrombolytics at facility.
Wake up stroke: Time starts when patient last awake or symptom free.
- You are often in the best position to determine the actual Time of Onset while you have family, friends or caretakers available. Often these sources of information may arrive well after you have delivered the patient to the hospital. Delays in decisions due to lack of information may prevent an eligible patient from receiving thrombolytics.
- **If possible place 2 IV sites.**
- The differential listed on the Altered Mental Status Protocol should also be considered.
- **Be alert for airway problems (swallowing difficulty, vomiting/aspiration).**
- Hypoglycemia can present as a localized neurologic deficit, especially in the elderly.
- **Document the Stroke Screen results in the PCR.**
- BGL measurement is < 60 for LAPSS rather than ≤ 69

Pediatrics:

- Strokes do occur in children, they are slightly more common in ages < 2, in boys, and in African-Americans.
- Newborn and infant symptoms consist of seizures, extreme sleepiness, and using only one side of the body.
- Children and teenagers symptoms may consist of severe headaches, vomiting, sleepiness, dizziness, and/or loss of balance or coordination.

LA Prehospital Stroke Screen & Motor Score

Patient Name: _____

Last seen normal time: _____ Time of exam: _____

LA Motor Score
in blue

	Right	Left
Normal = 0 <input type="checkbox"/> SMILE / GRIMACE	<input type="checkbox"/> ONOOP = 1	<input type="checkbox"/>
Normal = 0 <input type="checkbox"/> GRIP	<input type="checkbox"/> WEAK = 1	<input type="checkbox"/>
Normal = 0 <input type="checkbox"/> ARM STRENGTH	<input type="checkbox"/> NO GRIP = 2	<input type="checkbox"/>
	<input type="checkbox"/> DRIFTS DOWN	<input type="checkbox"/>
	<input type="checkbox"/> FALLS RAPIDLY	<input type="checkbox"/>

LAMS = _____

Weakness is unilateral only ☐ YES ☐ UNK. ☐ NO

Age > 45 ☐ YES ☐ UNK. ☐ NO

History of Stroke or Epilepsy *absent* ☐ YES ☐ UNK. ☐ NO

Onset of symptoms in last 24 hours ☐ YES ☐ UNK. ☐ NO

Ambulatory at baseline ☐ YES ☐ UNK. ☐ NO

Blood Glucose between 60 and 400 ☐ YES ☐ UNK. ☐ NO

If YES or UNK. to all items in RED above, LAPSS criteria is met, **immediately provide STROKE** (especially anti-coagulant and anti-platelet)

#FILM

When transporting a CVA patient to Duke, report # FILM to ED staff at handoff

- #** - Phone number for transporting unit
- F** - Family contact information
- I** - Recent Interventions (surgery, cardiac cath, etc.)
- L** - Last Known Normal
- M** - Medication (especially anti-coagulant and anti-platelet)

Universal Protocol Section

Clinical Operating Guidelines

Revised 10/2018

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Opportunities

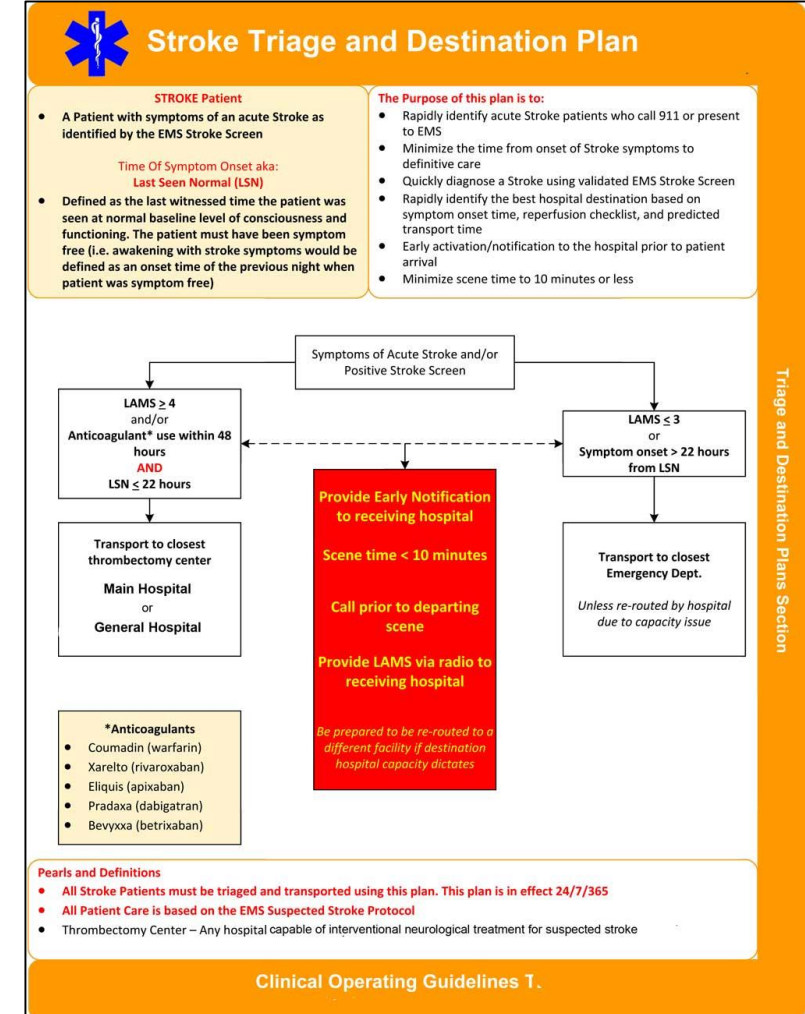


Acute Stroke Ready Hospital (ASRH)

Primary Stroke Center (PSC)



Comprehensive Stroke Center (CSC)

Thrombectomy-Capable Stroke Center (TSC)



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Opportunities

Patient Name: _____ DOB: _____ Date: _____				
<div style="display: flex; justify-content: space-between; align-items: center;">  <div style="text-align: center;"> South Carolina EMS R.A.C.E. Stroke Scale Rapid Arterial occlusion Evaluation Scale </div>  </div>				
ITEM	Instruction	Result	Score	NIHSS Equivalent
Facial Palsy	Ask patient to show their teeth (smile)	Absent (symmetrical movement)	0	0-3
		Mild (slight asymmetrical)	1	
		Moderate to Severe (completely asymmetrical)	2	
Arm Motor Function	Extending the arm of the patient 90° (if sitting) or 45° (if supine)	Normal to Mild (limb upheld more than 10 seconds)	0	0-4
		Moderate (limb upheld less than 10 seconds)	1	
		Severe (patient unable to raise arm against gravity)	2	
Leg Motor Function	Extending the leg of the patient 30° (in supine)	Normal to Mild (limb upheld more than 5 seconds)	0	0-4
		Moderate (limb upheld less than 5 seconds)	1	
		Severe (patient unable to raise leg against gravity)	2	
Head & Gaze Deviation	Observe eyes and head deviation to one side	Absent (eye movements to both sides were possible and no head deviation was observed)	0	0-2
		Present (eyes and head deviation to one side was observed)	1	
Aphasia (R side)	Difficulty understanding spoken or written words. Ask patient to follow two simple commands: 1. Close your eyes. 2. Make a fist.	Normal (performs both tasks requested correctly)	0	0-2
		Moderate (performs only 1 of 2 tasks requested correctly)	1	
		Severe (Cannot perform either task requested correctly)	2	
Agnosia (L side)	Inability to recognize familiar objects. Ask patient: 1. "Whose arm is this?" (while showing the affected arm) 2. "Can you move your arm?"	Normal (recognizes arm, and attempts to move arm)	0	0-2
		Moderate (does not recognize arm or is unaware of arm)	1	
		Severe (does not recognize arm and is unaware of arm)	2	
RACE SCALE TOTAL				
Any score above 4 is a Stroke Alert and high likelihood of an LVO				

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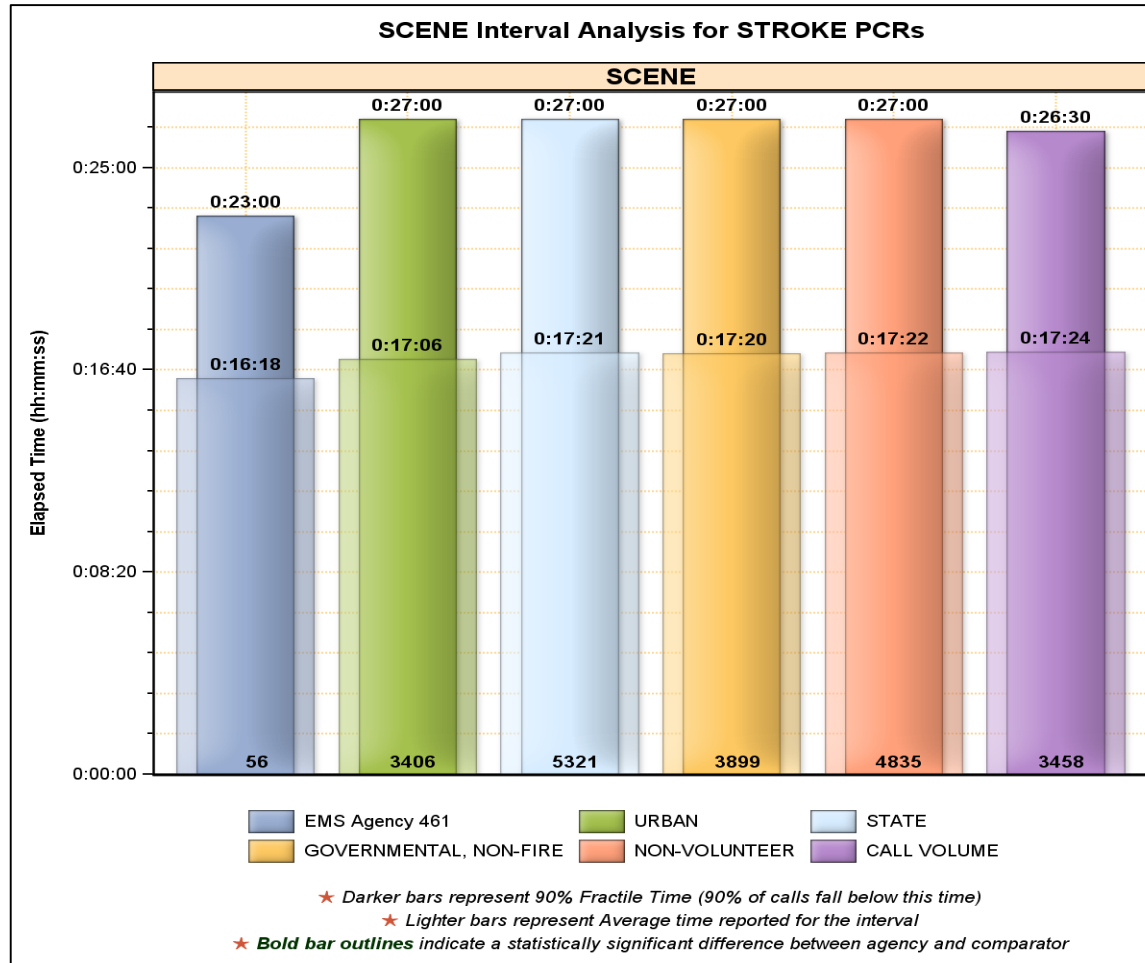
Performance

Stroke									
EMS Compass® ID	Version	Topic/Clinical Area	EMS Compass Bundle	Measure Title	Description	Measure Type	Rationale	Numerator	Denominator
Stroke-01	1	Stroke	Stroke	Suspected Stroke Receiving Prehospital Stroke Assessment	To measure the percentage of suspected stroke patients who had a stroke assessment performed by EMS	Process	Stroke assessments using prehospital stroke assessment tools can screen for stroke and affect patient destinations	Number of suspected stroke patients who had a stroke assessment performed (CPSS, LAMS, etc.)	Patients with a provider impression of stroke originating from a 911 request
Stroke-08	1	Stroke	Stroke	Emergency Department Diagnosed Stroke Identified by Prehospital Stroke Assessment	Measures the percentage of emergency department diagnosed stroke patients who had a positive stroke assessment by EMS	Process	Stroke assessments using prehospital stroke assessment tools can screen for stroke and affect patient destinations. Using hospital data, this measure identified the number of actual strokes that were either falsely assessed or not assessed using a prehospital stroke scale	Patients with a positive stroke assessment	Patients with emergency department diagnosed stroke transported by EMS originating from a 911 request

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Performance

Time Intervals

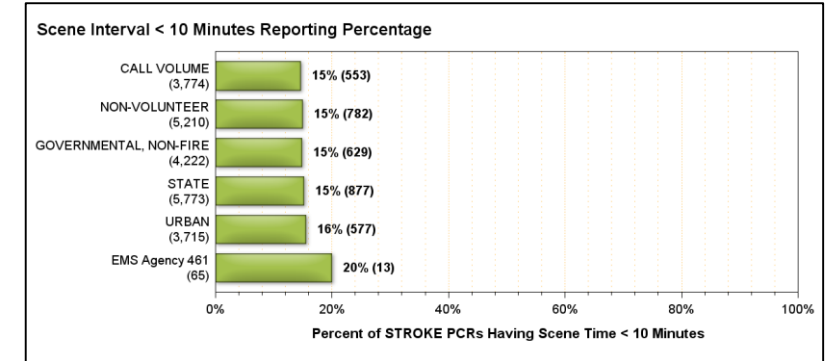


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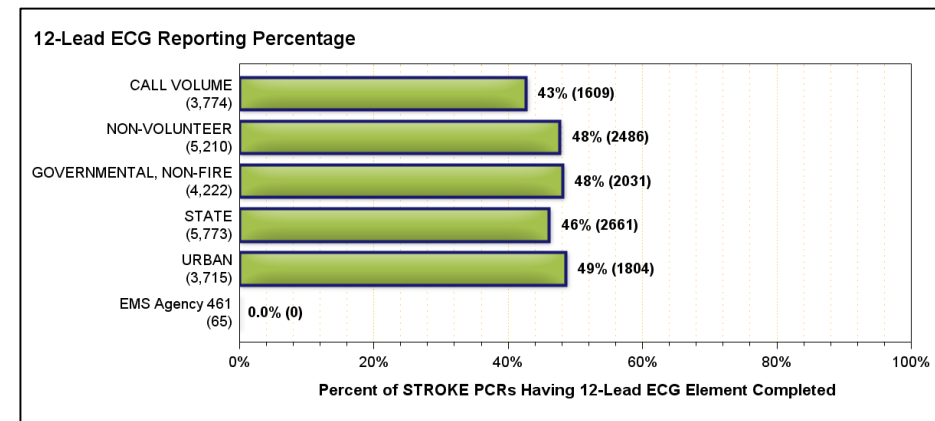
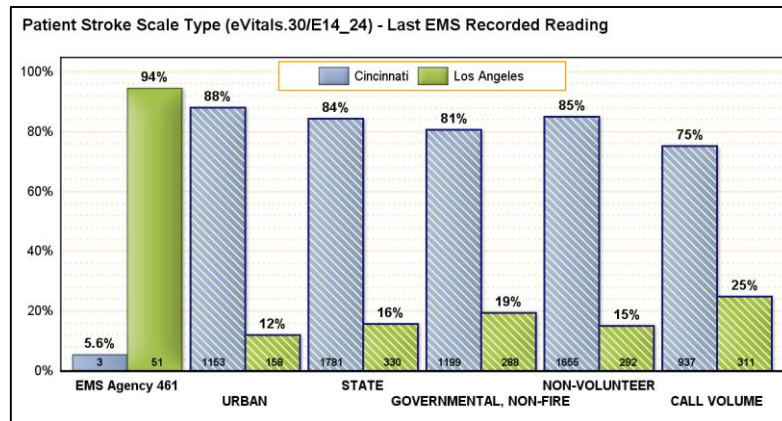
Performance



Data Quality



Procedures



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Collaboration

Continuum NC

Patrick S Kaye

Home

Behavioral Health Facility

Individual Referrals

Behavioral Health Reports

BH-CRSys Resources

State Office

PCRs

Region

System

Corporations

HealthCare Coalition

Hospital

Agency

Health Center

Pharmacy

Dialysis Center

Licensed Care Facility

S.M.A.T

Personnel

HP&R Message Board:
Construction use back door

Hospital Details for: General Hospital

Update Status

General Information

Physical Address:
1234 Some Street
Raleigh, NC 27601
Wake County
Latitude/Longitude Point: -78.63393969830008,35.77440028345357

Mailing Address:


Work: (919) 555-1212
Emergency:
Fax:
Website:
Status: Open

Contacts

+ Add Roster

Name	Job Title(s)	Phone Number(s)
Sean Kaye Pisan	HP&R Message Only Contact Trauma Program Director	Home: (919)-619-5881 Fax: (919)-843-0195 Work: (919)-843-0201 Mobile: (919)-619-5881
Jennifer K Wilson P500535	HP&R Administrator Hospital Administrator	Mobile: (919)-928-4099

Export options: CSV | Excel | XML



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Collaboration

How many of your Stroke/CVA Patients come in by EMS? All EMS?

Are you familiar with your EMS Stroke/CVA protocol?

Are you familiar with what procedures, medication, and transports decisions EMS can make?

Have you educated your EMS providers?

How can we help?

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Collaboration



**COMMUNITY
PARAMEDIC**



MEDICAL SERVICES	911 Response	Post-acute/ Post-discharge Follow-up	High Utilizer Mitigation/ Navigation	On-demand Episodic Request	Admission Prevention
Assessment/history & physical	44%	76%	69%	65%	58%
Post discharge follow-up	11%	80%	56%	57%	62%
Post surgery care	7%	82%	41%	59%	59%
Fall risk assessment/prevention	28%	74%	66%	57%	55%
Ear exams	14%	71%	57%	71%	57%
Prescription procurement	12%	75%	68%	53%	53%
Medication evaluation/compliance	24%	76%	70%	62%	64%
Medication monitoring/administration	30%	72%	64%	67%	57%
Post injury/illness evaluation	18%	74%	61%	70%	57%
Stroke assessment/follow-up	45%	66%	52%	58%	52%
Nutrition assessment/weight check	4%	79%	68%	61%	63%
Hypertension screening/education	23%	77%	69%	63%	63%
Sodium reduction education	8%	80%	58%	57%	62%
Cholesterol screening/education	7%	74%	63%	70%	44%
Diabetes screening and education	20%	76%	72%	66%	61%
Obesity screening/education/weight check	3%	74%	62%	59%	49%
Physical activity assessment/education	16%	73%	64%	61%	56%
Psychological evaluation/behavioral health services	33%	65%	71%	63%	57%
Neurological assessment	48%	71%	58%	61%	57%
Wound care	25%	63%	49%	71%	51%
Foley catheter maintenance	27%	62%	42%	57%	42%
Cancer self-exam education	6%	39%	56%	56%	28%
Blood draw	36%	66%	42%	73%	56%
Glucose check	48%	75%	64%	66%	60%
iStat test	12%	76%	62%	65%	68%
Throat swab culture	13%	40%	33%	80%	40%
Stool collection	11%	47%	42%	74%	42%
Urine collection	8%	61%	34%	87%	50%
Blood pressure check	50%	74%	64%	67%	58%
EKG12-lead test	57%	62%	47%	61%	47%
Peripheral intravenous access	57%	45%	29%	51%	38%
C-PAP	71%	31%	27%	42%	29%
MDI use	29%	70%	61%	64%	52%
Peak flow meter usage	8%	78%	56%	64%	56%
Oxygen saturation check	45%	72%	66%	65%	60%
Capnography assessment	61%	60%	46%	58%	48%



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Collaboration



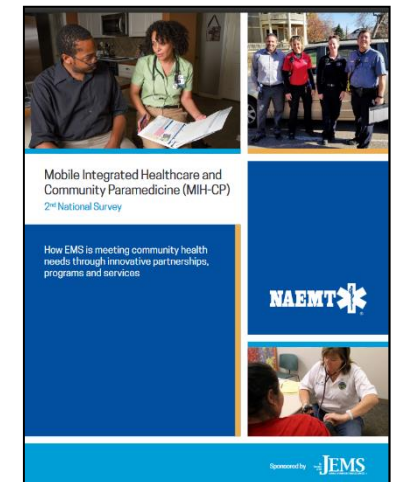
COMMUNITY
PARAMEDIC

MIH-CP PROGRAMS REPORT **IMPROVED OUTCOMES** FOR VARIOUS PATIENT GROUPS

	Highly Successful	Some Success	Little Success	No Success	Too Soon to Tell	N/A
Frequent 911 users	37%	32%	7%	1%	5%	18%
Congestive heart failure as a primary complaint/reason for referral	40%	25%	7%	0%	7%	20%
Substance abuse/alcoholism as a primary complaint/reason for referral	9%	25%	18%	1%	7%	39%
Other chronic diseases (COPD), diabetes, asthma	30%	44%	3%	0%	6%	17%
Terminal illness/hospice	15%	13%	6%	3%	6%	57%

MIH-CP PROGRAMS REPORT **LOWERED COSTS** FOR VARIOUS PATIENT GROUPS

	Highly Successful	Some Success	Little Success	No Success	Too Soon to Tell	N/A
Frequent 911 users	36%	31%	4%	2%	7%	20%
Congestive heart failure as a primary complaint/reason for referral	31%	33%	5%	0%	13%	18%
Substance abuse/alcoholism as a primary complaint/reason for referral	6%	26%	17%	3%	10%	39%
Other chronic diseases (COPD), diabetes, asthma	28%	41%	4%	0%	10%	17%
Terminal illness/hospice	15%	11%	8%	2%	9%	55%

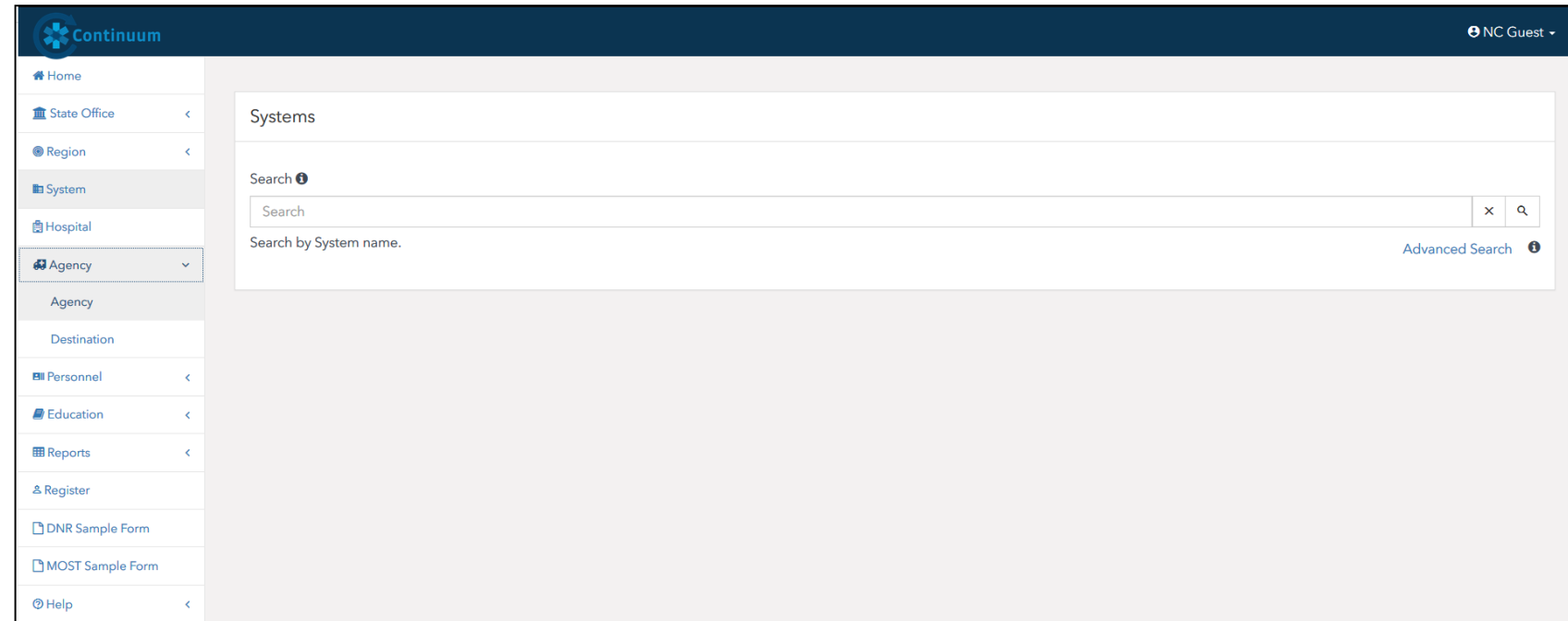
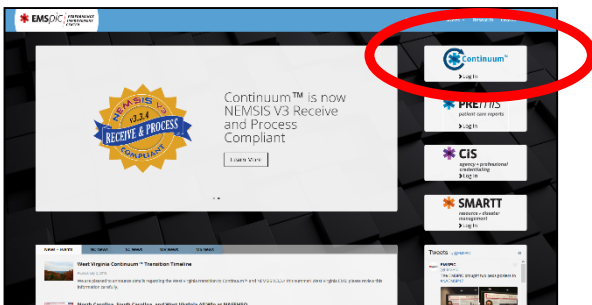


<https://www.naemt.org/initiatives/mih-cp>



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Collaboration



Choose State **Public Access:** North Carolina / South Carolina / West Virginia

Questions?



Thank You For Your Time

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EMS Specialist
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