The 12th Annual NECC Summit

State Breakout Sessions

New Jersey

GWTG-Stroke Data

January 2016 – December 2016

Agenda

1. Review data from GWTG-Stroke
2. Review Mission: Lifeline stroke triage algorithm
3. Review region's current protocol(s) & discuss next steps

Preview of GWTG-Stroke Data

Data by NECC State: Slides 5 – 12

Data by New York Region: Slides 14 – 21

- Stroke Diagnosis Type
- Arrival Mode
- Last Known Well to ED Arrival Times
- Stroke Care Measures
  - Pre-notification by EMS
  - Door to CT ≤ 25min
  - Ischemic Stroke patients who received IV tPA
  - Ischemic Stroke patients who received IA catheter-based reperfusion
  - Time to IV tPA – 60min
  - Time to IV tPA – 45min

Notes:
- This data is a reflection of hospital documentation of pre-hospital care, and may not be a true reflection of care provided by EMS.
- At the present time, GWTG-Stroke doesn't collect data specific to LVO patients.

Data by NECC State

Stroke Diagnosis Type, 2016
by Region
% of patients (number of patients)

Stroke Diagnosis Type	NECC States					Region		
	ME, NH, & VT	MA	RI	CT	NY	NJ	North-east	Nation
Ischemic Stroke	69.7% (2,824)	66.8% (10,252)	74.6% (1,743)	71.5% (3,928)	60.5% (29,546)	62.2% (10,771)	63.7% (83,004)	67.7% (384,294)
TIA	6.6% (269)	18.4% (2,819)	7.1% (165)	9.7% (534)	20.1% (9,825)	20.9% (3,620)	18.7% (24,373)	12.5% (70,985)
Subarachnoid Hemorrhage	4.0% (164)	3.0% (459)	3.5% (81)	3.8% (207)	3.5% (1,725)	3.5% (600)	3.4% (4,430)	3.8% (21,812)
Intracerebral Hemorrhage	13.1% (532)	8.3% (1,279)	13.4% (312)	10.4% (573)	10.2% (4,990)	10.5% (1,823)	10.1% (13,143)	11.1% (63,081)
Stroke, not otherwise specified	1.1% (43)	0.7% (102)	0.4% (9)	0.1% (7)	0.4% (193)	0.2% (31)	0.5% (696)	1.0% (5,848)
Total cases in GWTG	4,054	15,342	2,337	5,497	48,815	17,315	130,251	567,714

- The Northeast region benchmarking group includes the 8 NECC states and Pennsylvania
- Cases with a "missing diagnosis", "no stroke related diagnosis" or "elective carotid intervention only" are not listed here, therefore the sum of the number of patients within each diagnosis may not equal the "Total cases in GWTG" for each region.

Arrival Mode, 2016
by Region
% of patients (number of patients)

Arrival Mode	Region							
	NECC States							
	ME, NH, & VT	MA	RI	CT	NY	NJ	North-east	Nation
EMS from home/scene	39.5% (1,550)	54.6% (7,994)	51.4% (1,169)	53.1% (2,735)	55.2% (24,340)	53.6% (8,856)	52.2% (63,510)	45.8% (245,777)
Private transport/ taxi/other from home/scene	25.7% (1,008)	29.0% (4,250)	22.3% (507)	27.3% (1,406)	31.3% (13,793)	38.0% (6,275)	32.5% (39,585)	33.8% (181,265)
Transfer from other hospital	23.8% (935)	15.4% (2,262)	25.8% (587)	18.4% (948)	12.8% (5,621)	7.0% (1,162)	13.8% (16,825)	18.3% (98,298)
Not documented or unknown	1.1% (43)	0.8% (124)	0.5% (12)	1.1% (57)	0.7% (293)	1.4% (236)	0.8% (965)	0.8% (4,447)
Total N	3,921	14,646	2,276	5,148	44,081	16,529	121,646	537,005

- The Northeast region benchmarking group includes the 8 NECC states and Pennsylvania
- Cases with a "blank" for Arrival Mode are not listed here, therefore the sum of the number of patients for each arrival mode may not equal the "Total N" for each region.

Last Known Well to ED Arrival Times, 2016

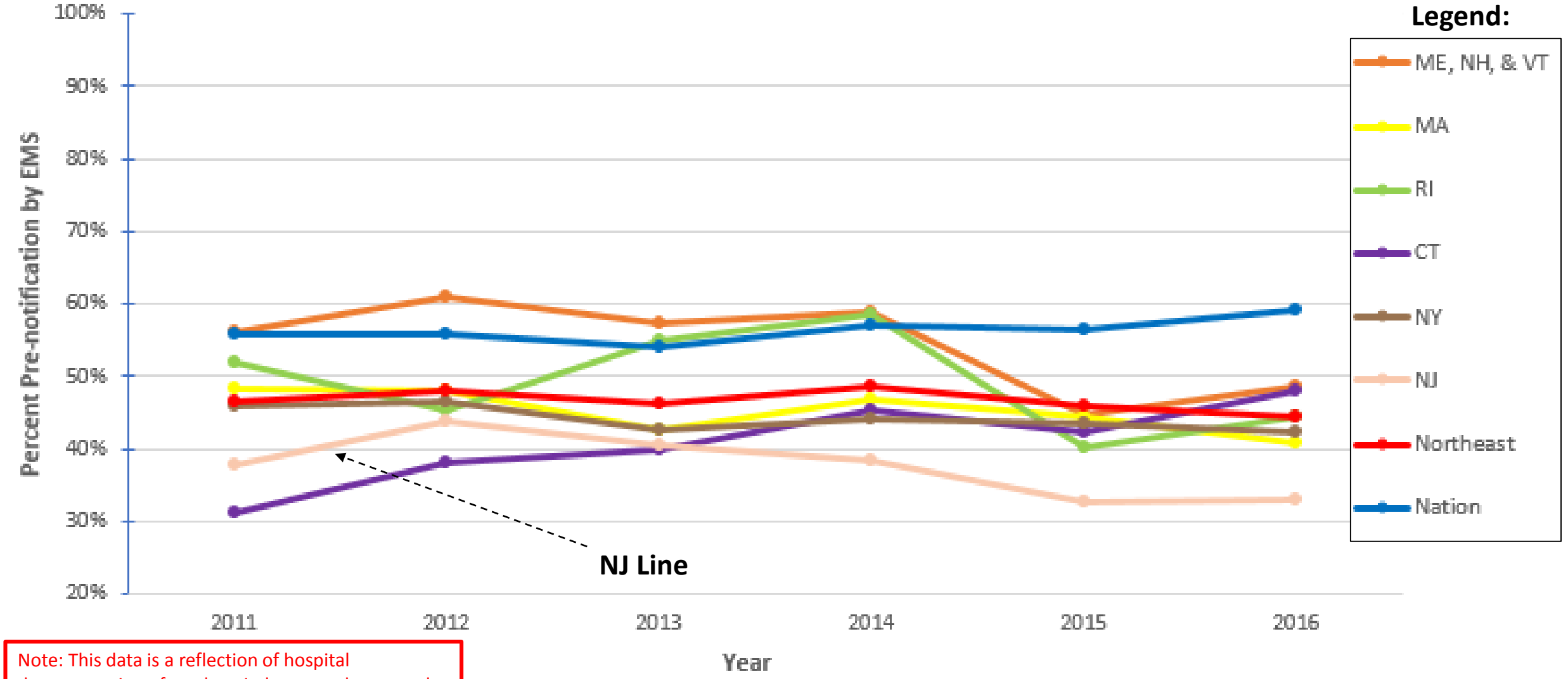
(For patients who arrive by EMS from home/scene),
by Region
% of patients (number of patients)

LKW to Arrival Time Group	Region							
	NECC States							
	ME, NH, & VT	MA	RI	CT	NY	NJ	North-east	Nation
0-30 min	5.0% (76)	5.4% (428)	3.7% (43)	3.8% (102)	3.4% (830)	3.0% (266)	3.7% (2,307)	4.3% (10,550)
31-60 min	13.2% (202)	14.2% (1,129)	11.5% (134)	13.9% (378)	11.5% (2,792)	13.4% (1,171)	12.5% (7,876)	12.9% (31,238)
61-120 min	12.8% (196)	13.2% (1,046)	10.7% (125)	13.3% (359)	13.3% (3,214)	14.1% (1,233)	13.5% (8,535)	13.1% (31,797)
121-180 min	5.3% (81)	6.2% (492)	5.1% (60)	4.5% (122)	6.2% (1,497)	6.0% (524)	6.0% (3,781)	5.8% (14,299)
181-540 min	14.4% (220)	13.1% (1,037)	15.3% (179)	13.4% (363)	13.4% (3,259)	14.2% (1,231)	13.3% (8,428)	13.2% (32,166)
> 540 min	12.7% (194)	13.5% (1,075)	14.9% (174)	10.8% (294)	13.9% (3,372)	14.3% (1,249)	13.5% (8,525)	13.3% (32,310)
LKW or Arrival Time unknown, or Arrival ≥2 days after LKW	38.0% (583)	35.8% (2,848)	39.1% (455)	40.9% (1,109)	39.6% (9,595)	36.5% (3,192)	38.7% (24,430)	38.4% (93,343)
Total N	1,533	7,958	1,166	2,713	24,205	8,755	63,071	24,280

- The Northeast region benchmarking group includes the 8 NECC states and Pennsylvania
- Cases with documented arrival and LKW time, and LKW to arrival ≥ 2 days, will be included in both the ">540 min" and "LKW or Arrival Time unknown, or Arrival ≥ 2 days after LKW" categories.

Pre-notification by EMS, 2011-2016

(For patients who arrive by EMS from home/scene),
by Region

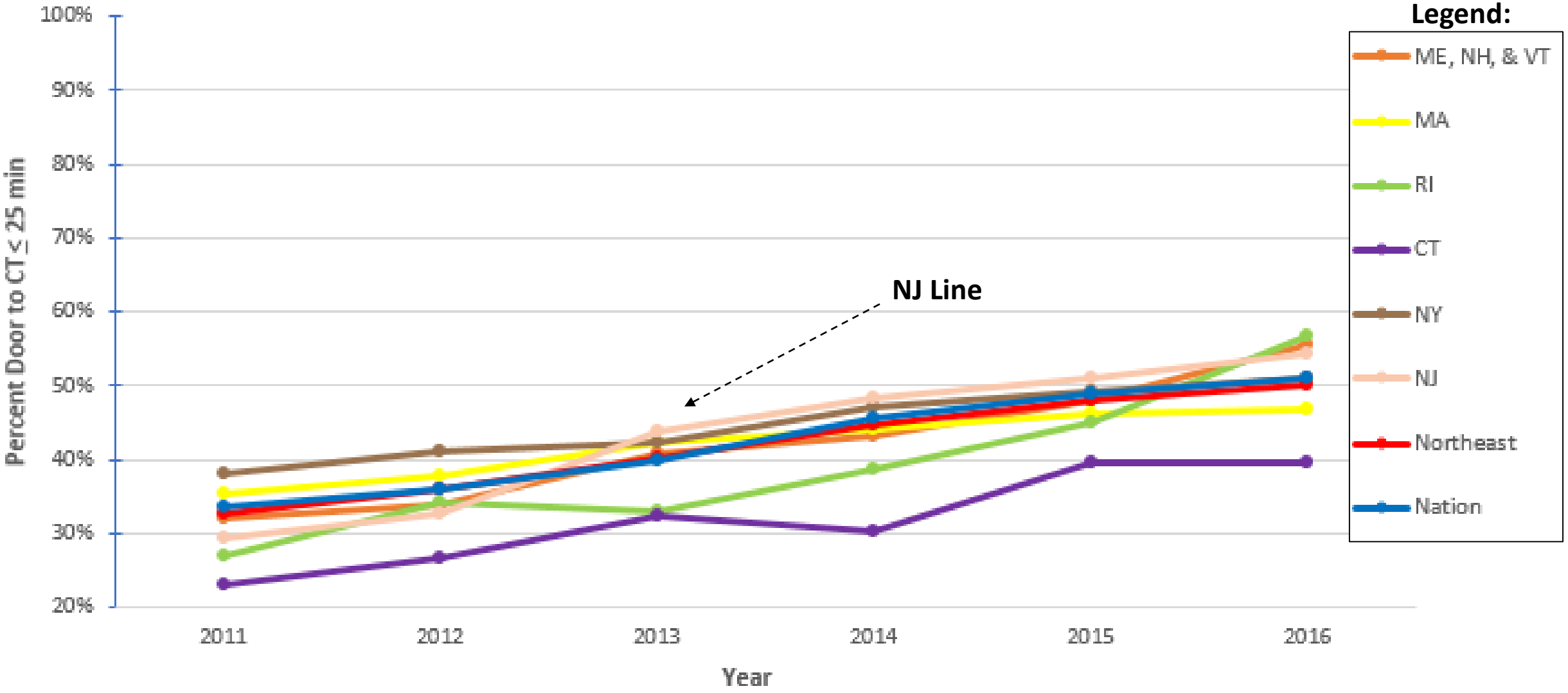


Note: This data is a reflection of hospital documentation of pre-hospital care, and may not be a true reflection of care provided by EMS.

- The Northeast region benchmarking group includes the 8 NECC states and Pennsylvania

Door to CT ≤ 25 min, 2011-2016

(For patients who arrive by EMS from home/scene), by Region



- The Northeast region benchmarking group includes the 8 NECC states and Pennsylvania

Stroke Care Measures, 2016

(For patients who arrive by EMS from home/scene),
by Region
% of patients (number of patients)

Measure	Region							
	NECC States							
	ME, NH, & VT	MA	RI	CT	NY	NJ	North-east	Nation
Pre-notification by EMS	48.6% (632)	40.8% (3,249)	44.4% (488)	48.0% (1,264)	42.2% (10,263)	32.9% (2,913)	44.4% (27,914)	59.0% (141,001)
Door to CT ≤ 25 min	55.4% (679)	46.7% (2,917)	56.8% (557)	39.7% (866)	51.1% (9,603)	54.4% (3,806)	50.1% (24,881)	51.1% (101,239)

- The Northeast region benchmarking group includes the 8 NECC states and Pennsylvania

Additional Stroke Care Measures, 2016

by Region

% of patients (number of patients)

Measure	Region							
	NECC States							
	ME, NH, & VT	MA	RI	CT	NY	NJ	North-east	Nation
Ischemic Stroke patients who received IV tPA (excluding patients with stroke after arrival)	8.9% (251)	10.1% (1,035)	11.5% (200)	10.1% (397)	10.6% (3,114)	12.4% (1,336)	10.1% (8,376)	11.0% (42,165)
Ischemic Stroke patients who received IA catheter-based reperfusion (excluding patients with stroke after arrival)	1.8% (51)	2.6% (270)	8.4% (146)	2.9% (113)	3.4% (986)	2.8% (305)	3.2% (2,622)	3.3% (12,584)

- The Northeast region benchmarking group includes the 8 NECC states and Pennsylvania
- IA catheter-based treatment includes both pharmacologic thrombolytic therapy and mechanical devices.

- Patients who receive IV tPA or IA catheter-based reperfusion at a non-GWTG hospital, who are subsequently transferred to a GWTG hospital, would not be captured in the measures for % of patients who received IV tPA, or IA catheter-based reperfusion.

Additional Stroke Care Measures, 2016

by Region

% of patients (number of patients)

Measure	NECC States					Region		
	ME, NH, & VT	MA	RI	CT	NY	NJ	North-east	Nation
Time to IV tPA - 60min (in eligible patients)	63.9% (124)	63.2% (494)	82.1% (124)	70.6% (202)	81.4% (1,869)	78.5% (832)	76.3% (4,801)	78.4% (25,233)
Time to IV tPA - 45min (in eligible patients)	27.3% (53)	33.5% (262)	49.0% (74)	34.6% (99)	45.2% (1,037)	48.6% (515)	41.7% (2,624)	44.9% (14,457)

- The Northeast region benchmarking group includes the 8 NECC states and Pennsylvania

Data by New York Region

Stroke Diagnosis Type, 2016

by New York Region

% of patients (number of patients)

Stroke Diagnosis Type	New York Region						
	Long Island	Capital/ Northeastern	Central	Hudson Valley/ Westchester	NYC	Rochester/ Finger Lakes	Western
Ischemic Stroke	56.8% (5,065)	66.4% (2,036)	63.6% (2,312)	55.6% (2,992)	60.9% (11,260)	60% (2,565)	66.8% (2,684)
TIA	25.2% (2,245)	18.2% (559)	19.7% (718)	24.6% (1,325)	16.1% (2,981)	23.4% (1,003)	20.3% (814)
Subarachnoid Hemorrhage	3.8% (341)	4.0% (122)	4.0% (144)	3.8% (207)	3.5% (644)	3.1% (131)	2.9% (117)
Intracerebral Hemorrhage	10.8% (962)	10.1% (311)	10.7% (389)	9.8% (529)	10.4% (1,922)	8.6% (368)	9.2% (369)
Stroke, not otherwise specified	0.1% (12)	0.5% (15)	0.1% (5)	0.8% (41)	0.2% (41)	1.4% (59)	0.3% (11)
Total cases in GWTG	8,910	3,068	3,638	5,385	18,502	4,278	4,019

- Cases with a “missing diagnosis”, “no stroke related diagnosis” or “elective carotid intervention only” are not listed here, therefore the sum of the number of patients with each diagnosis may not equal the “Total cases in GWTG” for each region.

Arrival Mode, 2016
by New York Region
% of patients (number of patients)

Arrival Mode	New York Region						
	Long Island	Capital/ Northeastern	Central	Hudson Valley/ Westchester	NYC	Rochester/ Finger Lakes	Western
EMS from home/scene	51.1% (4,170)	48.9% (1,456)	61.5% (2,080)	54.5% (2,699)	59.7% (9,518)	50.2% (1,962)	48.3% (1,849)
Private transport/ taxi/other from home/scene	37.4% (3,055)	25.9% (771)	20.8% (703)	35.2% (1,745)	29.4% (4,681)	34.3% (1,342)	30.6% (1,173)
Transfer from other hospital	11.0% (897)	24.9% (741)	16.8% (567)	10.1% (501)	9.8% (1,566)	14.0% (548)	20.7% (793)
Not documented or unknown	0.5% (37)	0.3% (9)	0.9% (30)	0.2% (8)	0.9% (148)	1.4% (53)	0.3% (13)
Total N	8,160	2,977	3,382	4,955	15,937	3,910	3,828

- Cases with a "blank" for Arrival Mode are not listed here, therefore the sum of the number of patients for each arrival mode may not equal the "Total N" for each region.

Last Known Well to ED Arrival Times, 2016

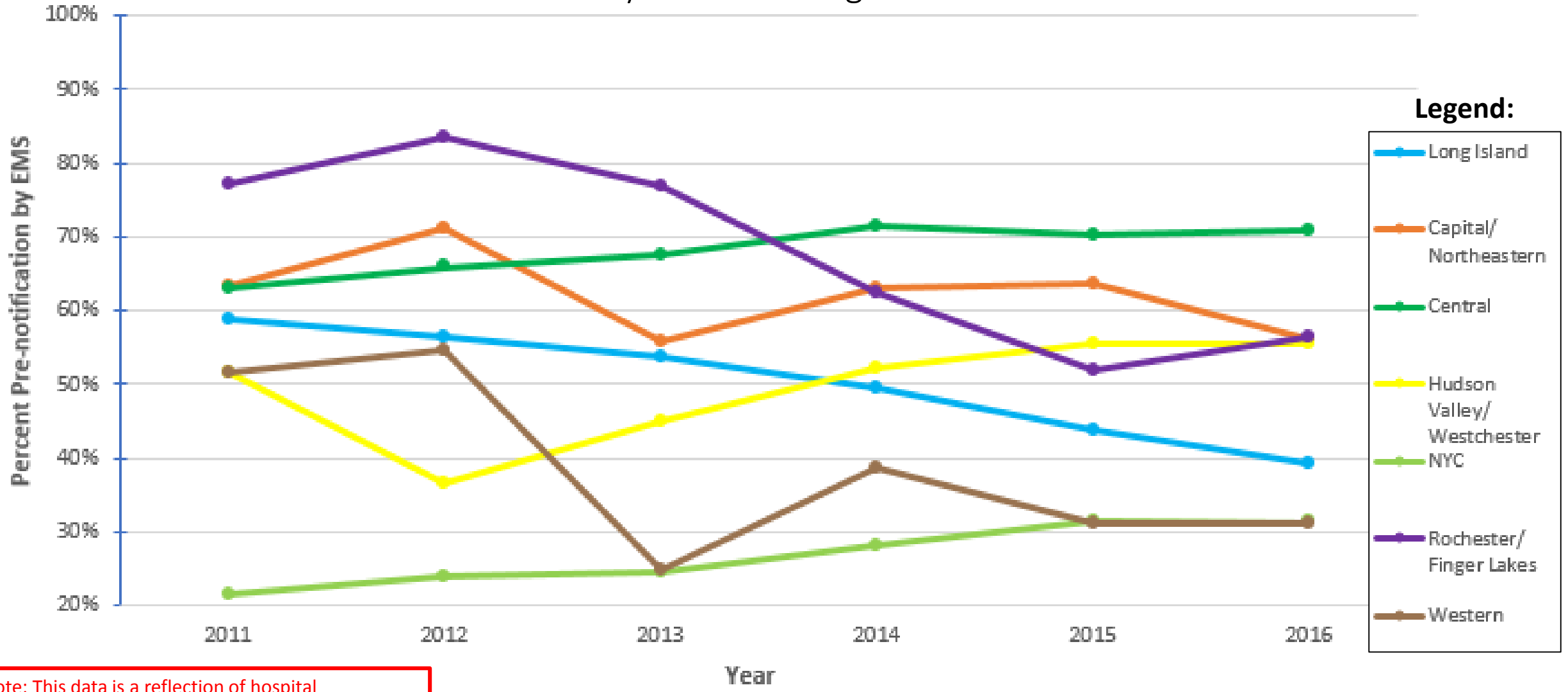
(For patients who arrive by EMS from home/scene),
by New York Region
% of patients (number of patients)

LKW to Arrival Time Group	New York Region						
	Long Island	Capital/ Northeastern	Central	Hudson Valley/ Westchester	NYC	Rochester/ Finger Lakes	Western
0-30 min	3.4% (140)	3.2% (46)	2.3% (48)	3.9% (104)	3.7% (351)	3.0% (59)	2.2% (40)
31-60 min	13.6% (561)	10.1% (146)	12.5% (259)	13.8% (371)	10.5% (993)	10.2% (200)	10.1% (187)
61-120 min	11.2% (462)	16.2% (235)	17.0% (353)	14.1% (377)	12.2% (1,150)	15.6% (305)	14.3% (263)
121-180 min	5.5% (228)	8.1% (117)	6.9% (143)	6.2% (166)	5.9% (557)	6.4% (125)	6.1% (112)
181-540 min	35.3% (507)	15.2% (220)	16.6% (345)	13.1 (351)	12.7% (1,198)	12.8% (250)	13.6% (250)
>540 min	11.1% (461)	15.3% (221)	15.6% (323)	9.8% (264)	14.1% (1,329)	14.0% (274)	15.1% (278)
LKW or Arrival Time unknown, or Arrival ≥2 days after LKW	43.6% (1,806)	32.9% (477)	30.9% (641)	39.6% (1,061)	42.9% (4,054)	38.9% (761)	39.2% (722)
Total N	4,137	1,448	2,073	2,681	9,456	1,956	1,843

- Cases with documented arrival and LKW time, and LKW to arrival ≥ 2 days, will be included in both the “>540 min” and “LKW or Arrival Time unknown, or Arrival ≥ 2 days after LKW” categories.

Pre-notification by EMS, 2011-2016

(For patients who arrive by EMS from home/scene),
by New York Region

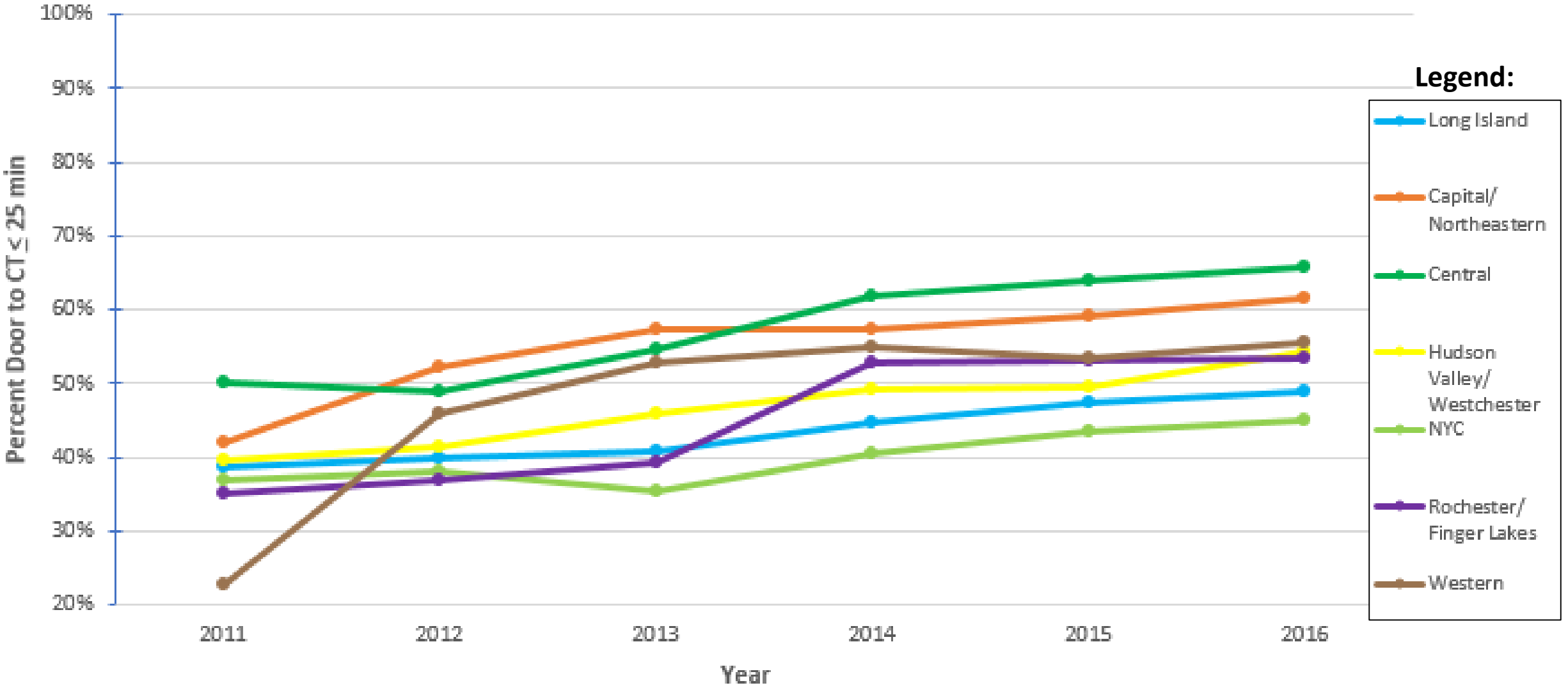


Note: This data is a reflection of hospital documentation of pre-hospital care, and may not be a true reflection of care provided by EMS.

Door to CT ≤ 25 min, 2011-2016

(For patients who arrive by EMS from home/scene)

by New York Region



Stroke Care Measures, 2016

(For patients who arrive by EMS from home/scene), by New York Region
% of patients (number of patients)

Measure	New York Region						
	Long Island	Capital/ Northeastern	Central	Hudson Valley/ Westchester	NYC	Rochester/ Finger Lakes	Western
Pre-notification by EMS	39.3% (1,640)	56.2% (819)	70.9% (1,474)	55.4% (1,496)	31.3% (2,981)	56.5% (1,109)	31.2% (577)
Door to CT ≤ 25 min	49.0% (1,497)	61.4% (682)	65.7% (1,084)	54.4% (1,109)	44.9% (3,349)	53.4% (800)	55.6% (824)

Additional Stroke Care Measures, 2016
by New York Region
% of patients (number of patients)

Measure	New York Region						
	Long Island	Capital/ Northeastern	Central	Hudson Valley/ Westchester	NYC	Rochester/ Finger Lakes	Western
Ischemic Stroke patients who received IV tPA (excluding patients with stroke after arrival)	9.6% (486)	11.0% (224)	12.2% (281)	11.6% (346)	10.7% (1,203)	10.5% (267)	9.4% (246)
Ischemic Stroke patients who received IA catheter-based reperfusion (excluding patients with stroke after arrival)	2.2% (113)	1.6% (32)	6.0% (138)	2.9% (88)	3.4% (382)	3.1% (79)	5.7% (149)

- IA catheter-based treatment includes both pharmacologic thrombolytic therapy and mechanical devices.
- Patients who receive IV tPA or IA catheter-based reperfusion at a non-GWTG hospital, who are subsequently transferred to a GWTG hospital, would not be captured in the measures for % of patients who received IV tPA, or IA catheter-based reperfusion.

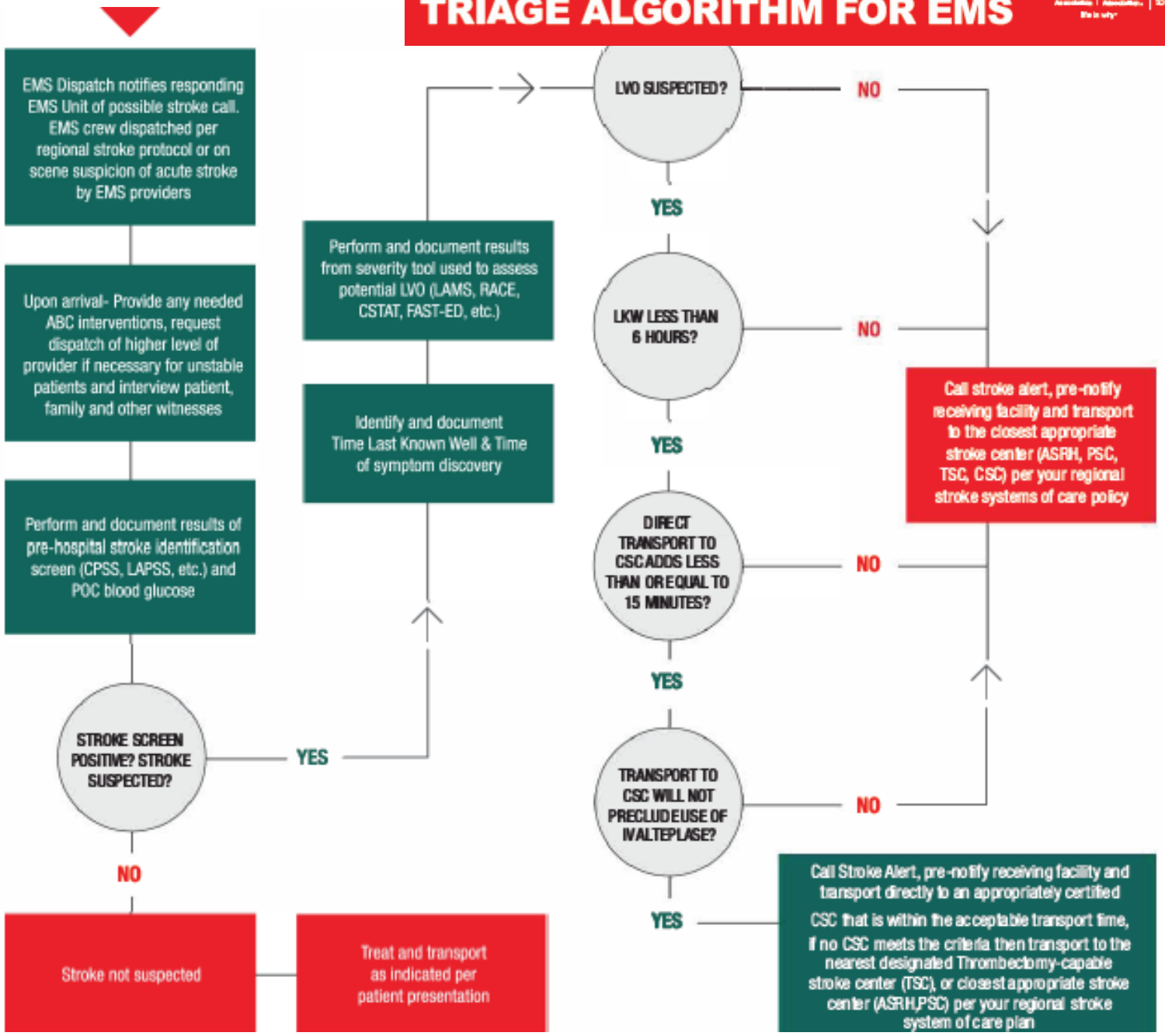
Additional Stroke Care Measures, 2016

by New York Region

% of patients (number of patients)

Measure	New York Region						
	Long Island	Capital/ Northeastern	Central	Hudson Valley/ Westchester	NYC	Rochester/ Finger Lakes	Western
Time to IV tPA - 60min (in eligible patients)	84.8% (262)	64.7% (110)	77.1% (189)	67.3% (173)	85.8% (738)	82.6% (176)	90.7% (175)
Time to IV tPA - 45min (in eligible patients)	40.5% (125)	29.4% (50)	48.2% (118)	27.2% (70)	50.0% (430)	44.6% (95)	61.1% (118)

SEVERITY-BASED STROKE TRIAGE ALGORITHM FOR EMS



ON SCENE

- Interview patient, family members and other witnesses to determine Last Known Well (LKW) time and time of Symptom Discovery.
- Attempt to identify possible stroke mimics (eg, seizure, migraine, intoxication) and determine if patient has pre-existing substantial disability (need for nursing homecare or inability to walk without help from others).
- Encourage family to go directly to Emergency Department if not transported with patient and obtain mobile number of next of kin and witnesses.
- If Mobile Stroke Unit available—follow Mobile Stroke Unit Protocol.
- Each EMS agency should utilize a published and validated stroke screen to assess patients with non-traumatic onset of focal neurologic deficits and validated tool to assess possible Large Vessel Occlusion (LVO).
- Patients who are eligible for IV Alteplase if transported to nearest Acute Stroke Ready Hospital (ASRH) or PSC should not be rerouted to a CSC or Thrombectomy-capable Stroke Center if doing so would result in a delay that would make them ineligible for IV Alteplase.
- Collect a list of current medications (especially anticoagulants) and obtain patient history including co-morbid conditions (eg. serious kidney or liver disease, recent surgery, procedures or stroke) that may impact treatment decisions.

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Severity-Based Stroke Triage Algorithm for EMS

From the webinar,
"Mission: Lifeline Stroke presents the Severity-based Stroke Triage Algorithm for EMS"
Peter D. Panagos, MD, FAHA, FACEP
Lee Schwamm, MD, FAHA
Joe Acker, EMT-P, MPH

* What It Is:

Evidenced-based best-practice, multi-specialty review of currently available data for time-dependent benefits of IV tPA and EVT, stroke scale predictive power and EMS Stroke Triage capabilities

* What It Is Not:

Prescriptive template for every EMS region. Requires customization to local resources and geography

Key Assumptions

From the webinar,
"Mission: Lifeline Stroke presents the Severity-based Stroke Triage Algorithm for EMS"
Peter D. Panagos, MD, FAHA, FACEP
Lee Schwamm, MD, FAHA
Joe Acker, EMT-P, MPH

* Balance access to EVT in suspected LVO patients with potential harm of delay in IV tPA
* Minimal disruption in clinical work-flow to get EMS on board
* More PSCs (N=1182) than CSCs (N=118) and ASRH (N=24)
* Avoid overcrowding at CSC and reducing expertise at PSC
* No single Severity Tool is superior. Aim for uniformity by region
* Hemorrhagic stroke triage guided by symptom severity
* Acceptable delay for re-routing still unclear. RCTs underway
* Every 15 minute delay increases mortality and sICH
* In rural settings, longer times (20-30 min?) may be reasonable
* Update algorithm when better evidence exists

Our Local EMS Stroke Triage Protocol(s)

NJ Department of Health and Senior Services, Office of Emergency Medical Services

Prehospital Stroke Guidelines:*

Procedure:

1. Initiate general patient care
2. Recognize possible Stroke or TIA symptoms.
   a. Perform Prehospital Stroke Scale or Screen.
   b. The Cincinnati Stroke Scale is the most common and simplest test to perform in the field. The LA Prehospital Stroke Scale may be performed if the provider is knowledgeable using this tool
3. Administer Oxygen.
4. Place patient in position of comfort.
5. Determine time of onset, defined as last time seen or spoken to in normal state.
6. Patients with acute stroke symptoms should be transported to a Designated Stroke Center with notification to the receiving facility.
7. If not simultaneously dispatched, a MICU should be requested but transport should not be delayed waiting for their arrival.
8. If possible, obtain the name of a witness and their cell phone number and a contact person and cell phone number and provide to the receiving facility.
9. If time permits, during transport, complete the optional Stroke Checklist.
10. If the patient is unstable (respiratory or hemodynamically) and is accompanied by BLS only, then the patient is to be transported to the closest appropriate hospital regardless of stroke center status.

Advanced Life Support Treatment Procedure

1. Initiate Intravenous Access without delaying transport.
2. Perform Blood Glucose Level Check
3. Obtain 12 lead ECG without delaying transport.
4. Obtain On Line Medical Command
5. Do Not treat Hypertension in the field.

*Developed for prehospital providers including BLS and ALS and apply to care of all patients with possible stroke and TIA symptoms.

Similarities and/or Differences with National Mission: Lifeline Triage Algorithm

Key Similarities:

- Perform prehospital stroke identification screening
- Identify time last known well & witness
- Dispatch higher level provider as appropriate
- Pre-notify receiving hospital of patient with suspected stroke

Key Differences:

- If prehospital stroke screening indicates suspected stroke:
  - NJ Prehospital Guidelines indicate to transport to a Designated Stroke Center (*unless unstable and accompanied by only BLS*)
  - ML algorithm recommends performance of severity tool to assess potential LVO
    - Transportation recommendations are then dependent on these results, as well as time last known well and time from closest Comprehensive Stroke Center

Any other key similarities or differences?

Next Steps as a Region?