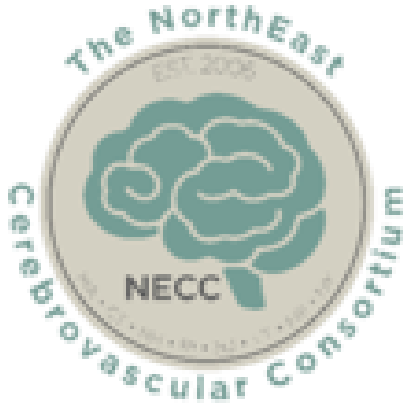
The 12th Annual NECC Summit



State Breakout Sessions

Long Island

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 – 25

- 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
- NYS Department of Health EMS Measures
  - EMS pre-hospital stroke scale
  - Stroke team activated prior to arrival
  - Pre-notification content
  - Reasons(s) for patient transfer (prior to admission)
  - Reason(s) for patient transfer (following admission)

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

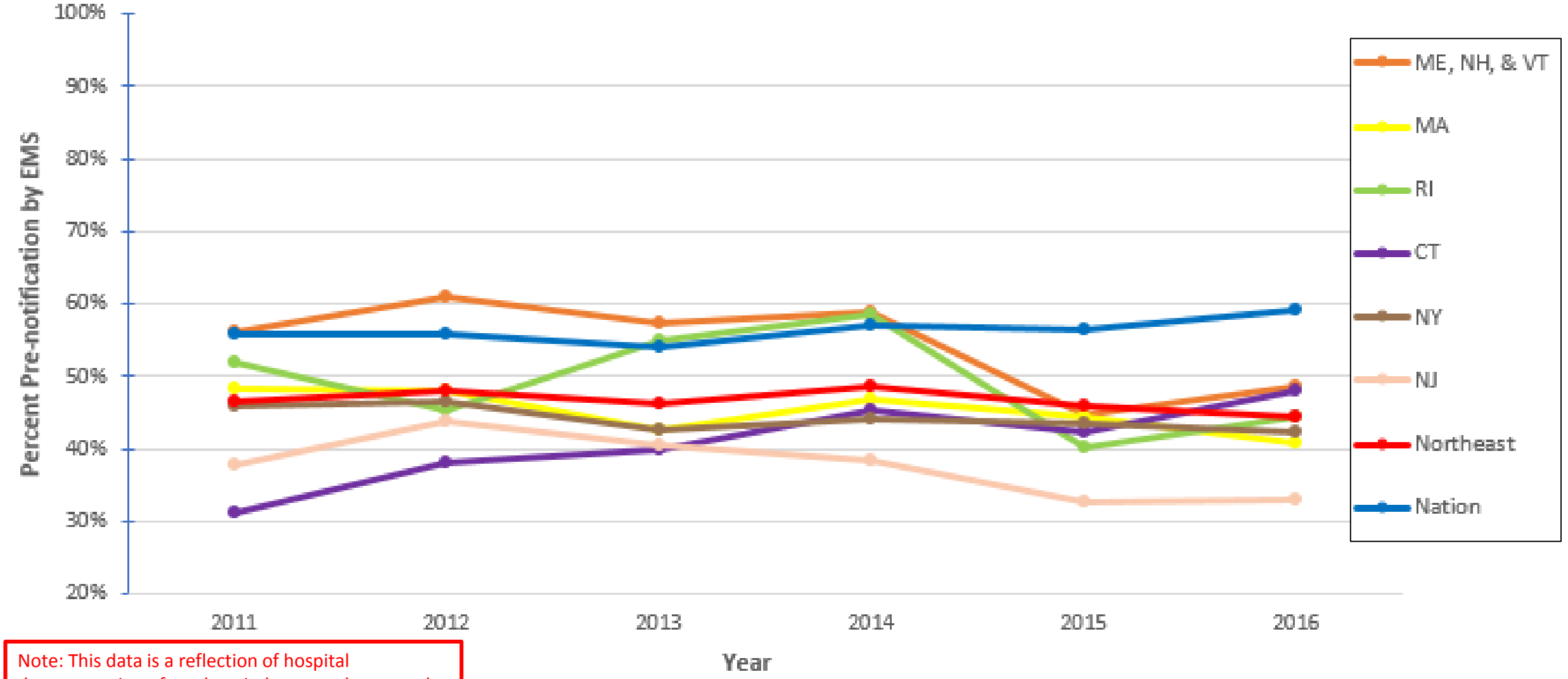
(For patients who arrive by EMS from home/scene),
by Region
% of patients (number of patients)

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

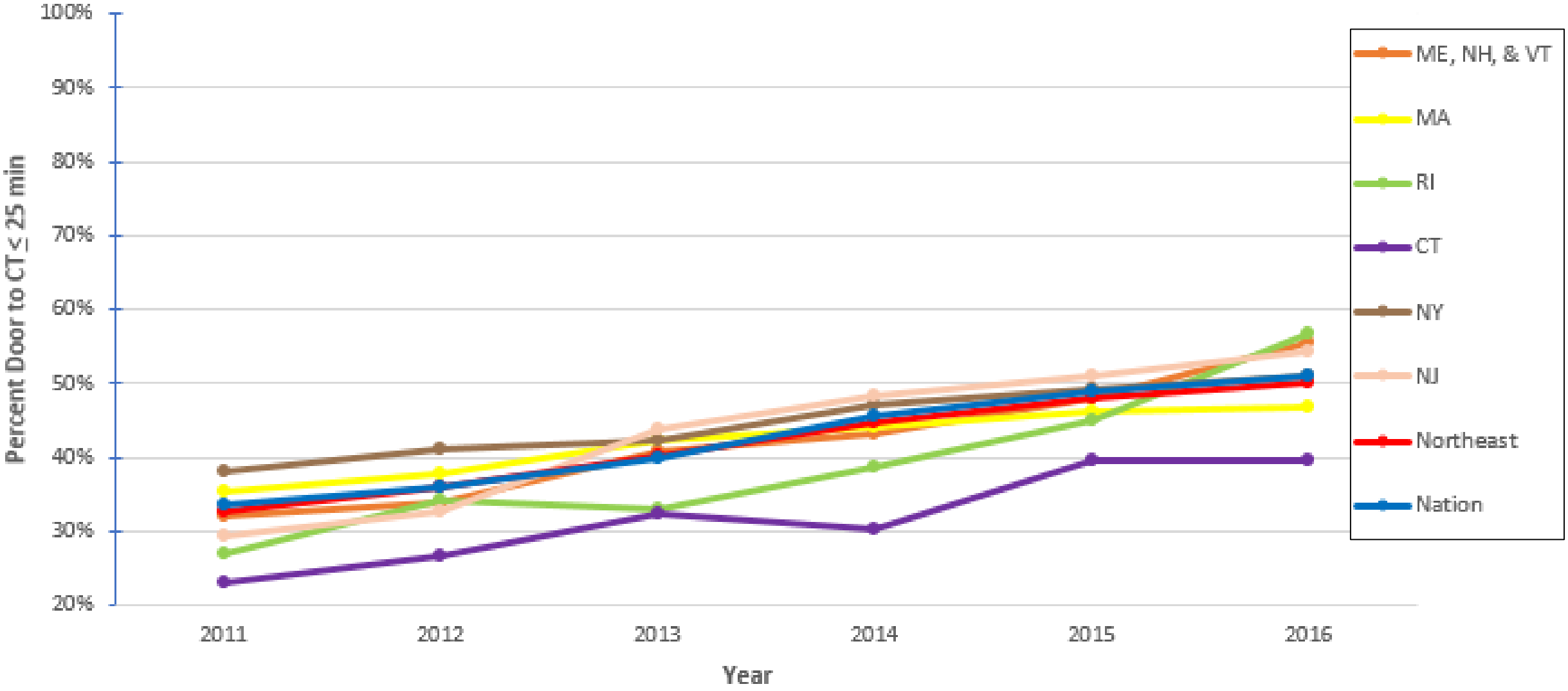


Note: This data is a reflection of hospital documentation of pre-hospital care, and may not be a true reflection of care provided by EMS.

- 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					
	NYC	Long Island	Hudson Valley/ Westchester	Capital/ Northeastern	Central	Rochester/ Finger Lakes	Western
Ischemic Stroke	60.9% (11,260)	56.8% (5,065)	55.6% (2,992)	66.4% (2,036)	63.6% (2,312)	60% (2,565)	66.8% (2,684)
TIA	16.1% (2,981)	25.2% (2,245)	24.6% (1,325)	18.2% (559)	19.7% (718)	23.4% (1,003)	20.3% (814)
Subarachnoid Hemorrhage	3.5% (644)	3.8% (341)	3.8% (207)	4.0% (122)	4.0% (144)	3.1% (131)	2.9% (117)
Intracerebral Hemorrhage	10.4% (1,922)	10.8% (962)	9.8% (529)	10.1% (311)	10.7% (389)	8.6% (368)	9.2% (369)
Stroke, not otherwise specified	0.2% (41)	0.1% (12)	0.8% (41)	0.5% (15)	0.1% (5)	1.4% (59)	0.3% (11)
Total cases in GWTG	18,502	8,910	5,385	3,068	3,638	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						
	NYC	Long Island	Hudson Valley/ Westchester	Capital/ Northeastern	Central	Rochester/ Finger Lakes	Western
EMS from home/scene	59.7% (9,518)	51.1% (4,170)	54.5% (2,699)	48.9% (1,456)	61.5% (2,080)	50.2% (1,962)	48.3% (1,849)
Private transport/ taxi/other from home/scene	29.4% (4,681)	37.4% (3,055)	35.2% (1,745)	25.9% (771)	20.8% (703)	34.3% (1,342)	30.6% (1,173)
Transfer from other hospital	9.8% (1,566)	11.0% (897)	10.1% (501)	24.9% (741)	16.8% (567)	14.0% (548)	20.7% (793)
Not documented or unknown	0.9% (148)	0.5% (37)	0.2% (8)	0.3% (9)	0.9% (30)	1.4% (53)	0.3% (13)
Total N	15,937	8,160	4,955	2,977	3,382	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

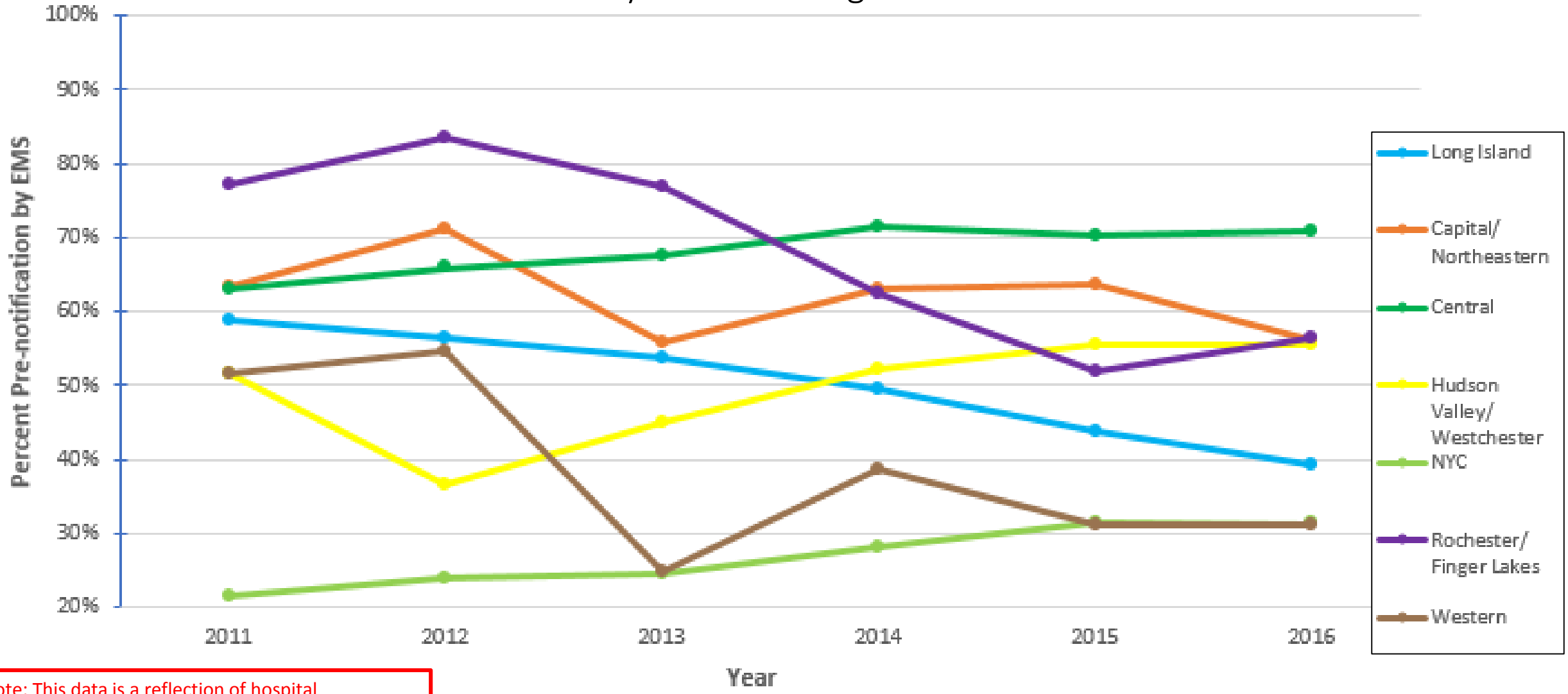
(For patients who arrive by EMS from home/scene),
by New York Region
% of patients (number of patients)

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

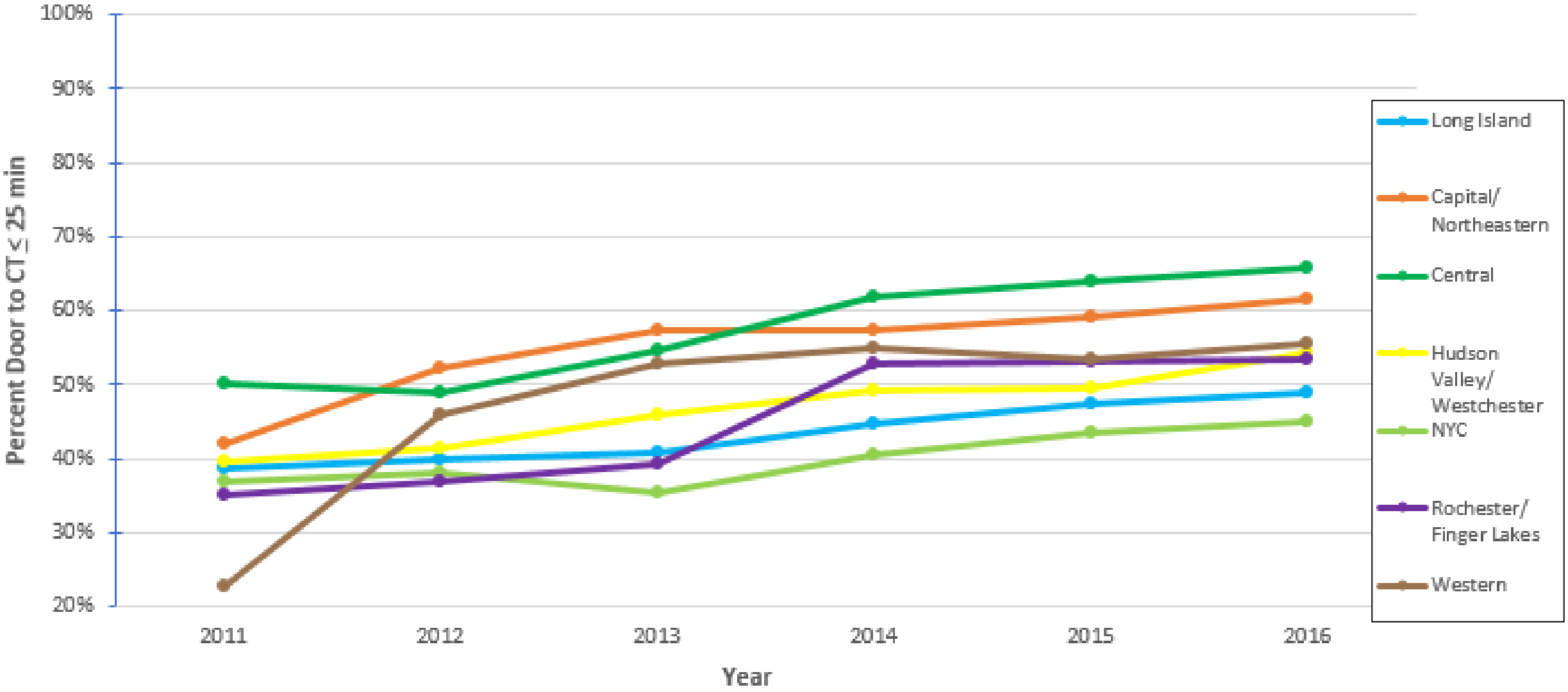


Note: This data is a reflection of hospital documentation of pre-hospital care, and may not be a true reflection of care provided by EMS.

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

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

Measure	New York Region						
	NYC	Long Island	Hudson Valley/ Westchester	Capital/ Northeastern	Central	Rochester/ Finger Lakes	Western
Ischemic Stroke patients who received IV tPA (excluding patients with stroke after arrival)	10.7% (1,203)	9.6% (486)	11.6% (346)	11.0% (224)	12.2% (281)	10.5% (267)	9.4% (246)
Ischemic Stroke patients who received IA catheter-based reperfusion (excluding patients with stroke after arrival)	3.4% (382)	2.2% (113)	2.9% (88)	1.6% (32)	6.0% (138)	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						
	NYC	Long Island	Hudson Valley/ Westchester	Capital/ Northeastern	Central	Rochester/ Finger Lakes	Western
Time to IV tPA - 60min (in eligible patients)	85.8% (738)	84.8% (262)	67.3% (173)	64.7% (110)	77.1% (189)	82.6% (176)	90.7% (175)
Time to IV tPA - 45min (in eligible patients)	50.0% (430)	40.5% (125)	27.2% (70)	29.4% (50)	48.2% (118)	44.6% (95)	61.1% (118)

NYS Department of Health EMS Measures, 2016

by New York Region

% of patients (number of patients)

Measure	New York Region						
	NYC	Long Island	Hudson Valley/ Westchester	Capital/ Northeastern	Central	Rochester/ Finger Lakes	Western
EMS pre-hospital stroke scale*	24.0% (1071)	41.4% (733)	44.4% (626)	35.9% (248)	60.3% (629)	32.6% (296)	63.1% (518)
Stroke team activated prior to arrival**	35.8% (675)	49.5% (437)	36.3% (327)	47.0% (214)	45.9% (373)	71.6% (649)	8.1% (27)

*Percent of patients arriving via EMS who had pre-hospital stroke scale performed.

**Percent of patients arriving via EMS for whom the stroke team was activated prior to patient arrival based upon EMS pre-notification.

NYS Department of Health EMS Measures, 2016

by New York Region

% of patients (number of patients)

Pre-Notification Content*	New York Region						
	NYC	Long Island	Central	Capital/ Northeastern	Hudson Valley/ Westchester	Rochester/ Finger Lakes	Western
Pre-hospital stroke scale findings	43.5% (820)	71.5% (631)	62.9% (511)	33.2% (151)	62.1% (559)	87.4% (567)	69.4% (231)
Patient last known well (LKW)	41% (772)	62.9% (555)	55.6% (452)	33.2% (151)	58.1% (523)	81% (1526)	65.8% (219)
Pre-hospital stroke scale findings AND LKW	37.6% (709)	60.7% (535)	52.3% (425)	30.3% (138)	53.9% (485)	80.1% (520)	61.3% (204)
Total N	1884	882	813	455	900	649	333

*Where prenotification by EMS occurred, information communicated to receiving hospital.

NYS Department of Health EMS Measures, 2016
by New York Region
% of patients (number of patients)

Reason(s) for Transfer (Prior to Patient Admission)	New York Region						
	NYC	Long Island	Hudson Valley/ Westchester	Capital/ Northeastern	Central	Rochester/ Finger Lakes	Western
Ischemic Stroke: IV tPA w/in 3hr window	**1.1%** (7)	**1%** (3)	**0.6%** (2)	**0.6%** (1)	**0.8%** (1)	**0.9%** (2)	**0%** (0)
Ischemic Stroke: Reperfusion interventions-only	**34%** (222)	**20.9%** (65)	**27.9%** (93)	**15.2%** (27)	**34.7%** (41)	**7.8%** (18)	**45.7%** (96)
Ischemic Stroke: Neurocritical or neurosurgical care	**18.4%** (120)	**36.3%** (113)	**24.3%** (81)	**41%** (73)	**22%** (26)	**29.7%** (69)	**62.4%** (131)
ICH interventional procedure, neurocritical, or neurosurgical care	**29.4%** (192)	**24.4%** (76)	**26.7%** (89)	**24.7%** (44)	**15.3%** (18)	**22%** (51)	**18.1%** (38)
SAH interventional procedure, neurocritical, or neurosurgical care	**13.3%** (87)	**11.9%** (37)	**16.2%** (54)	**11.8%** (21)	**16.1%** (19)	**8.6%** (20)	**9.5%** (20)
Patient/Family Transfer Request	**1.4%** (9)	**2.6%** (8)	**1.2%** (4)	**1.7%** (3)	**0.8%** (1)	**1.7%** (4)	**1%** (2)
Other	**2.6%** (17)	**4.2%** (13)	**7.2%** (24)	**6.2%** (11)	**10.2%** (12)	**31.5%** (73)	**8.6%** (18)
Total N	**653**	**311**	**333**	**178**	**118**	**232**	**210**

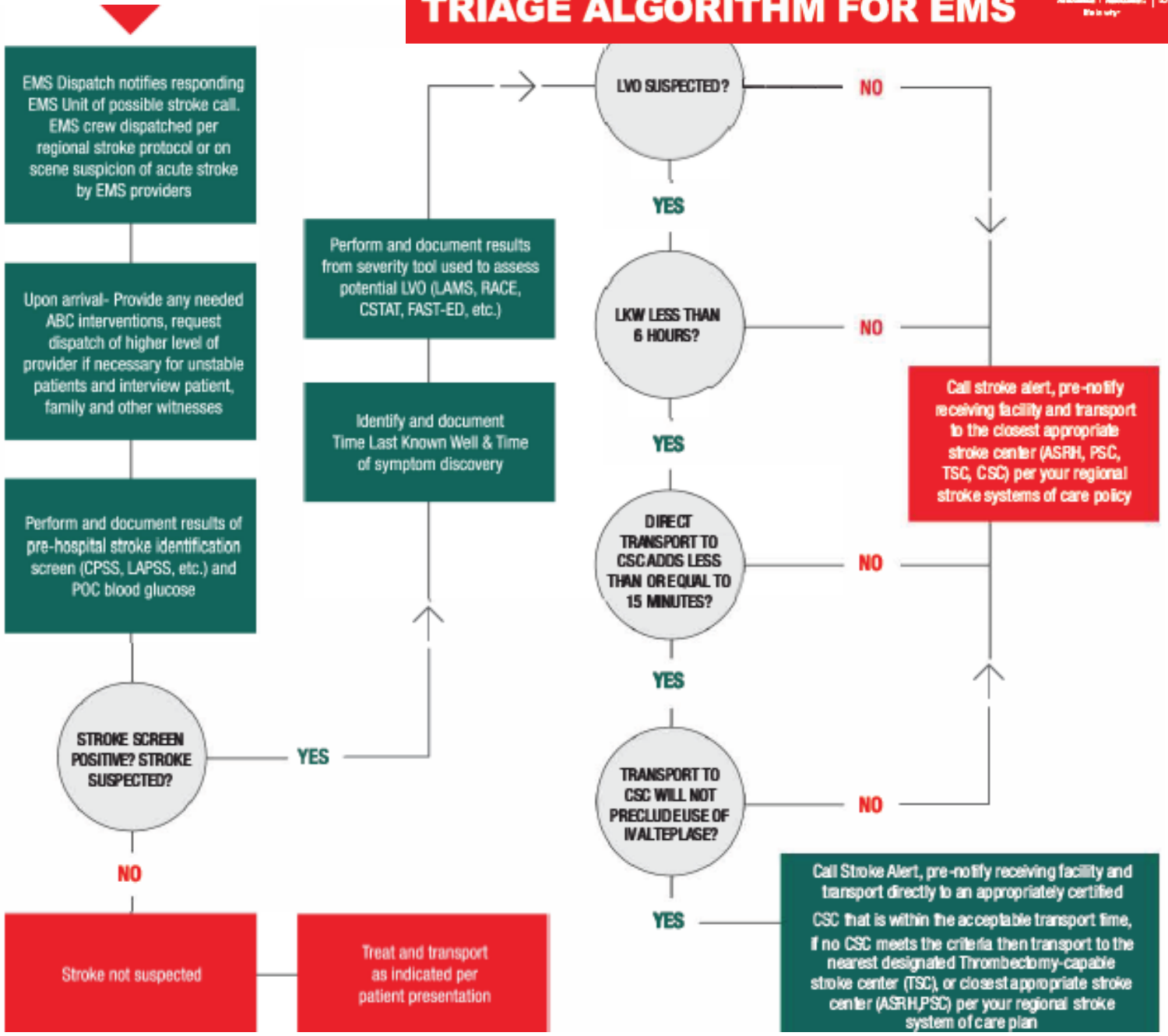
*Hospitals can select more than one reason, and reason(s) may not be documented. Therefore, the sum of the number of reasons may not equal the "Total N" for each region.

NYS Department of Health EMS Measures, 2016
by New York Region
% of patients (number of patients)

Reason(s) for Transfer (Following Patient Admission)	New York Region						
	NYC	**Long Island**	**Hudson Valley/ Westchester**	**Capital/ Northeastern**	**Central**	**Rochester/ Finger Lakes**	**Western**
Ischemic Stroke: IV tPA w/in 3hr window	**0.8%** (5)	**0%** (0)	**1.3%** (2)	**0.9%** (1)	**0.0%** (0)	**0%** (0)	**0%** (0)
Ischemic Stroke: Reperfusion interventions-only	**23.4%** (154)	**14.6%** (33)	**12.6%** (19)	**12.3%** (13)	**37.1%** (33)	**11.2%** (14)	**50.6%** (44)
Ischemic Stroke: Neurocritical or neurosurgical care	**22.6%** (149)	**25.2%** (57)	**29.1%** (44)	**42.5%** (45)	**25.8%** (23)	**36.8%** (46)	**70.1%** (61)
ICH interventional procedure, neurocritical, or neurosurgical care	**23.4%** (154)	**18.6%** (42)	**13.2%** (20)	**22.6%** (24)	**6.7%** (6)	**22.4%** (28)	**5.7%** (5)
SAH interventional procedure, neurocritical, or neurosurgical care	**10%** (66)	**7.1%** (16)	**5.3%** (8)	**10.4%** (11)	**11.2%** (10)	**8.8%** (11)	**8%** (7)
Patient/Family Transfer Request	**6.1%** (40)	**14.2%** (32)	**10.6%** (16)	**3.8%** (4)	**2.2%** (2)	**3.2%** (4)	**4.6%** (4)
Other	**17.5%** (115)	**22.6%** (51)	**30%** (45)	**13.2%** (14)	**21.3%** (19)	**20.8%** (26)	**10.3%** (9)
Total N	**658**	**226**	**151**	**106**	**89**	**125**	**87**

*Hospitals can select more than one reason, and reason(s) may not be documented. Therefore, the sum of the number of reasons may not equal the "Total N" for each region.

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.

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

Suspected Stroke
(Stroke)

Note:
This protocol is for patients who have an acute episode of neurological deficit without any evidence of trauma.

Note:
Request Advanced Life Support if available.
Do not delay transport to the nearest appropriate hospital.

I. Perform initial assessment.

II. Assure that the patient's airway is open and that breathing and circulation are adequate.

Caution:
Consider other causes of altered mental status, i.e. hypoxia, hypoperfusion, hypoglycemia, trauma or overdose.

III. Administer high concentration oxygen, suction as necessary, and be prepared to assist ventilations.

IV. Position patient with head and chest elevated or position of comfort, unless doing so compromises the airway.

CFR

V. Perform Cincinnati Pre-Hospital Stroke Scale:

A. Assess for facial droop: have the patient show teeth or smile,

B. Assess for arm drift: have the patient close eyes and hold both arms straight out for 10 seconds,

C. Assess for abnormal speech: have the patient say, "you can't teach an old dog new tricks".

VI. If the findings of the Cincinnati prehospital stroke scale are positive, establish onset of signs and symptoms by asking the following:

A. To patient – "When was the last time you remember before you became weak, paralyzed, or unable to speak clearly?"

B. To family or bystander – "When was the last time you remember before the patient became weak, paralyzed, or unable to speak clearly?"

VII. Transport of patient's with signs and symptoms of stroke to the appropriate hospital:

A. Transport the patient to the closest New York State Department of Health designated Stroke Center if the total prehospital time (time from when the patient's symptoms and/or signs first began to when the patient is expected to arrive at the Stroke Center) is less than two (2) hours.

B. Transport the patient to the closest appropriate hospital emergency department (ED) if:

1. The patient is in cardiac arrest, ***or***
2. The patient has an unmanageable airway, ***or***
3. The patient has (an) other medical condition(s) that warrant(s) transport to the closest appropriate hospital emergency department (ED) as per protocol, ***or***
4. The total prehospital time (time from when the patient's symptoms and/or signs first began to when the patient is expected to arrive at the Stroke Center) is greater than two (2) hours, ***or***
5. An on-line medical control physician so directs.

VIII. Maintain normal body temperature; do not overly warm the patient.

IX. Protect any paralyzed or partially paralyzed extremities.

X. Ongoing assessment. Obtain and record the patient's initial vital signs, repeat enroute as often as the situation indicates.

XI. Notify the receiving hospital as soon as possible of your impending arrival with an acute stroke patient, Cincinnati Stroke Scale findings, and time signs and symptoms began.

XII. Record all patient care information, including the patient's medical history and all treatment provided, on a Prehospital Care Report (PCR).

Our Local EMS Stroke Triage Protocol

PROPOSED SUFFOLK PROTOCOL

1. Perform routine basic life support interventions and patient assessment

1. Assess Finger Stick Blood Glucose

2. Assess for presence of exclusion criteria:

LOC	Yes/No
SZ (current or PMH)	Yes/No
FS < 60	Yes/No
Last known well > 5 hours	Yes/No
Age < 45 y/o	Yes/No
Trauma causing symptoms	Yes/No
Wheelchair/bed ridden	Yes/No

4. If no exclusion criteria present perform with LAMS assessment:

a. Assess facial droop –	0 (absent)	1 (present)	
b. Assess arm weakness –	0 (absent)	1 (drifts down)	2 (falls rapidly)
c. Assess grip strength –	0 (normal)	1 (weak grip)	2 (no grip)

- If LAMS sum ≥ 4, transport to Endovascular Stroke Center
- If LAMS sum = 3, assess speech – 0 (normal) 1 (abnormal)
  - If LAMS + Speech sum = 4, transport to Endovascular Stroke Center, otherwise transport to Primary Stroke Center
- If LAMS sum = 1-2, transport to Primary Stroke Center
- If LAMS sum = 0, transport to closest appropriate Emergency Department
- If patient on anticoagulants, and LAMS sum = 1-3, transport to Endovascular Stroke Center.
- If expected transport time to Endovascular Stroke Center exceeds 30minutes, transport to Primary Stroke Center or consider Suffolk County PD helicopter as a means of transport.

Focus Areas as a Region?

Pre-Hospital

- Increase priority and accountability as critical “first link of the chain”
- EMS education, engagement, and feedback by hospital staff
- Prenotification processes: improve frequency and quality of documentation
  - Standardize run sheets
  - Establish process for integrating run sheets into EHR
  - Explore interoperability with hospital EHR

Inter-Hospital

- Standardize transfer protocols within hospital setting
- Collaborate with referring/receiving hospitals to develop coordinated transfer protocol