Michigan and MOSAIC Data Review

2018 ANNUAL WORKSHOP

5/23/2018

Adrienne Nickles, MPH

Overview

- Update of Stroke in Michigan: trends in hospitalization and mortality rates as well as risk factor prevalence
- MOSAIC Hospital Selected Performance Measures:
  - Dysphagia Screening
  - Hospital Arrival Mode and Door-to-needle time measurements (DIT, ITN, DTN)
- Hypertension: Identifying disparities
- New data report cards: what are your thoughts?
- Review of website and materials we have collected
- Future Directions: What should we consider? What questions should we be asking?

Morbidity and Mortality Weekly Report (*MMWR*)

Vital Signs: Recent Trends in Stroke Death Rates — United States, 2000–2015

Weekly / September 8, 2017 / 66(35);933–939

On September 6, 2017, this report was posted online as an MMWR *Early Release.*

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View suggested citation

Abstract

Introduction: The prominent decline in U.S. stroke death rates observed for more than 4 decades has slowed in recent years. CDC examined trends and patterns in recent stroke death rates among U.S. adults aged ≥35 years by age, sex, race/ethnicity, state, and census region.

Methods: Trends in the rates of stroke as the underlying cause of death during 2000–2015 were analyzed using data from the National Vital Statistics System. Joinpoint software was used to identify trends in stroke death rates, and the excess number of stroke deaths resulting from unfavorable changes in trends was estimated.

Results: Among adults aged ≥35 years, age-standardized stroke death rates declined 38%, from 118.4 per 100,000 persons in 2000 to 73.3 per 100,000 persons in 2015. The annual percent change (APC) in stroke death rates changed from 2000 to 2015, from a 3.4% decrease per year during 2000–2003, to a 6.6% decrease per year during 2003–2006, a 3.1% decrease per year during 2006–2013, and a 2.5% (nonsignificant) increase per year during 2013–2015. The last trend segment indicated a reversal from a decrease to a statistically significant increase among Hispanics (APC = 5.8%) and among persons in the South Census Region (APC = 4.2%). Declines in stroke death rates failed to continue in 38 states, and during 2013–2015, an estimated 32,593 excess stroke deaths might not have occurred if the previous rate of decline could have been sustained.

Conclusions and Implications for Public Health Practice: Prior declines in stroke death rates have not continued in recent years, and substantial variations exist in timing and magnitude of change by demographic and geographic characteristics. These findings suggest the importance of strategically identifying opportunities for prevention and intervening in vulnerable populations, especially because effective and underused interventions to prevent stroke incidence and death are known to exist.

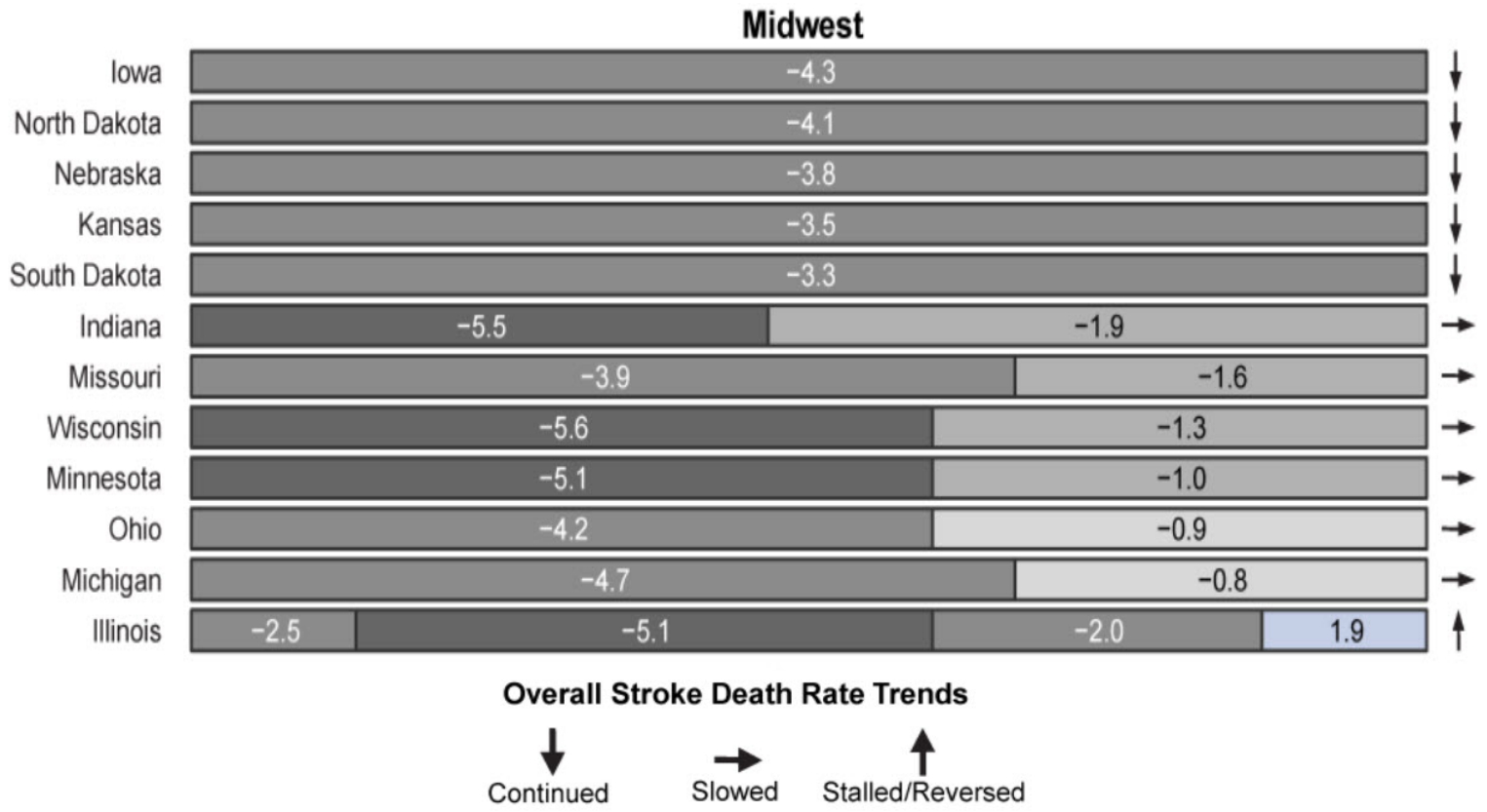
Stroke in the United States

- Stroke is accountable for 1 out of every 20 deaths in the US
- Every 40 seconds someone has a stroke in the US– every 4 minutes, someone dies of stroke.
- The decline of stroke mortality in the United States has slowed, and in some states, has reversed in recent years.
- Thirty-eight states had an unfavorable change in the rate of decline in stroke death rates during 2000–2015.

Michigan Stroke Data

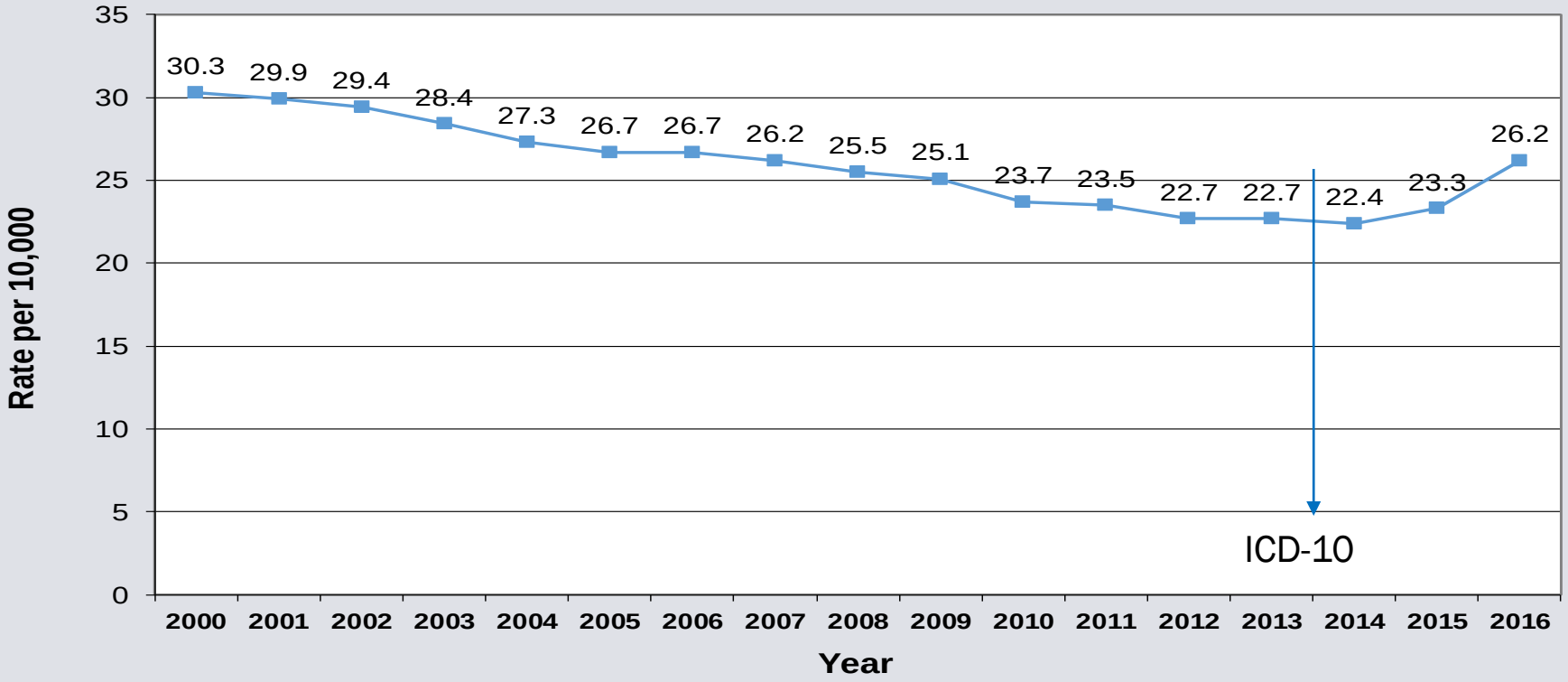
STATE-LEVEL PREVALENCE AND TRENDS

FIGURE 2. Trends in age-standardized stroke death rates among adults aged ≥35 years, by state and census region — United States, 2000–2015



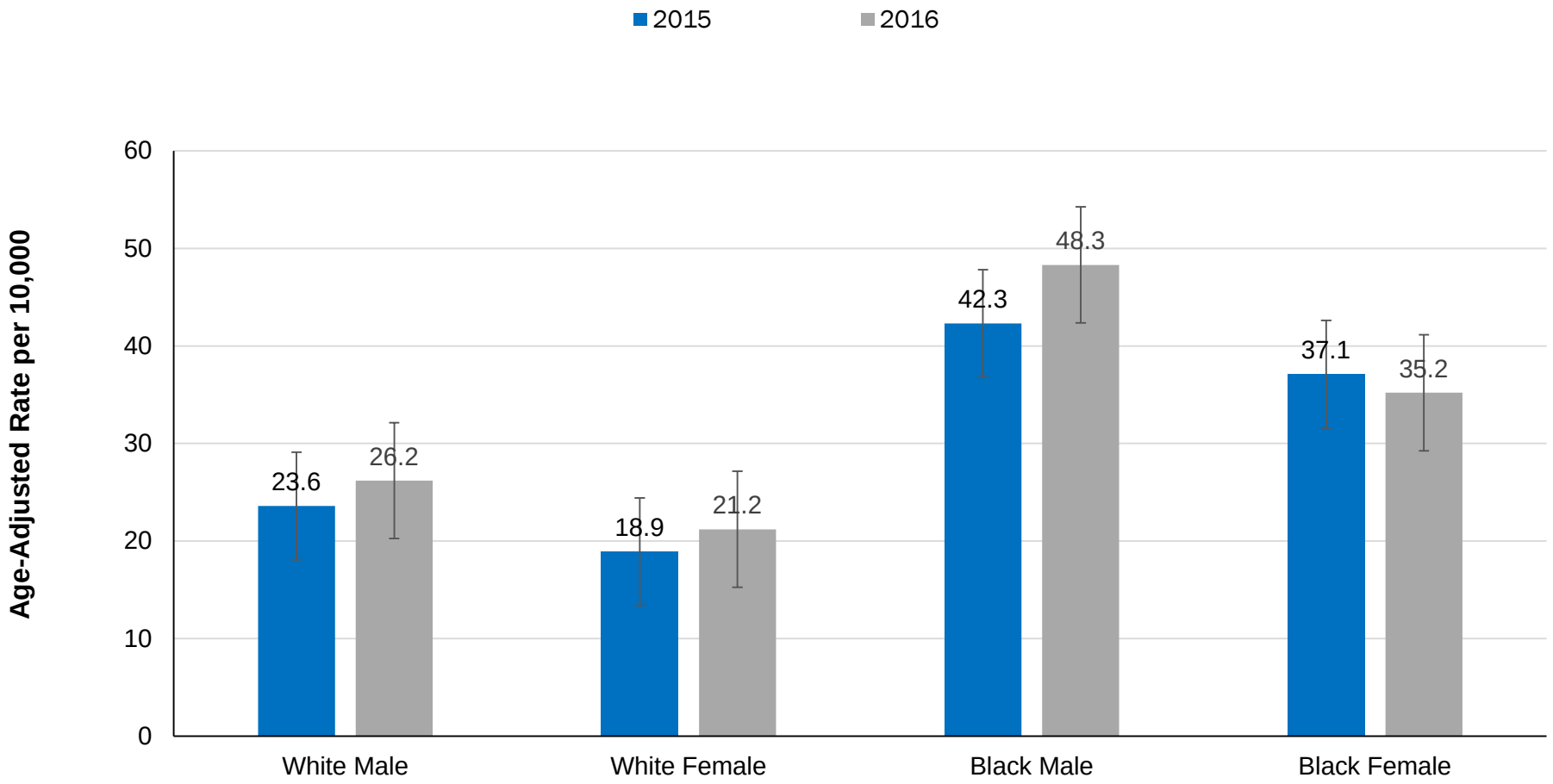
Reference: Yang Q, Tong X, Schieb L, et al. Vital Signs: Recent Trends in Stroke Death Rates — United States, 2000–2015. MMWR Morb Mortal Wkly Rep 2017;66:933–939. DOI: http://dx.doi.org/10.15585/mmwr.mm6635e1.

Age-adjusted Stroke Hospitalization Rates, Michigan, 2000-2016



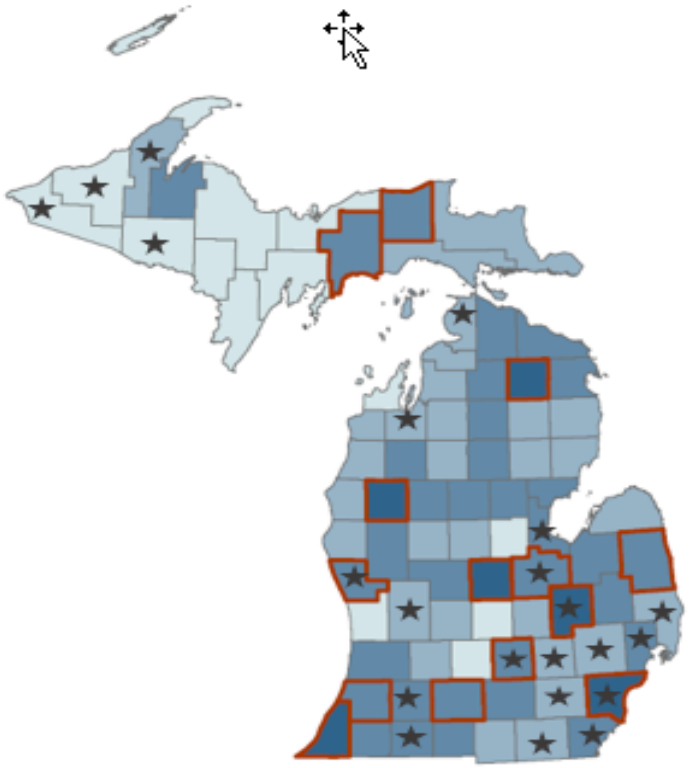
Denominator used from 2000-20014: ICD-9
ICD-10 used to calculate hospitalization rates starting in 2015.

Age-adjusted stroke hospitalization rates by race and gender, Michigan, 2015 vs 2016



Stroke Hospitalization Rates 2010 - 2016

State Average: 23.5 (per 10,000)
Counties above MI rate are outlined
MOSAIC hospitals are in the starred counties



Age-Adjusted Hospitalization Rate per 10,000 population

- 13 - 18
- >18- 22
- >22 - 26
- >26

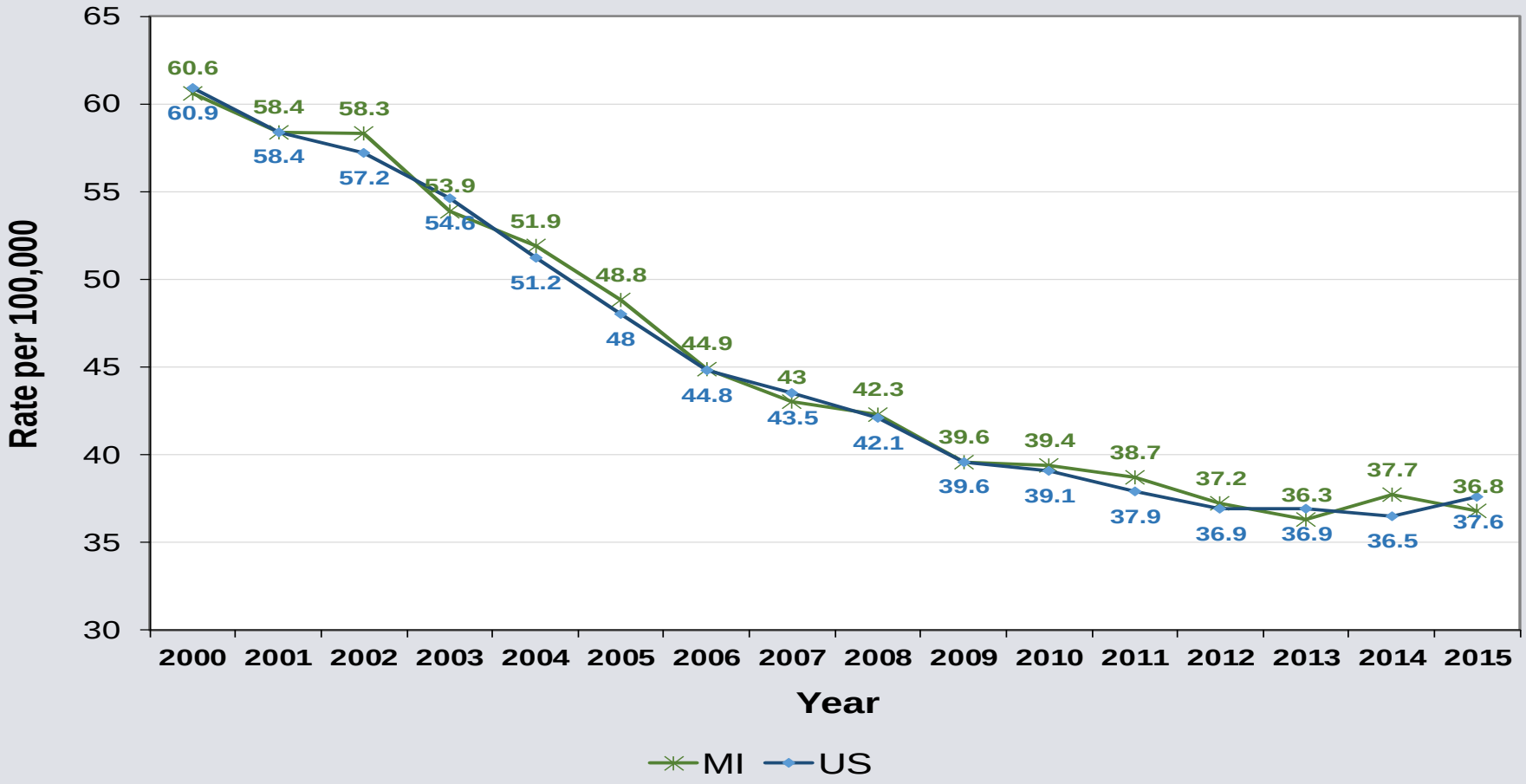
MDCH

Chronic Disease and Injury Control Division GIS Team

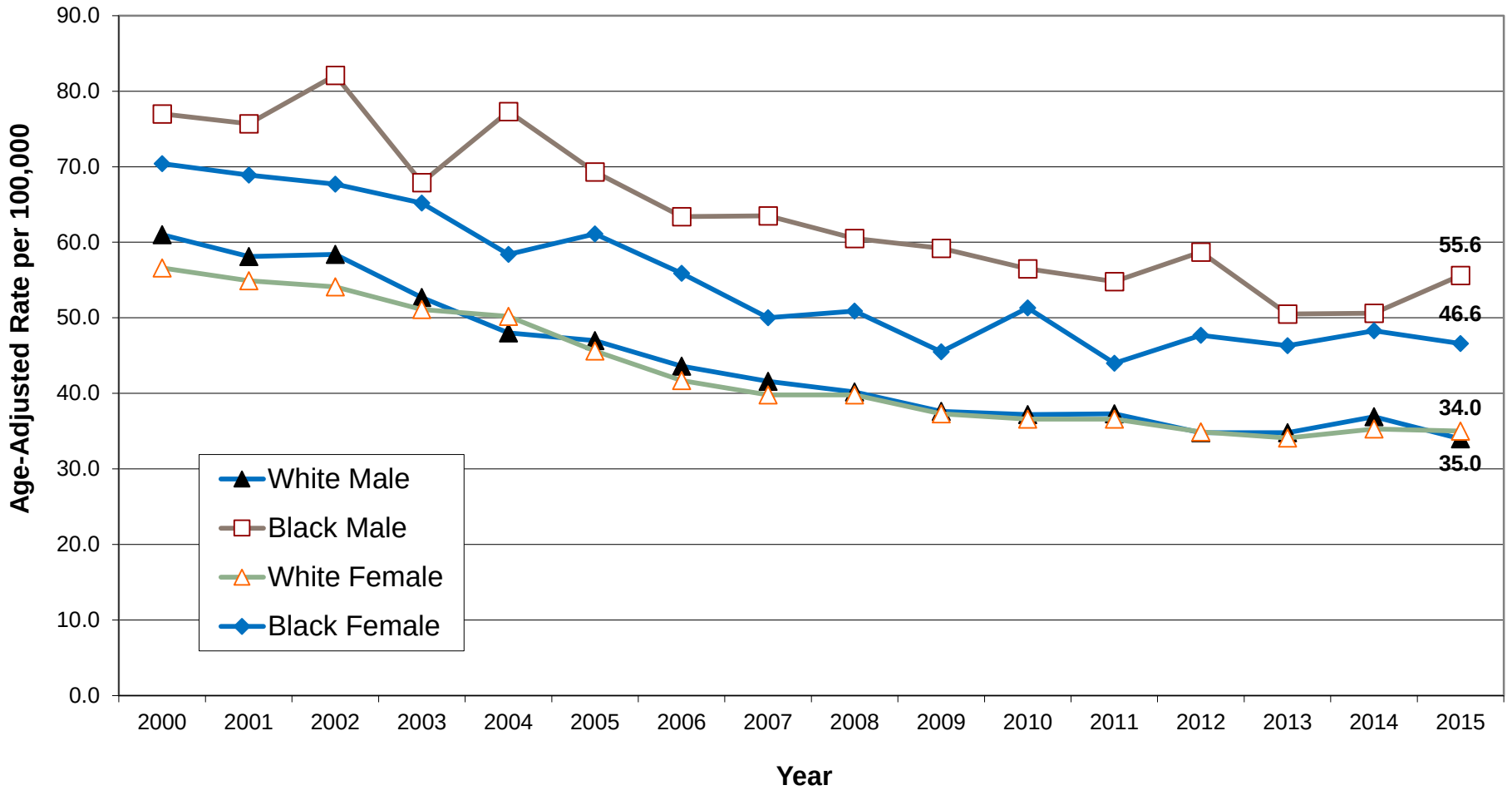
Source: Michigan Resident Inpatient Files Division for Vital Records and Health Statistics, MDCH.
ICD-10: I60-I69
Age-adjusted to the 2000 U.S. standard population.

Source: Michigan Resident Inpatients Data Files, Division for Vital Records and Health Statistics, MDCH

Age-adjusted Stroke Mortality Rates, Michigan, 2000-2015



Age-adjusted stroke mortality rates by race and gender, Michigan, 2000 to 2015



Prevalence of CVD Risk Factors, Michigan Adults 2011-2016 Compared to 2016 National Prevalence

Risk Factor	MI 2011	MI 2012	MI 2013	MI 2014	MI 2015	MI 2016	US 2016	2016 National Ranking
Current Smoking	23.3	23.3	21.4	21.2	20.7	20.4	17.1	11
Blood pressure ever told high	34.2	NA	34.6	NA	33.1	N/A		
Cholesterol: Ever Told High	41.8	NA	40.6	NA	38.2	N/A		
Overweight (BMI>25)	34.2	34.6	34.7	34.9	35.1	35.0	35.3	30^{tied}
Obese (BMI>30)	31.3	31.1	31.5	30.7	31.2	32.5	29.9	11^{tied}
No Leisure Time Physical Activity	23.6	23.3	24.4	25.5	25.5	23.9	23.2	22^{tied}
Diabetes	10	10.5	10.4	10.4	10.7	11.2	10.5	17^{tied}

Local Health Department data can be found at www.michigan.gov/brfs

Source: CDC BRFSS

MOSAIC Hospital Report Overview and Selected QI Measures

Reports to Review

1) Annual benchmark reports
2) Annual Re-abstraction Reports
3) Annual Arrival Mode, DTN, and Pre-Notification reports

2018 MOSAIC Selected QI Measures

- Improve compliance of Dysphagia Screen

All Participating Hospitals 2017	VTE Prophylaxis	Antithrombotics at Discharge	Anticoag for AFib/AFlutter	t-PA Initiated	Early Antithrombotics	Statin at Discharge	Dysphagia Screen	Stroke Education	Smoking Cessation	Assessed for Rehab	Defect-Free
Cases that Received Measure	7955	8072	1279	736	6253	6220	6850	5220	2135	8160	8051
Eligible Cases	8137	8163	1373	836	6472	6418	8627	5407	2163	8268	10555
% Compliance	97.8	98.9	93.2	88.0	96.6	96.9	79.4	96.5	98.7	98.7	76.3

- Reduce Door-to-Needle times

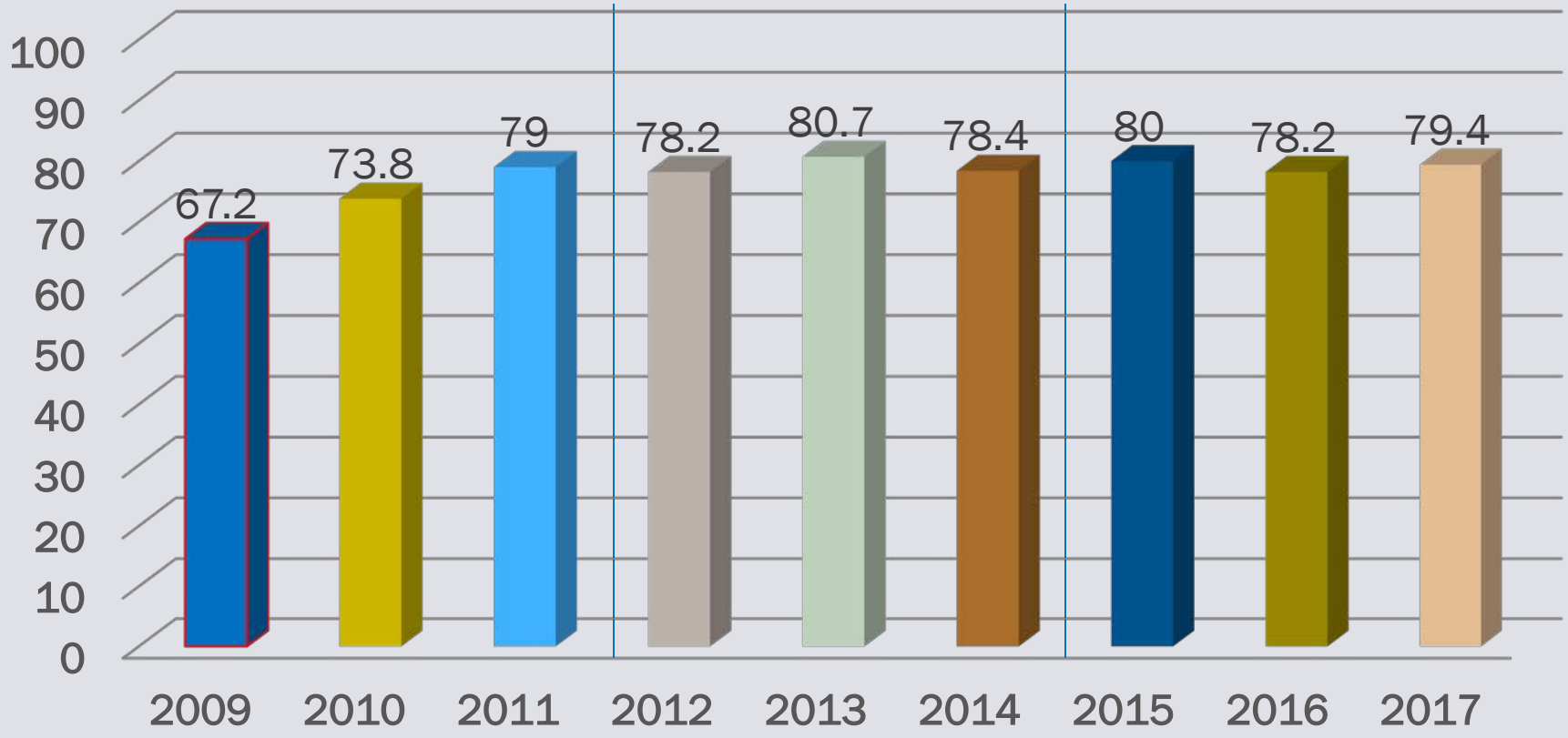
Dysphagia Screen STK-7

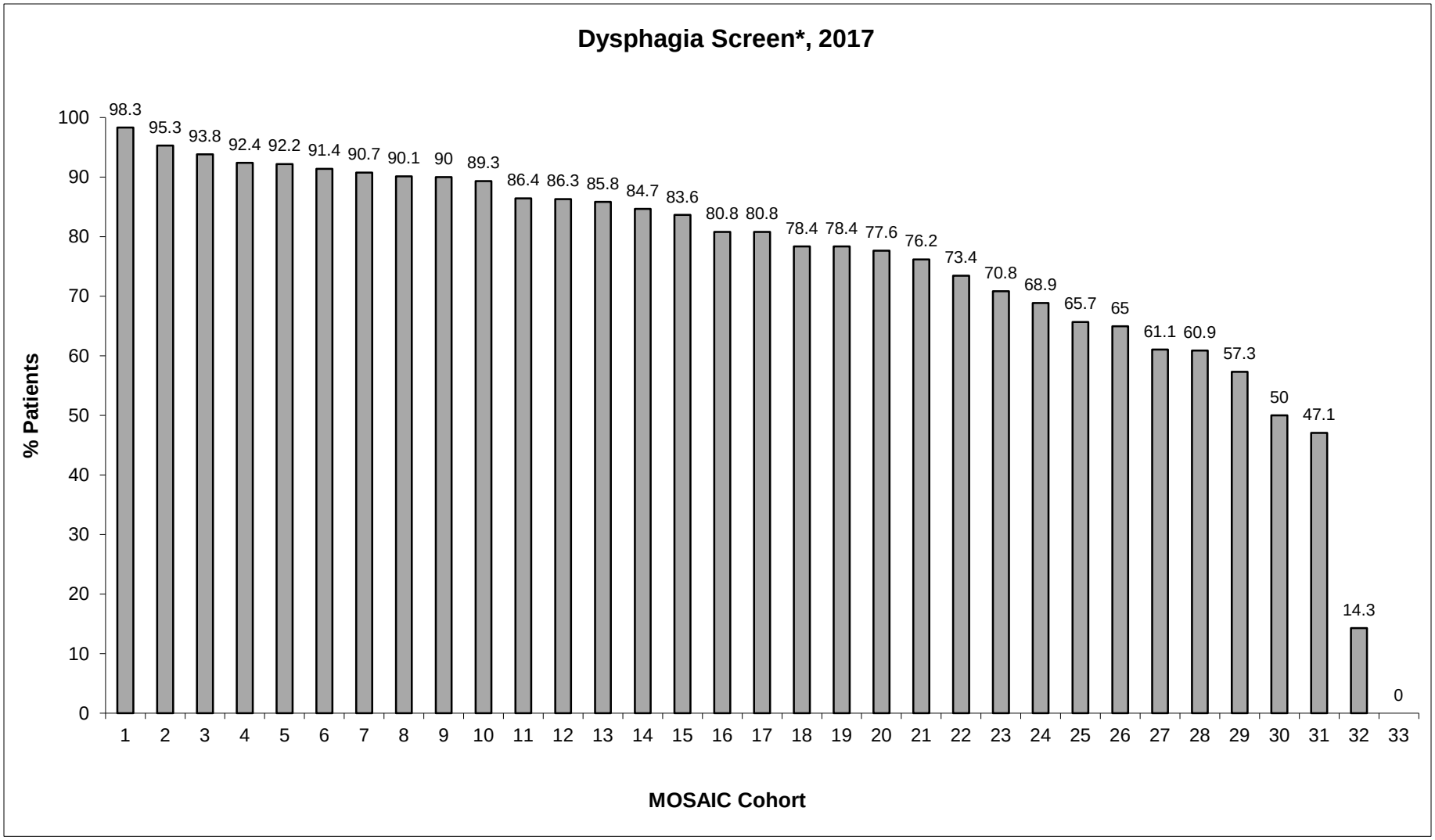
Percent of Stroke patients who undergo screening for dysphagia with an evidence-based bedside testing protocol approved by the hospital before being given any food, fluids, or medication by mouth.

16

National: 84.5%

MI: 76.1%




Dysphagia Screen*, 2017
% Patients
MOSAIC Cohort
100
90
80
70
60
50
40
30
20
10
0
98.3
95.3
93.8
92.4
92.2
91.4
90.7
90.1
90
89.3
86.4
86.3
85.8
84.7
83.6
80.8
80.8
78.4
78.4
77.6
76.2
73.4
70.8
68.9
65.7
65
61.1
60.9
57.3
50
47.1
14.3
0
1
2
3
4
5
6
7
8
9
10
11
12
13
14
15
16
17
18
19
20
21
22
23
24
25
26
27
28
29
30
31
32
33

Coverdell Performance Measures, 201x

Hospital Name		10 Coverdell Performance Measures and Defect-Free Care										Other Measures			
		VTE Prophylaxis	Antithrombotics at Discharge	Anticoag for AFib/AFlutter	t-PA Initiated	Early Antithrombotics	Statin at Discharge	Dysphagia Screen	Stroke Education	Smoking Cessation	Assessed for Rehab	Defect-Free	NIHSS Reported	% Patients with DTN Time ≤ 60 min	EMS Pre-Notification
Q1	Hospital	x.x	x.x	x.x	x.x	x.x	x.x	x.x	x.x	x.x	x.x	x.x	x.x	x.x	x.x
	MOSAIC	x.x	x.x	x.x	x.x	x.x	x.x	x.x	x.x	x.x	x.x	x.x	x.x	x.x	x.x
	MI Hospitals	x.x	x.x	x.x	x.x	x.x	x.x	x.x	x.x	x.x	x.x	x.x	x.x	x.x	x.x
	Nationwide	x.x	x.x	x.x	x.x	x.x	x.x	x.x	x.x	x.x	x.x	x.x	x.x	x.x	x.x
Q2	Hospital	x.x	x.x	x.x	x.x	NA	x.x	x.x	x.x	x.x	x.x	x.x	NA	x.x	x.x
	MOSAIC	x.x	x.x	x.x	x.x	x.x	x.x	x.x	x.x	x.x	x.x	x.x	x.x	x.x	x.x
	MI Hospitals	x.x	x.x	x.x	x.x	x.x	x.x	x.x	x.x	x.x	x.x	x.x	x.x	x.x	x.x
	Nationwide	x.x	x.x	x.x	x.x	x.x	x.x	x.x	x.x	x.x	x.x	x.x	x.x	x.x	x.x
Q3	Hospital	x.x	x.x	x.x	x.x	x.x	x.x	x.x	x.x	x.x	x.x	x.x	x.x	x.x	x.x
	MOSAIC	x.x	x.x	x.x	x.x	x.x	x.x	x.x	x.x	x.x	x.x	x.x	x.x	x.x	x.x
	MI Hospitals	x.x	x.x	x.x	x.x	x.x	x.x	x.x	x.x	x.x	x.x	x.x	x.x	x.x	x.x
	Nationwide	x.x	x.x	x.x	x.x	x.x	x.x	x.x	x.x	x.x	x.x	x.x	x.x	x.x	x.x
Q4	Hospital	x.x	x.x	x.x	x.x	x.x	x.x	NA	x.x	x.x	x.x	x.x	x.x	x.x	x.x
	MOSAIC	x.x	x.x	x.x	x.x	x.x	x.x	x.x	x.x	x.x	x.x	x.x	x.x	x.x	x.x
	MI Hospitals	x.x	x.x	x.x	x.x	x.x	x.x	x.x	x.x	x.x	x.x	x.x	x.x	x.x	x.x
	Nationwide	x.x	x.x	x.x	x.x	x.x	x.x	x.x	x.x	x.x	x.x	x.x	x.x	x.x	x.x
2017	Hospital	x.x	x.x	x.x	x.x	x.x	x.x	NA	x.x	x.x	x.x	x.x	x.x	x.x	x.x
	MOSAIC	x.x	x.x	x.x	x.x	x.x	x.x	x.x	x.x	x.x	x.x	x.x	x.x	x.x	x.x
	MI Hospitals	x.x	x.x	x.x	x.x	x.x	x.x	x.x	x.x	x.x	x.x	x.x	x.x	x.x	x.x
	Nationwide	x.x	x.x	x.x	x.x	x.x	x.x	x.x	x.x	x.x	x.x	x.x	x.x	x.x	x.x

Measure(s)	Goal
10 Coverdell Performance Measures	≥ 85 %
Coverdell Defect-free Care	≥ 85 %
NIHSS Reported	≥ 85 %
Percent Patients with Door-to-Needle Time ≤ 60 min	≥ 75 %
EMS Pre-Notification	≥ 80 %

Key:
Outperform or meets goal
Within 10% of goal
Underperform < 10 % of goal
NA = Deneminator of "0"

Agreement between two data abstractors for events in 201x

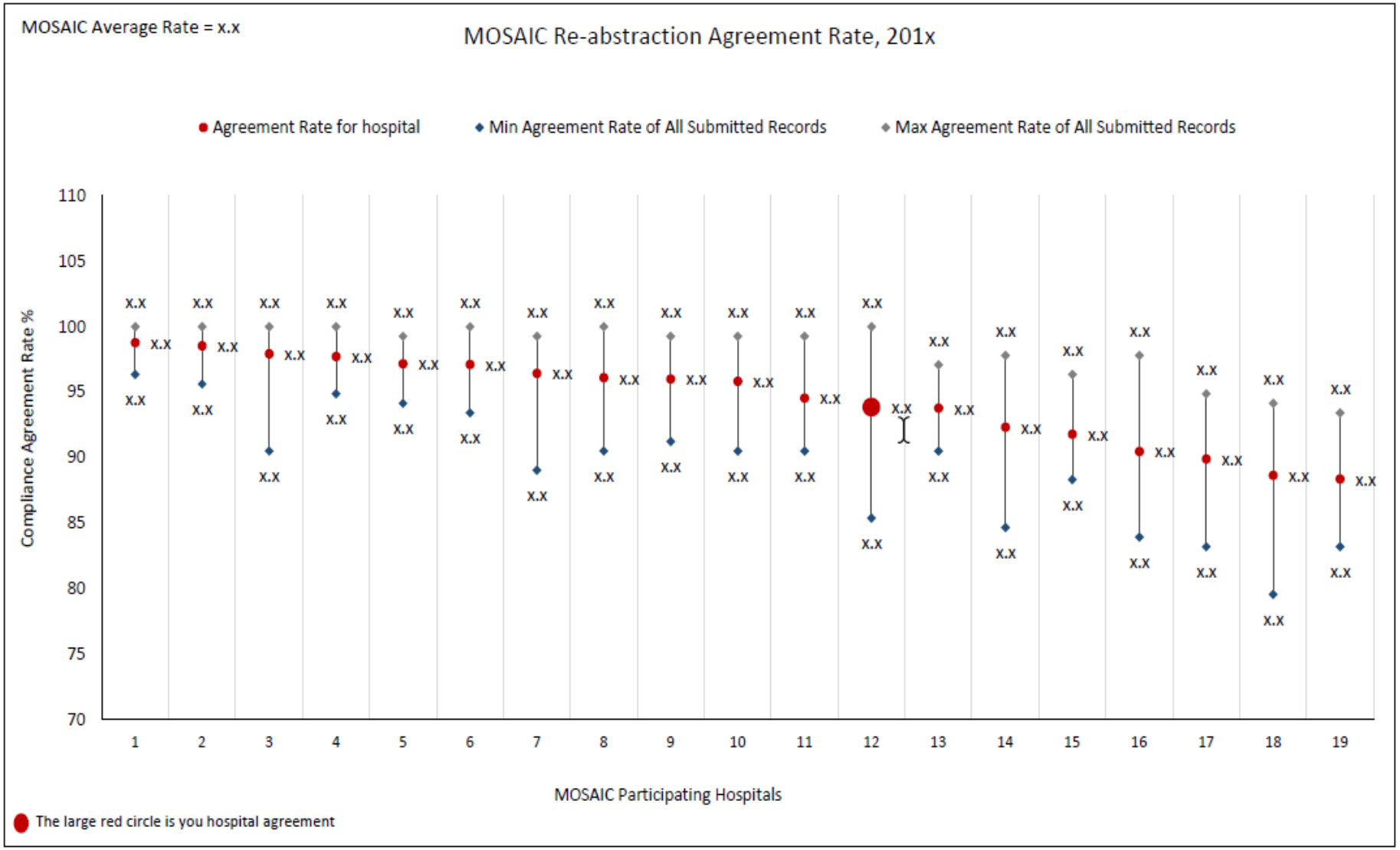
Re-abstracted Records from Your Hospital in 2017: 24
Re-abstracted Records from All MOSAIC Participants in 2017: x

Highlighted in red are < 90% H: Hospital M: MOSAIC

PMT Question/Response Options	Q1		Q2		Q3		Q4		201x	
	H %	M %	H %	M %	H %	M %	H %	M %	H %	M %
Administrative										
Final clinical diagnosis related to stroke	x.x	x.x	x.x	x.x	x.x	x.x	x.x	x.x	x.x	x.x
When is the earliest documentation of comfort measures only?	x.x	x.x	x.x	x.x	x.x	x.x	x.x	x.x	x.x	x.x
Hospital Arrival Date and Time	x.x	x.x	x.x	x.x	x.x	x.x	x.x	x.x	x.x	x.x
Admit Date	x.x	x.x	x.x	x.x	x.x	x.x	x.x	x.x	x.x	x.x
Not admitted	x.x	x.x	x.x	x.x	x.x	x.x	x.x	x.x	x.x	x.x
Reason not admitted	x.x	x.x	x.x	x.x	x.x	x.x	x.x	x.x	x.x	x.x
Discharge Information	x.x	x.x	x.x	x.x	x.x	x.x	x.x	x.x	x.x	x.x
Discharge Date Only (not time)										
Patient's discharge disposition on day of discharge?	x.x	x.x	x.x	x.x	x.x	x.x	x.x	x.x	x.x	x.x
If discharged to "other" health care facility	x.x	x.x	x.x	x.x	x.x	x.x	x.x	x.x	x.x	x.x
Principal Diagnosis	x.x	x.x	x.x	x.x	x.x	x.x	x.x	x.x	x.x	x.x
ICD-10 Principal Diagnosis code										
Discharge Diagnosis	x.x	x.x	x.x	x.x	x.x	x.x	x.x	x.x	x.x	x.x
ICD-10 Discharge Diagnosis Related to Stroke										
Arrival & Admission	x.x	x.x	x.x	x.x	x.x	x.x	x.x	x.x	x.x	x.x
Patient location when stroke symptoms discovered										
How patient arrived at your hospital	x.x	x.x	x.x	x.x	x.x	x.x	x.x	x.x	x.x	x.x
Demographics	x.x	x.x	x.x	x.x	x.x	x.x	x.x	x.x	x.x	x.x
Age										
Gender	x.x	x.x	x.x	x.x	x.x	x.x	x.x	x.x	x.x	x.x
Hispanic Ethnicity	x.x	x.x	x.x	x.x	x.x	x.x	x.x	x.x	x.x	x.x
Race	x.x	x.x	x.x	x.x	x.x	x.x	x.x	x.x	x.x	x.x
Medical History	x.x	x.x	x.x	x.x	x.x	x.x	x.x	x.x	x.x	x.x
Previously known medical hx of: - Dyslipidemia										
Previously known medical hx of: - Previous Stroke	x.x	x.x	x.x	x.x	x.x	x.x	x.x	x.x	x.x	x.x
Previously known medical hx of: - Previous TIA	x.x	x.x	x.x	x.x	x.x	x.x	x.x	x.x	x.x	x.x
Previously known medical hx of: - Smoker	x.x	x.x	x.x	x.x	x.x	x.x	x.x	x.x	x.x	x.x
Ambulatory status prior to the current event?	x.x	x.x	x.x	x.x	x.x	x.x	x.x	x.x	x.x	x.x
Diagnosis & Evaluation	x.x	x.x	x.x	x.x	x.x	x.x	x.x	x.x	x.x	x.x
Stroke symptoms resolved at time of presentation										

Highlighted in red are < 90% H: Hospital M: MOSAIC

PMT Question/Response Options	Q1		Q2		Q3		Q4		201x	
	H %	M %	H %	M %	H %	M %	H %	M %	H %	M %
Persistent or Paroxysmal Atrial Fibrillation/Flutter	X.X	X.X	X.X	X.X	X.X	X.X	X.X	X.X	X.X	X.X
If atrial fib/flutter or history of PAF documented, was patient discharged on anticoagulation?	X.X	X.X	X.X	X.X	X.X	X.X	X.X	X.X	X.X	X.X
Documented reasons no anticoagulation: Allergy to or complicated r/t warfarin or heparins	X.X	X.X	X.X	X.X	X.X	X.X	X.X	X.X	X.X	X.X
Documented reasons no anticoagulation: Mental status	X.X	X.X	X.X	X.X	X.X	X.X	X.X	X.X	X.X	X.X
Documented reasons no anticoagulation: Patient refused	X.X	X.X	X.X	X.X	X.X	X.X	X.X	X.X	X.X	X.X
Documented reasons no anticoagulation: Risk for bleeding or discontinued due to bleeding	X.X	X.X	X.X	X.X	X.X	X.X	X.X	X.X	X.X	X.X
Documented reasons no anticoagulation: Risk for falls	X.X	X.X	X.X	X.X	X.X	X.X	X.X	X.X	X.X	X.X
Documented reasons no anticoagulation: Serious side effect to medication	X.X	X.X	X.X	X.X	X.X	X.X	X.X	X.X	X.X	X.X
Documented reasons no anticoagulation: Terminal illness/Comfort Measures Only	X.X	X.X	X.X	X.X	X.X	X.X	X.X	X.X	X.X	X.X
Cholesterol Reducing Tx - None prescribed/ND	X.X	X.X	X.X	X.X	X.X	X.X	X.X	X.X	X.X	X.X
Cholesterol Reducing Tx - Statin	X.X	X.X	X.X	X.X	X.X	X.X	X.X	X.X	X.X	X.X
Cholesterol Reducing Tx - Niacin	X.X	X.X	X.X	X.X	X.X	X.X	X.X	X.X	X.X	X.X
Cholesterol Reducing Tx - Other med	X.X	X.X	X.X	X.X	X.X	X.X	X.X	X.X	X.X	X.X
Cholesterol Reducing Tx - None - contraindicated	X.X	X.X	X.X	X.X	X.X	X.X	X.X	X.X	X.X	X.X
Cholesterol Reducing Tx - Fibrate	X.X	X.X	X.X	X.X	X.X	X.X	X.X	X.X	X.X	X.X
Cholesterol Reducing Tx - Absorption inhibitor	X.X	X.X	X.X	X.X	X.X	X.X	X.X	X.X	X.X	X.X
Reason for Not Prescribing Statin Medication at Discharge	X.X	X.X	X.X	X.X	X.X	X.X	X.X	X.X	X.X	X.X
Anti-Smoking Tx	X.X	X.X	X.X	X.X	X.X	X.X	X.X	X.X	X.X	X.X
Stroke Education Education Addresses Risk Factors for Stroke	X.X	X.X	X.X	X.X	X.X	X.X	X.X	X.X	X.X	X.X
Education Addresses Warning Signs and Symptoms of Stroke	X.X	X.X	X.X	X.X	X.X	X.X	X.X	X.X	X.X	X.X
Education Addresses Activation of Emergency Medical System	X.X	X.X	X.X	X.X	X.X	X.X	X.X	X.X	X.X	X.X
Education Addresses Follow-up After Discharge	X.X	X.X	X.X	X.X	X.X	X.X	X.X	X.X	X.X	X.X
Education Addresses Medications Prescribed at Discharge	X.X	X.X	X.X	X.X	X.X	X.X	X.X	X.X	X.X	X.X
Stroke Rehabilitation Assessed for Rehabilitation Services	X.X	X.X	X.X	X.X	X.X	X.X	X.X	X.X	X.X	X.X
Total Percent Agreement	**X.X**	**X.X**	**X.X**	**X.X**	**X.X**	**X.X**	**X.X**	**X.X**	**X.X**	**X.X**
Number of records reviewed	6	x	6	x	6	x	6	x	24	x
Min of agreement for each of the patient records abstracted	X.X	X.X	X.X	X.X	X.X	X.X	X.X	X.X	X.X	X.X
Max of agreement for each of the patient records abstracted	X.X	X.X	X.X	X.X	X.X	X.X	X.X	X.X	X.X	X.X


MOSAIC Average Rate = x.x
MOSAIC Re-abstraction Agreement Rate, 201x
Agreement Rate for hospital
Min Agreement Rate of All Submitted Records
Max Agreement Rate of All Submitted Records
Compliance Agreement Rate %
110
105
100
95
90
85
80
75
70
1
2
3
4
5
6
7
8
9
10
11
12
13
14
15
16
17
18
19
MOSAIC Participating Hospitals
The large red circle is you hospital agreement

Michigan's Ongoing Stroke Registry to Accelerate Improvement of Care (MOSAIC) Program Re-abstraction Process

1- Chart is abstracted and entered into GWTG PMT

2- Data is downloaded by Stroke Project Specialist and sent to Data Analyst

3- Five abstracts are randomly selected by Data Analyst

4- Hospital is sent list of randomly selected charts

5- Hospital assigns re-abstractor to enter cases into their GWTGs re-abstraction site

6- Re-Abstractions are completed within 30 days of receipt of case list

7- Data Analyst compares record against GWTG original data entry; error checks and inter-rater agreement will occur

8- QI report sent to hospital contact

Hospital Arrival Mode, Door-to Needle and Pre-Notification Reports, 2017

PATIENTS WHO ARRIVED VIA EMS (VS. PRIVATE TRANSPORTATION), MOSAIC, 2009-2017

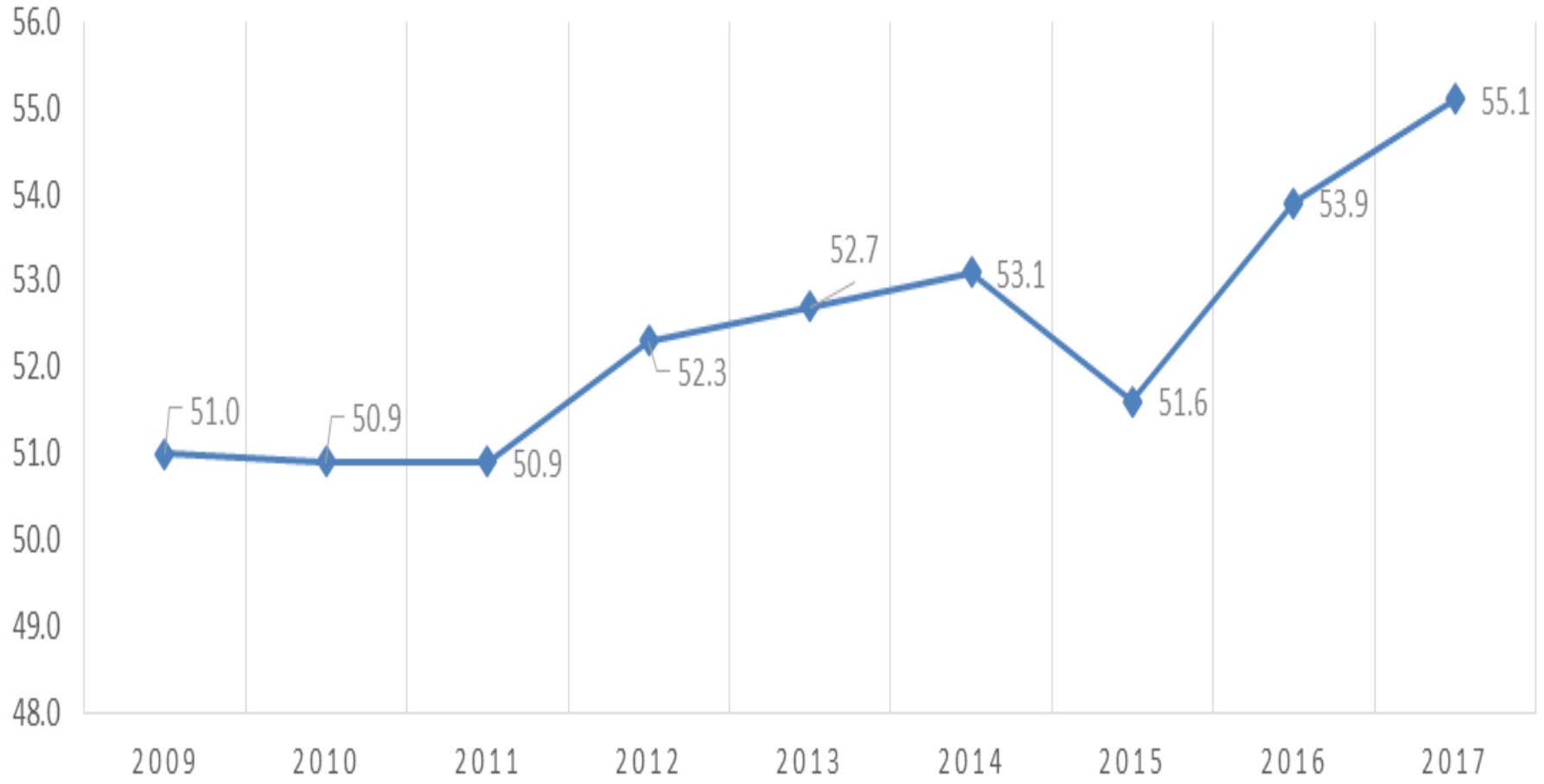


Table 1. Arrival Mode among Stroke Cases by Demographics, MOSAIC, 2017

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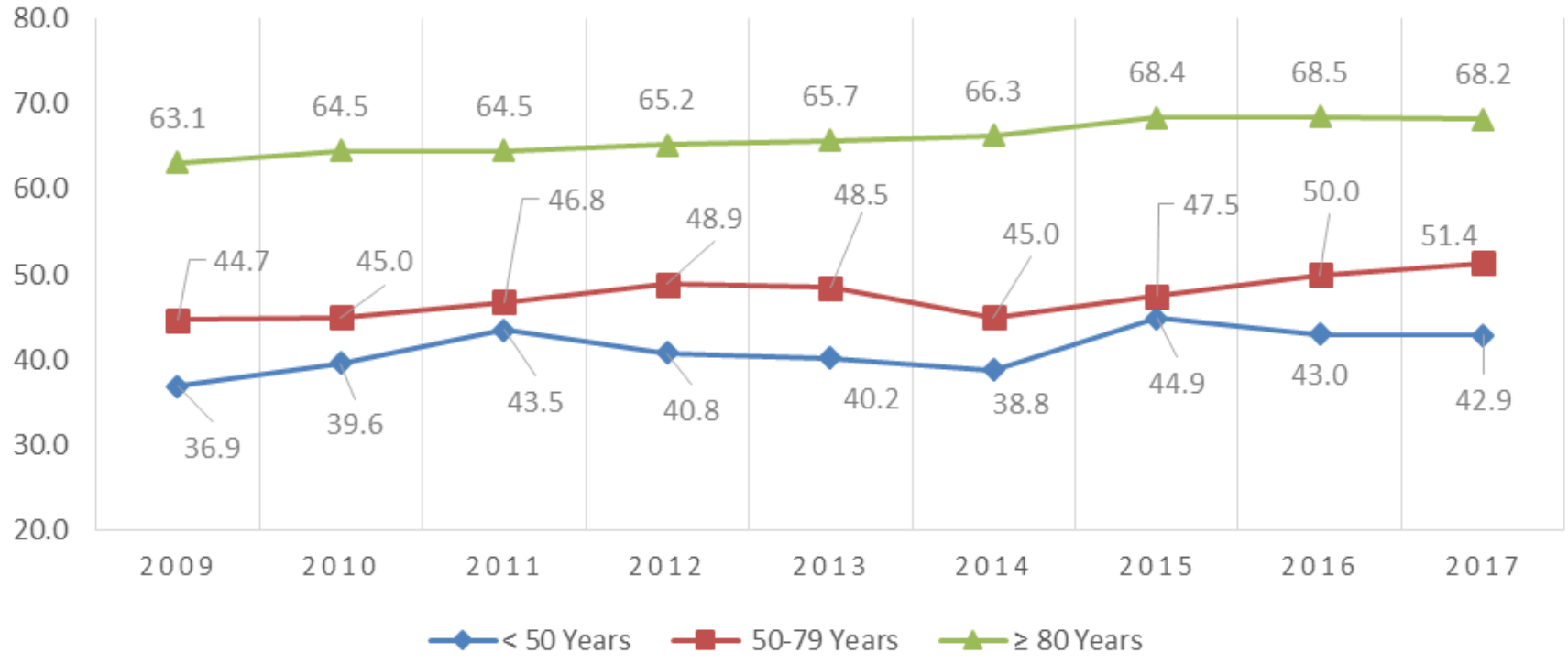
	MOSAIC Aggregate			
	Arrival Mode			
	EMS		Private Mode	
Demographics	N=3683	56.0%	N=2891	44.0%
Stroke Type				
Ischemic	2733	54.7%	2259	45.3%
Hemorrhagic	534	71.4%	214	28.6%
TIA	398	50.3%	393	49.7%
Age Group				
< 50 Years	214	42.9%	285	57.1%
50-79 Years	2058	51.4%	1949	48.6%
≥ 80 Years	1411	68.2%	657	31.8%
Sex				
Female	1933	57.6%	1420	42.4%
Male	1750	54.3%	1471	45.7%
Race				
Black	680	55.1%	555	44.9%
White	2857	56.3%	2218	43.7%
Other/ Missing	146	55.3%	118	44.7%

Percent of Cases Who Arrived via EMS, by Age Group, MOSAIC, 2009-2017



Mean Door-to-Needle, Image-to-Needle, and Door-to-CT Time, 2009-2017

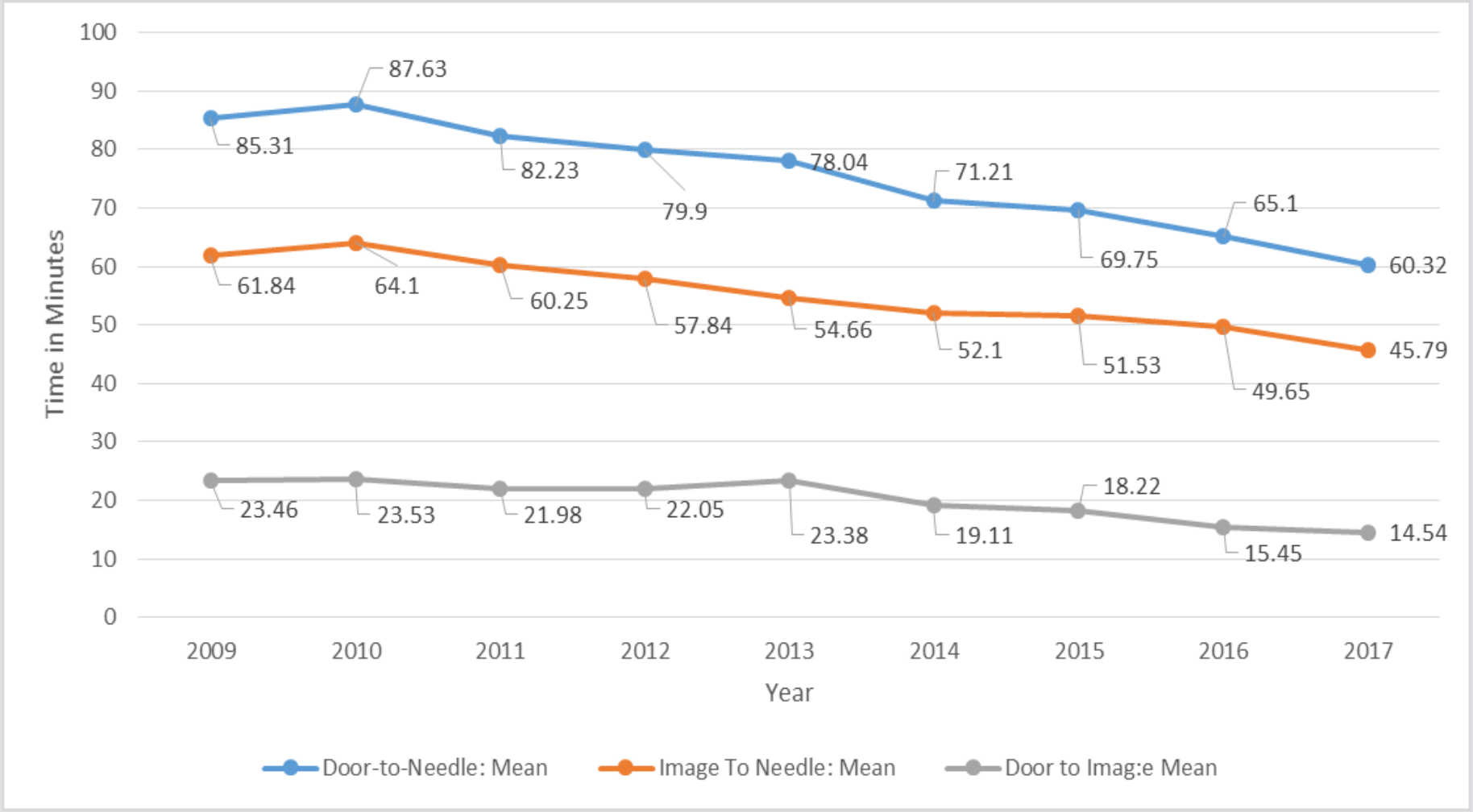


Figure. Mean Door-to-Needle Time by EMS vs. Private Arrival Mode, 2009-2017

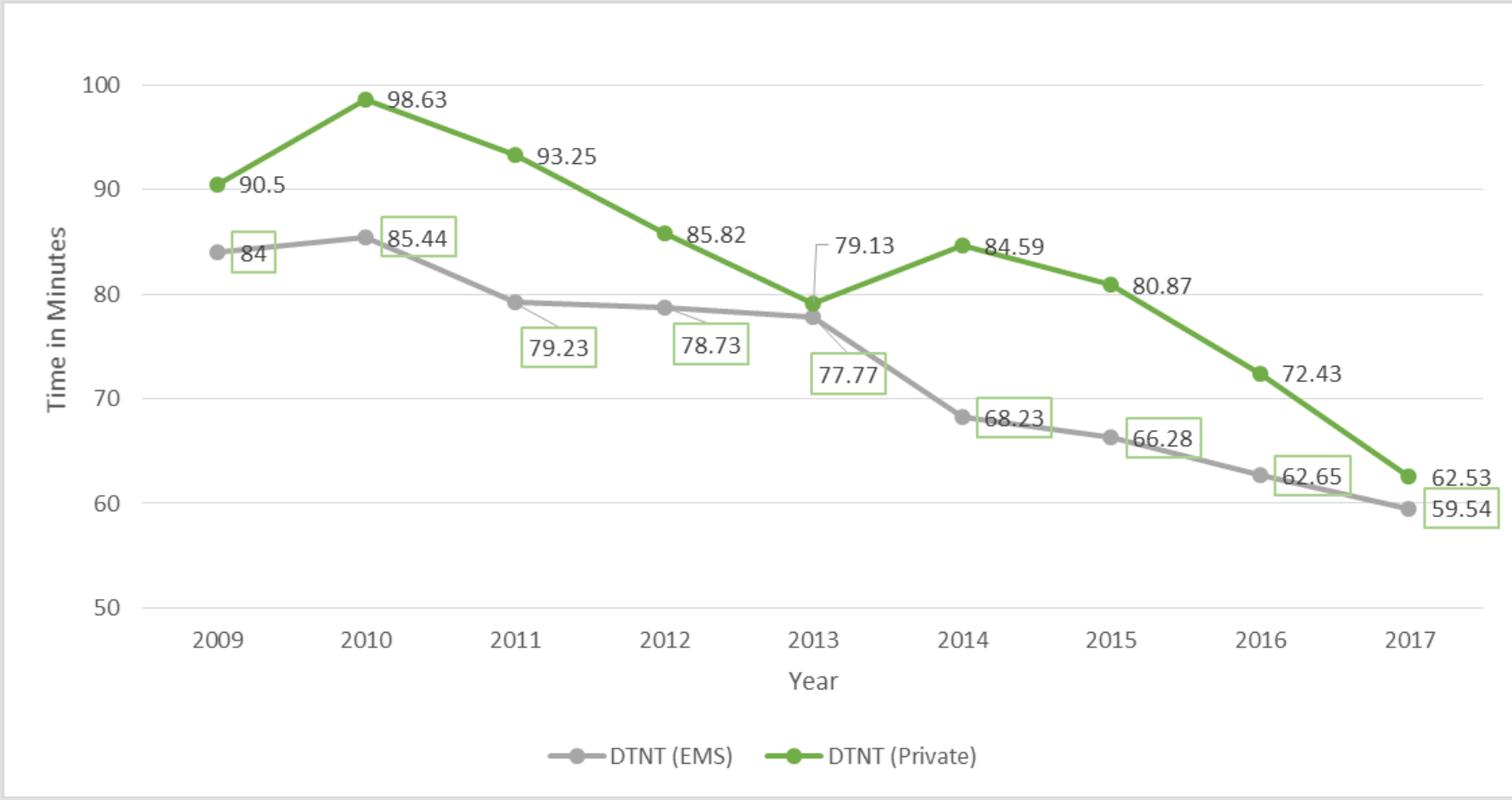


Table 2. Door-to-Needle Times by Arrival Mode among Stroke Cases, MOSAIC 2017

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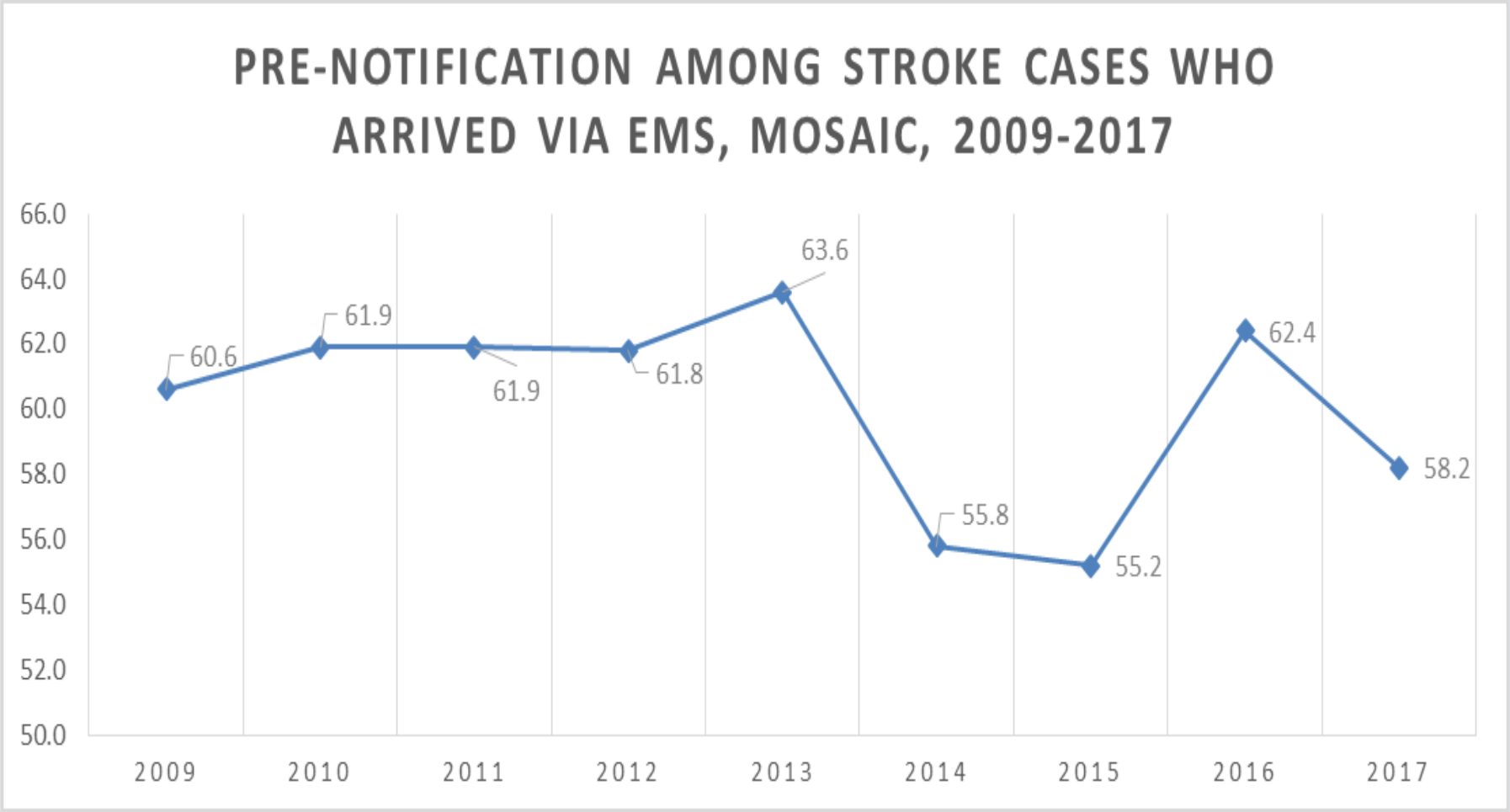
Time Elements (in Minutes)	MOSAIC Aggregate			
	Number of Patients	Mean (Minutes)	Median (Minutes)	Range (Minutes)
Door-to-Image	5854	58.3	34.0	0.0-360.0
Arrived via EMS	3297	45.5	21.0	0.0-360.0
Arrived via Private Transportation	2557	74.8	52.0	0.0-359.0
Door-to-Image (among t-PA treated)	682	14.7	12.0	0.0-109.0
Arrived via EMS	498	13.2	11.0	0.0-98.0
Arrived via Private Transportation	184	18.9	17.0	0.0-109.0
Image-to Needle **	682	45.9	40.0	7.0-202.0
Arrived via EMS	498	46.2	39.5	7.0-202.0
Arrived via Private Transportation	184	45.2	42.0	10.0-138.0
Door-to Needle **	682	60.6	54.0	15.0-225.0
Arrived via EMS	498	59.3	52.0	151.-225.0
Arrived via Private Transportation	184	64.1	59.0	25.0-163.0

*Included ischemic or hemorrhagic cases with times that were less or equal to 270 minutes, (4.5 hours)

**Transferred cases were excluded

Trends in Pre-notification, MOSAIC, 2009-2017



Pre-notification Abstraction Definition

REQUIRED: Advanced notification by EMS?(Traditional Responder or Mobile Stroke Unit)
•**Definition:** *EMS personnel should provide prehospital notification to the receiving hospital that a suspected stroke patient is en route so that the appropriate hospital resources may be mobilized before patient arrival. For this element, record if EMS personnel notified the receiving hospital prior to the arrival of possible stroke patient.*

Allowable Values: Yes
•No/ND
•N/A
•
Notes for Abstraction: Yes: EMS notified the receiving hospital prior to arrival
•To select '**Yes'** there must be explicit documentation that advanced notification by EMS included that the patient was a suspected stroke.
•The following language is sufficient to identify patients with suspected stroke; any use of the word "stroke" or any documentation of signs & symptoms consistent with stroke is acceptable:
•N/A: the patient did not arrive via EMS
•*Sudden numbness or weakness of face, arm or leg - especially on one side of the body.*
•*Sudden confusion, trouble speaking or understanding.*
•*Sudden trouble seeing in one or both eyes.*
•*Sudden trouble walking, dizziness, loss of balance or coordination.*
•*Sudden severe headache with no known cause.*
•**No/ND:** EMS either did not pre-notify the receiving hospital or there is no documentation regarding EMS pre-notification.
•**N/A:** the patient did not arrive via EMS

* Definition accessed 5/15/18

Table 3. Pre-Notification among Stroke Cases Who Arrived Via EMS by Demographics, MOSAIC, 2017

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	MOSAIC Aggregate			
	Pre-Notification			
	Yes		No	
Demographics	N=2180	60.8%	N=1405	39.2%
Stroke Type				
Ischemic	1735	65.0%	936	35.0%
Hemorrhagic	297	57.0%	224	43.0%
TIA	141	37.3%	237	62.7%
Age Group				
< 50 Years	121	59.9%	81	40.1%
50-79 Years	1213	60.6%	790	39.4%
≥ 80 Years	846	61.3%	534	38.7%
Sex				
Female	1125	59.8%	755	40.2%
Male	1055	61.9%	650	38.1%
Race				
Black	312	47.6%	343	52.4%
White	1789	64.0%	1004	36.0%
Other/ Missing	79	57.7%	58	42.3%

Hypertension Reports, 2017

MOSAIC Hypertension Update

MOSAIC Hospitals, July -December 2017

		Cases with a Previous History of Hypertension			Arrived on Antihypertensive Medication*			Antihypertensive Treatment Prescribed at Discharge**		
		Numerator	Denominator	%	Numerator	Denominator	%	Numerator	Denominator	%
	Total	4,335	5,605	77.3	3,569	4,309	82.8	3,407	3,778	90.2
Sex										
	Male	2,108	2,752	76.6	1,718	2,101	81.8	1,692	1,858	91.1
	Female	2,227	2,853	78.1	1,851	2,208	83.8	1,715	1,920	89.3
Race										
	Black	885	1,036	85.4	702	873	80.4	727	802	90.6
	White	3,177	4,199	75.7	2,655	3,171	83.7	2,466	2,730	90.3
	Other Race	273	366	74.6	212	265	80.0	214	246	87.0
Insurance Status										
	Medicare/Medicaid	2,259	2,871	78.7	1,855	2,247	82.6	1,779	1,963	90.6
	Private/VA/Champus/Other	729	1,153	63.2	537	724	74.2	578	668	86.5
	Medicare and Private	1,273	1,462	87.1	1,137	1,270	89.5	999	1,085	92.1
	Self Pay or No Insurance	52	85	61.2	28	52	53.8	37	44	84.1

(34 cases had missing insurance data)

*Cases with a history of hypertension on an antihypertensive medication at admission

**Cases with a history of hypertension; excluded cases with an indicated antihypertensive treatment contraindication

MOSAIC Website

www.Michigan.gov/stroke

Thank You

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MOSAIC Hospital Infrastructure

Among all participating hospitals, the average number of:

- Licensed beds was 351 (range: 25 to 1059 beds).
- Inpatient discharges was 20,729 (range: 547to 129,555 patients).
- Acute stroke discharges (primary diagnosis only) was 412 (range: 11 to 1012 patients).

MOSAIC: Participating Hospitals

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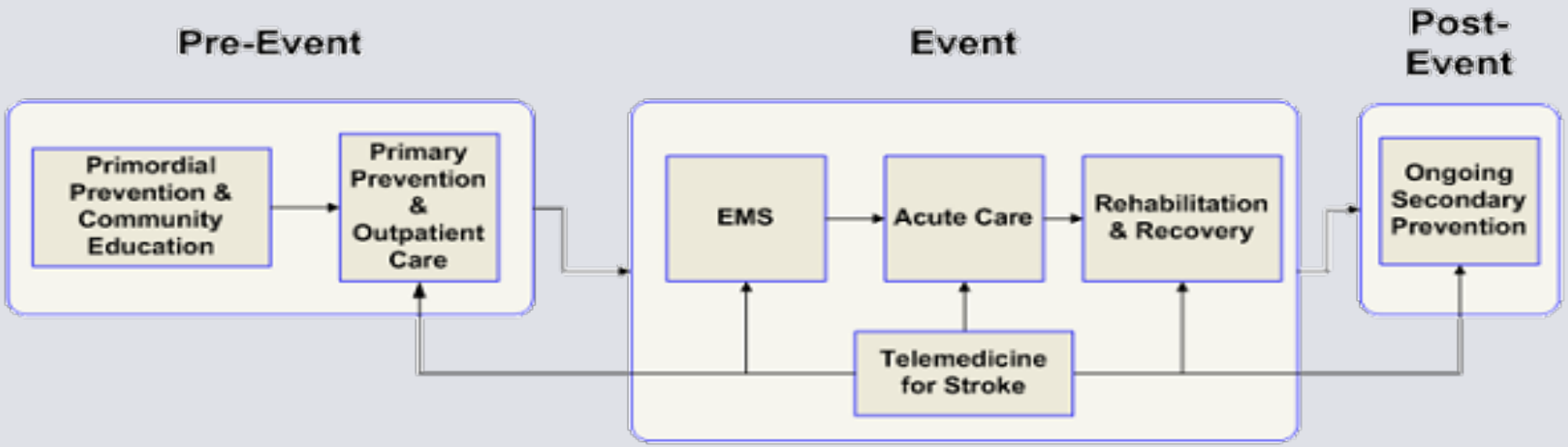
Aspirus Keweenaw Hospital (Laurium)
Aspirus Grand View Hospital
Aspirus Iron River Hospital
Aspirus Ontonagon Hospital
Bixby Medical Center
Bronson Methodist Hospital
Covenant Health Care
Detroit Receiving Hospital
Genesys Health System
Henry Ford Hospital - Detroit*
Henry Ford West Bloomfield
Herrick Medical Center
Huron Valley-Sinai Hospital
Lakeland Regional Medical Center*
McLaren Bay Regional Medical Center
McLaren Greater Lansing

McLaren Macomb Hospital
McLaren Northern MI Hospital*
McLaren Oakland Medical Center
McLaren Port Huron Hospital
McLaren Flint Medical Center*
Mercy Health Muskegon
Mercy Health Saint Mary's Hospital
Metro Health Hospital
Munson Medical Center*
ProMedica Monroe Regional Hospital
Sparrow Hospital*
St. John Hospital and Medical Center
St Joseph Mercy - Ann Arbor
St Joseph Mercy Chelsea
St Joseph Mercy Livingston Hospital
St. Joseph Mercy Oakland
St Mary Mercy
St. Mary of Michigan Hospital
U of M Hospital

MOSAIC 2015-2020

- Focus of Grant: Developing Stroke Systems of Care
  - Community Awareness
  - EMS
  - In-hospital QI
  - Transition of Care Post-Discharge



Pre-hospital Care

AVAILABLE DATA

EMS/MOSAIC Data Linkage

-The MOSAIC Team continues to link data from the Michigan EMS Information System (MiEMSIS) to MOSAIC Data

- Reports have been created for and reviewed by the Tri-County Area MCA and Detroit East MCA.
- This work will expand to other MCA regions that serve hospitals participating in MOSAIC.

Transporting EMS Agency **Quarter #**

Table 1: Analysis of EMS Suspect Stroke Transports	Agency Suspected Stroke Cases		Statewide Suspected Stroke Cases	
	N	%	N	%
Total:	x	---	x	---
Destination Hospital:				
MOSAIC Destination Hospital(s)	x	x.x %		
DEMOGRAPHICS				
Age				
Median	x		x	
Range	Min - Max years		Min - Max years	
Gender				
Female	x	x.x %	x	x.x %
Male	x	x.x %	x	x.x %
Not Available	x	x.x %	x	x.x %
Race				
White	x	x.x %	x	x.x %
Black or African American	x	x.x %	x	x.x %
Asian	x	x.x %	x	x.x %
American Indian or Alaska Native	x	x.x %	x	x.x %
Multi-racial*	x	x.x %	x	x.x %
Other Race	x	x.x %	x	x.x %
Not Available	x	x.x %	x	x.x %
EMS PERFORMANCE				
EMS Recognized Strokes	x	x.x %		
EMS Overcalls	x	x.x %		
1.On-scene time ≤15 minutes	x	x.x %	x	x.x %
2.At Patient - Left Scene time ≤15 minutes	x	x.x %	x	x.x %
3.Blood Glucose level checked and recorded	x	x.x %	x	x.x %
4.EMS called in a stroke alert / pre-notification	x	x.x %	x	x.x %
5.Stroke screen completed and recorded	x	x.x %	x	x.x %
6.Time last known to be well was documented	x	x.x %	x	x.x %

*Multi-racial includes Native Hawaiian or Other Pacific Islander.

Table 2: Patient Outcomes Among Cases Confirmed as Stroke by Receiving Hospital	EMS Recognized		EMS Not Recognized*	
	N	%	N	%
Total:	x	---		
Stroke type				
Ischemic	x	x.x %	x	x.x %
Hemorrhagic	x	x.x %	x	x.x %
TIA	x	x.x %	x	x.x %
Stroke Not Specified	x	x.x %	x	x.x %
ED EVALUATION AND TREATMENT**				
Door-to-CT Time				
Median	x		x	
Range	Min - Max minutes		Min - Max minutes	
Received t-PA (Ischemic Stroke Cases Only)	x	x.x %	x	x.x %
Door-to-t-PA Time				
Median	x		x	
Range	Min - Max minutes		Min - Max minutes	
Hospital Confirmed Strokes***	x	x.x %		
DISCHARGE DISPOSITION ****				
Transfer to higher level	x	x.x %		
Home	x	x.x %		
Acute/Subacute rehab	x	x.x %		
Hospice/Death	x	x.x %		

* Data will be available when EMS tab in Outcome Science is used.

** Outliers removed from Door-to-CT and Door-to-t-PA times.

*** Denominator is all stroke cases arrived by EMS.

**** Transfer to higher level includes cases that were transferred to an Acute Care Facility

Home includes cases that were discharged to home or left against Medical Advice/AMA

Hospice/Death includes cases that were discharged to Hospice-Home, a Hospice-Healthcare Facility, or those who expired

Defect Free Care

Defect-Free Measure of the 10 Consensus CDC/COV measures

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National: 72.8%

MI: 80.8 %