
Ohio Coverdell Stroke Program

Annual Benchmark Report

For 2016

This report is created annually for each hospital participating in the Ohio Coverdell Stroke Program. It benchmarks each hospital's data to aggregate data from all participating Ohio Coverdell hospitals and from all hospitals using *Get With The Guidelines– Stroke™* nationwide. This sample report includes only Ohio Coverdell and national benchmarks.

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Types of Stroke

- **Ischemic Stroke (IS)** is the death of an area of brain tissue resulting from an inadequate supply of blood and oxygen to the brain due to blockage of an artery.
- **Transient Ischemic Attack (TIA)** occurs when a blood clot temporarily clogs an artery and part of the brain does not get the blood it needs. The symptoms occur rapidly and last a relatively short time.
- **Intracerebral Hemorrhage (ICH)** occurs when a blood vessel in the brain leaks or ruptures, resulting in bleeding into the brain. Parts of the brain affected by the bleeding can become damaged, and, when blood accumulates, it can put pressure on the brain.
- **Subarachnoid Hemorrhage (SAH)** is bleeding into the subarachnoid space, the area between the arachnoid membrane and the pia mater surrounding the brain.
- **Other Stroke (NOS)** is when the type of stroke was not specified.

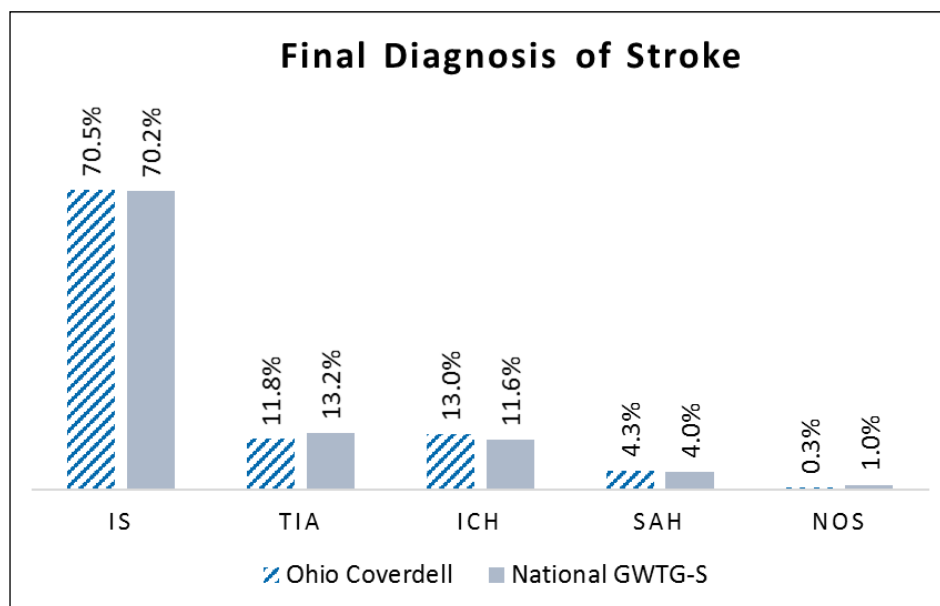
Introduction

The Ohio Coverdell Stroke Program (Coverdell) is a data-driven quality improvement program. We provide quality improvement resources, training, and technical assistance to stroke teams in participating hospitals to support their implementation of evidence-based stroke treatment. Coverdell is funded by a nationwide competitive grant from the U.S. Centers for Disease Control and Prevention and by the Ohio Department of Health.

Coverdell has designated Get With The Guidelines®– Stroke (GWTG-S) as our data collection and reporting platform. For calendar year 2016, 56 Coverdell participant hospitals entered 18,668 stroke patients into GWTG-S.¹ That same year, more than 2,700 hospitals nationwide entered 501,317 stroke patients into GWTG-S. The latter includes patients in both Coverdell and non-Coverdell hospitals nationwide. In this report, your hospital's performance is compared to Ohio Coverdell hospital data and national GWTG-S data, where available.

Patients by Stroke Type

The graph below compares patients by stroke type for your hospital, all Ohio Coverdell hospitals, and all hospitals nationwide participating in GWTG-S.



	IS	TIA	ICH	SAH	NOS
Ohio Coverdell (n = 18,668)	13,164	2,209	2,435	802	58
National GWTG – S (n = 501,317)	351,923	66,172	58,110	19,926	5,186

¹Data in this report was downloaded from GWTG-S on May 16, 2017.

Stroke Demographics

An increase of stroke in younger adults has been seen not only in Ohio, but also across the nation. This correlates with increases in uncontrolled hypertension and obesity, both of which are risk factors for stroke.

The average age of adult stroke patients treated in all Ohio Coverdell hospitals was 69.5 years. Patients aged 18 to 65 years accounted for 37.6% of the strokes reported by Ohio Coverdell hospitals. Patients aged 66 and older accounted for 62.4% of the strokes reported by Ohio Coverdell hospitals.

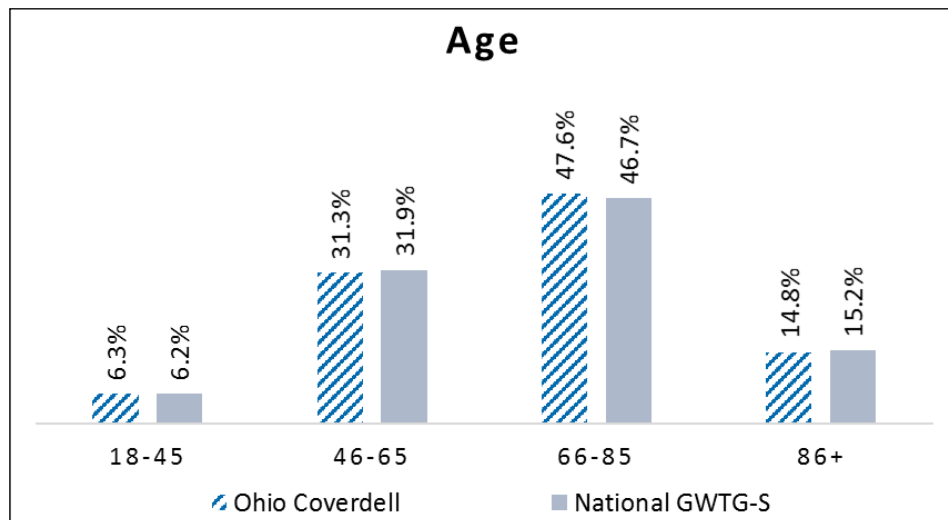
Females represented 51.5% of stroke patients, and males represented 48.5% of stroke patients in all Ohio Coverdell hospitals.

Cardiovascular disease, including stroke, is the greatest contributor to life expectancy disparities based on race and ethnicity. Racial disparities exist in health care and are a growing concern in the U.S. In Ohio Coverdell hospitals, about 80.6% of stroke patients are White, and 15.7% are Black or African American. According to the U.S. Census Bureau, about 82.7% of Ohio's population is White alone, and 12.7% is Black or African American alone.

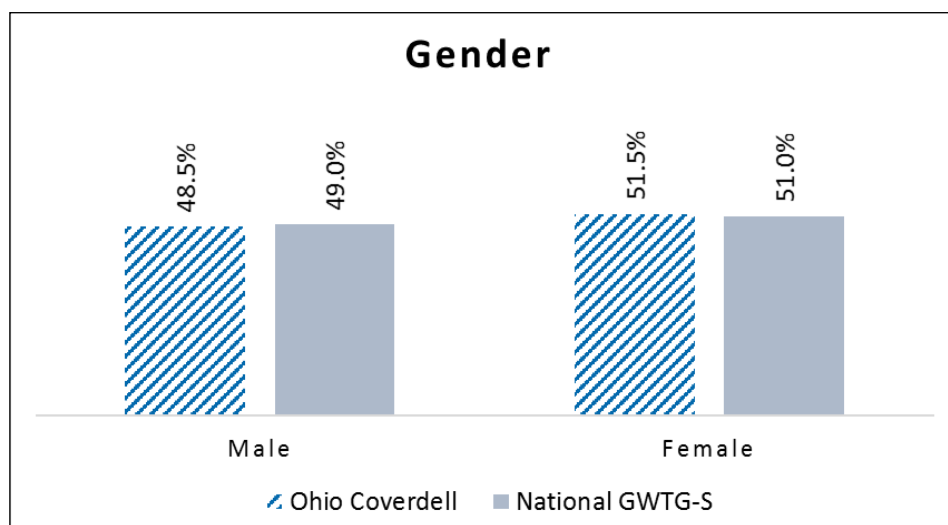
See your hospital's stroke demographics by race on page 4.

Demographics by Age and Gender

The following three graphs compare the age, gender, and race of stroke patients treated in your hospital to those in all Ohio Coverdell hospitals and in all hospitals nationwide using GWTG-S.



	18 – 45	46 – 65	66 – 85	86 +
Ohio Coverdell (n = 18,665)	1,172	5,843	8,893	2,757
National GWTG – S (n = 501,225)	30,868	160,060	234,276	76,021



	Male	Female
Ohio Coverdell (n = 18,667)	9,047	9,620
National GWTG – S (n = 501,235)	245,707	255,528

The Warning Signs of Stroke

Learning the warning signs of stroke is the first step in getting care. However, most people do not recognize all 5 warning signs.

The 5 Warning Signs of Stroke are:

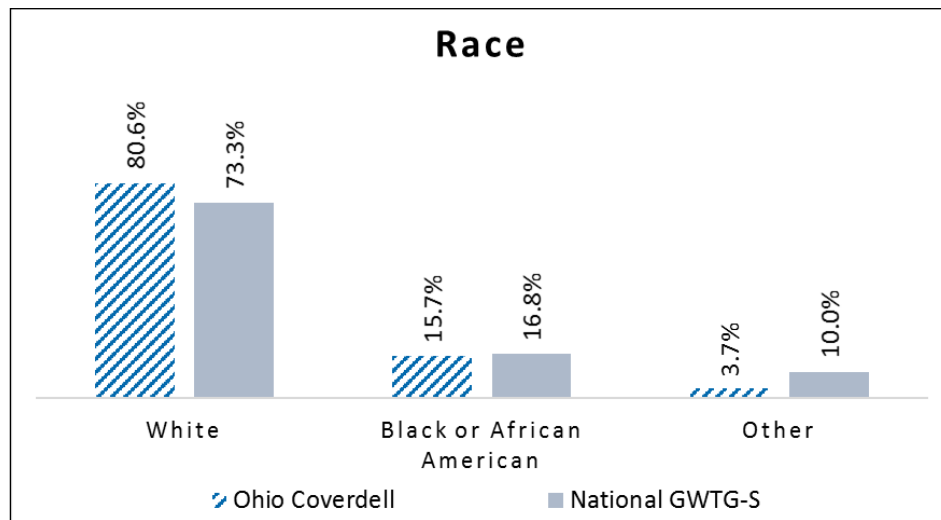
- 1) **SUDDEN** numbness or weakness of face, arm, or leg, especially on one side of the body
- 2) **SUDDEN** confusion, trouble speaking, or understanding
- 3) **SUDDEN** vision problems
- 4) **SUDDEN** trouble walking, dizziness, loss of balance, or coordination
- 5) **SUDDEN** severe headache with no known cause

If you notice any of these warning signs, call 9-1-1 immediately. It is very important to make note of the time you first noticed one of these signs.

People with warning signs of stroke who arrive at the hospital by Emergency Medical Service (EMS) transportation or ambulance generally have better outcomes in terms of higher survival rates and less disability, in comparison to those who arrive by other forms of transport.

In Ohio Coverdell hospitals, 42.8% of stroke patients are transported by EMS.

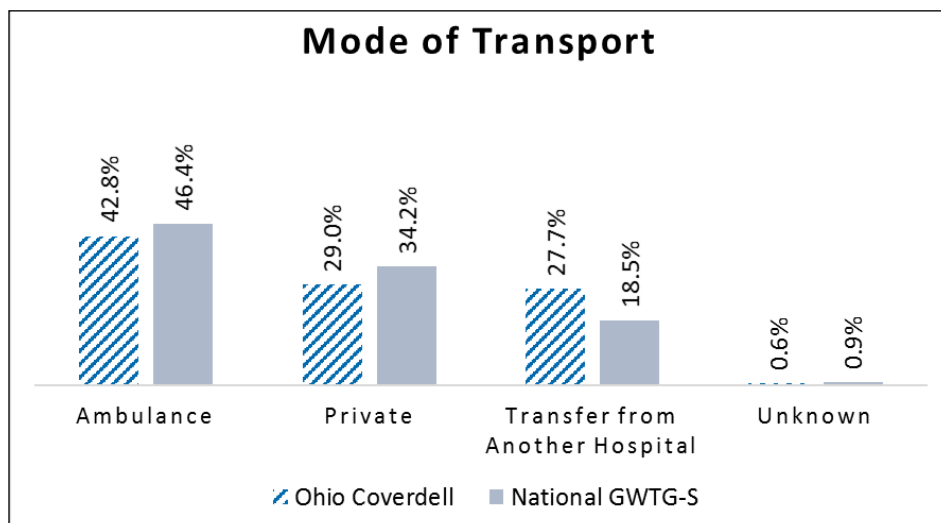
Demographics by Race



	White	Black or AA	Other
Ohio Coverdell (n = 18,668)	15,054	2,939	682
National GWTG – S (n = 501,317)	367,319	84,167	50,214

How Stroke Patients Arrive at the Hospital

The graph below shows how stroke patients arrived at your hospital compared to all Ohio Coverdell hospitals and nationwide GWTG-S hospitals.



	EMS	Private	Transfer	Unknown
Ohio Coverdell (n = 18,295)	7,832	5,298	5,061	104
National GWTG – S (n = 489,551)	227,262	167,416	90,413	4,460

Pre-Hospital Transitions of Care for Stroke Patients

The importance of transitions of care for stroke patients is not limited to the post-hospital setting. The care that stroke patients receive prior to arriving at the hospital impacts their treatment and outcomes.

Advanced pre-notification by EMS for suspected stroke patients is a Class I; Level of Evidence B recommendation. The American Heart Association/American Stroke Association (AHA/ASA) recommends that “EMS personnel should provide pre-hospital notification to the receiving hospital that a potential stroke patient is en route so that the appropriate hospital resources may be mobilized prior to patient arrival.”

Pre-notification has been associated with more timely stroke evaluation and treatment, as well as increased administration of intravenous tissue-type plasminogen activator (t-PA).

Nearly half of all Ohio Coverdell patients are transported by EMS, and 69.4% of these patients had an advanced pre-notification called in by EMS prior to hospital arrival.

The Ohio Coverdell Stroke Program also recommends that EMS providers provide the following information when calling in a stroke pre-notification:

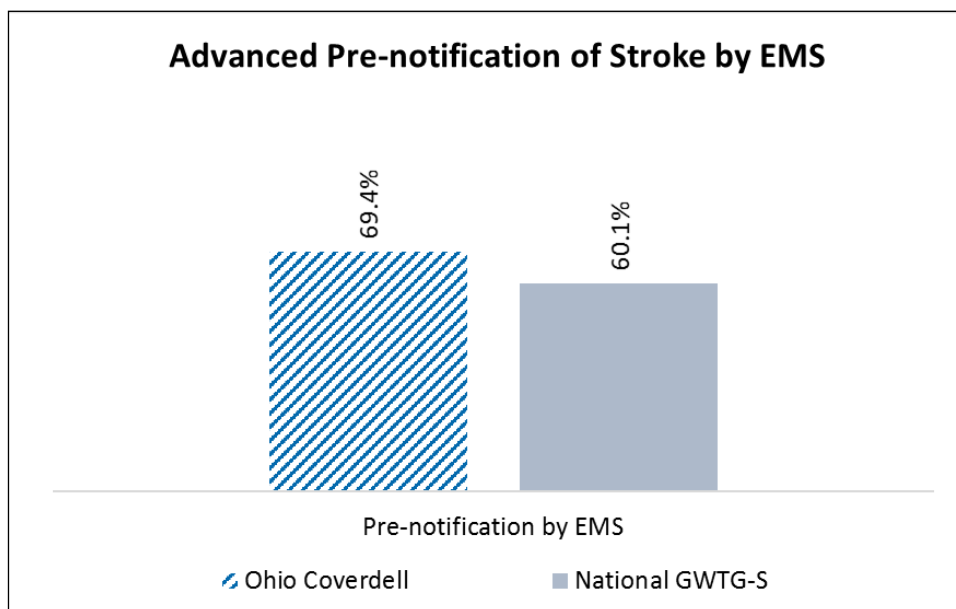
1. Last Known Well date and time
2. Stroke screen type and score
3. Blood glucose level

EMS Pre-Notification

EMS pre-notification for suspected stroke patients helps the receiving hospital in preparing for patient hand-off and in administering treatment to eligible stroke patients within treatment windows. Pre-notification has been associated with more timely stroke evaluation and treatment, as well as increased administration of intravenous tissue-type plasminogen activator (t-PA).

Due to the importance of pre-notification in improving the quality of pre-hospital care transitions and reducing time to treatment, the Ohio Coverdell Stroke Program has designated pre-notification as our new Statewide Coverdell QI Initiative, beginning in 2016.

The graph below shows the percentage of cases of advanced pre-notification by EMS for patients transported by EMS from the scene to your hospital, compared to all Ohio Coverdell hospitals and all hospitals nationwide using GWTG-S. In order to qualify for this measure, there must be explicit documentation that EMS identified the transport as a suspected stroke patient in the pre-notification call, either by using the word “stroke” or describing signs and symptoms consistent with stroke.



	Cases of advanced pre-notification by EMS	Patients transported by EMS
Ohio Coverdell	5,432	7,832
National GWTG – S	132,884	221,038

Treatment is Time Critical

Stroke is a medical emergency that can kill up to 1.9 million brain cells per minute. Time lost is brain lost, and treatment expediency is critical in order to improve patients' health outcomes.

Door-to-Needle Time

"Door-to-Needle Time" is the time from patients' arrival at the hospital emergency department (ED) to the time eligible patients receive t-PA.

Target: Stroke is an initiative of the AHA/ASA to improve clinical performance and timeliness of t-PA administration.

Target: Stroke Phase II began in January 2015. The goals are for hospital EDs to:

- 1) Achieve door-to-needle time of ≤ 60 min. for at least 75% of eligible acute ischemic stroke patients; and
- 2) Achieve door-to-needle time of ≤ 45 min. for at least 50% of eligible acute ischemic stroke patients.

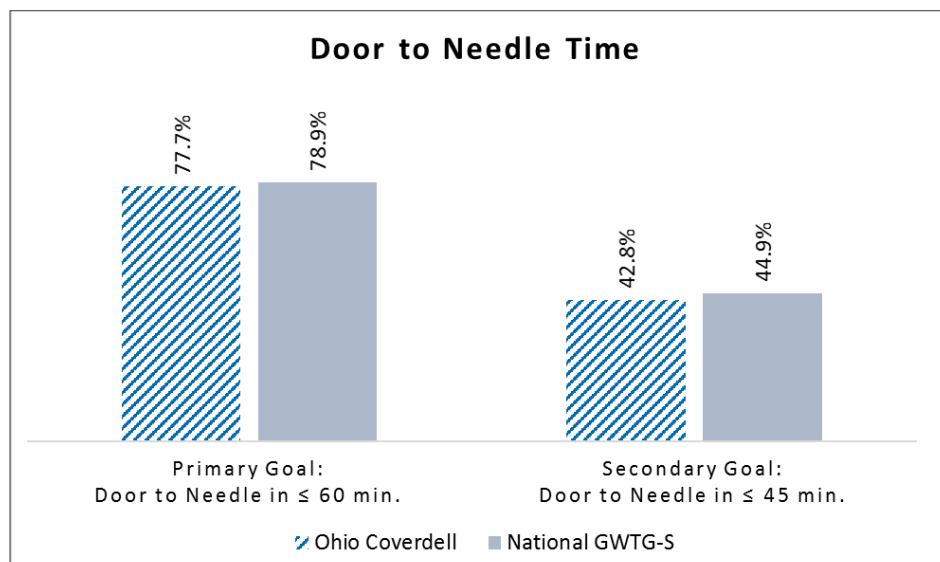
The average door-to-needle time for all Ohio Coverdell hospital patients in 2016 was 52.3 minutes.

The average "last known well" to needle time for all Ohio Coverdell hospital patients was 940 minutes (15.7 hours). The median was 119 minutes (2.0 hours).

Door-to-Needle Time

"Door-to-Needle Time" is the time from patients' arrival at a hospital emergency department (ED) to the time eligible acute ischemic stroke patients receive t-PA. Stroke is a medical emergency, and treatment is time critical to reduce brain damage and improve patients' health outcomes. Guidelines recommend that t-PA be administered to eligible patients within 60 minutes of arrival at the ED.

The graph below shows the percentage of eligible acute ischemic stroke patients who received t-PA within 60 minutes and 45 minutes of ED arrival at your hospital, compared to all Ohio Coverdell hospitals and all hospitals nationwide using GWTG-S. These two measures align with *Target: Stroke* Phase II goals from AHA/ASA.



Note: These graphs use data from the "Time to Intravenous Thrombolytic Therapy-60 min" and "Time to Intravenous Thrombolytic Therapy-45 min" configurable measure reports in GWTG-S.

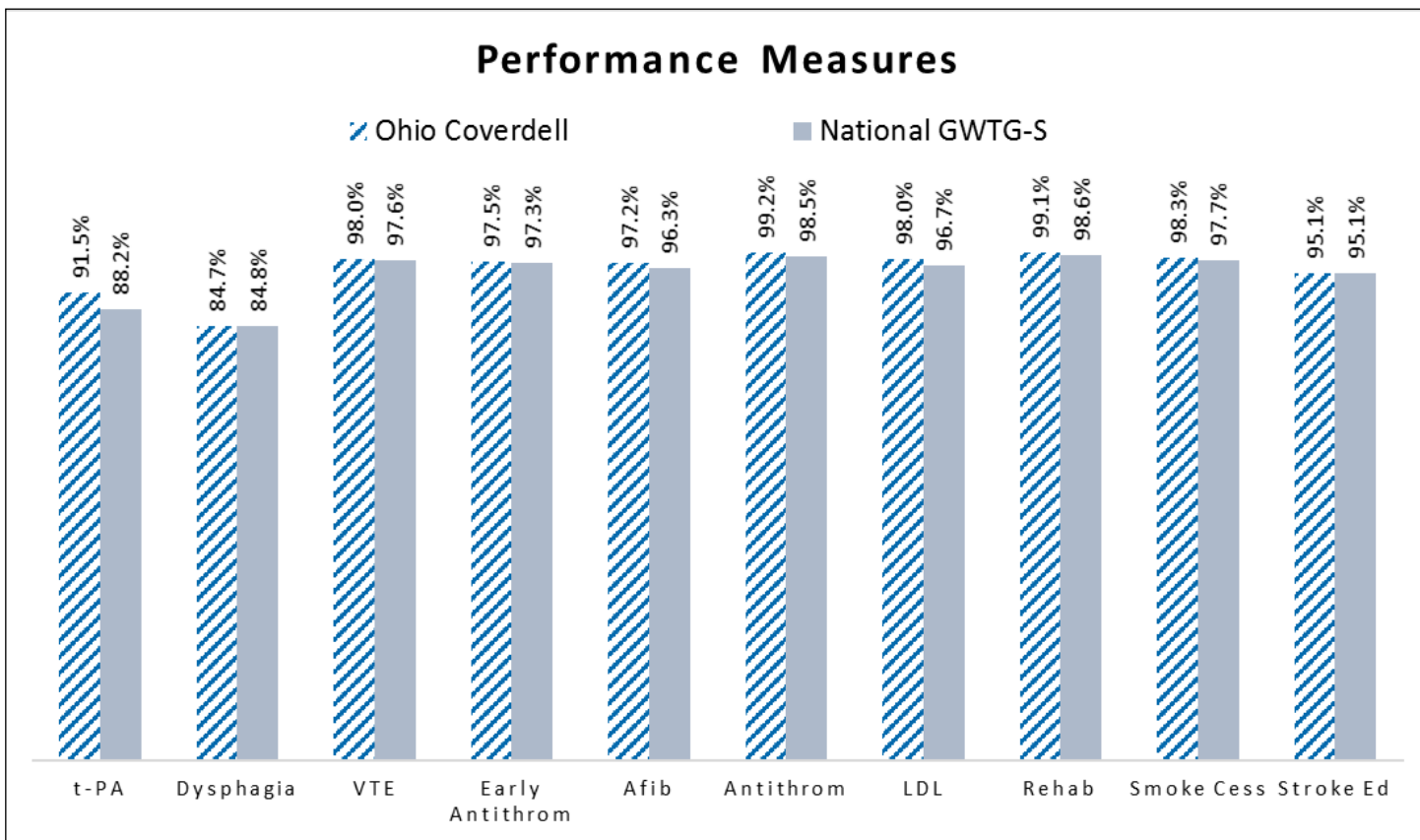
	Door-to-Needle in 60 min. (# of patients treated/total eligible patients)	Door-to-Needle in 45 min. (# of patients treated/total eligible patients)
Ohio Coverdell	753/969	415/969
National GWTG – S	23,169/29,380	13,188/29,382

Information on *Target: Stroke* Phase II and how your hospital can continue to reduce door-to-needle time is available at the following link:

http://www.strokeassociation.org/STROKEORG/Professionals/TargetStroke/Target-Stroke-Phase-II_UCM_469859_Article.jsp

Stroke Performance Measures

There are ten primary performance measures for stroke treatment that include aspects of acute stroke treatment from admission through discharge. Each performance measure has separately defined inclusion and exclusion criteria, based on parameters from GWTG and CDC. The graph below shows how your hospital compares to all Ohio Coverdell hospitals and all hospitals nationwide using GWTG-S. Performance measure definitions are on the next page.



	t-PA	Dysph- agia	VTE	Early Anti- throm	Afib	Anti- throm	LDL	Rehab	Smoke Cess	Stroke Ed
Ohio Coverdell (numerator)	966	11,198	12,284	9,645	1,847	11,985	9,015	12,671	3,205	7,161
Ohio Coverdell (denominator)	1,056	13,220	12,532	9,890	1,900	12,081	9,198	12,783	3,262	7,531
National GWTG-S (numerator)	30,666	327,830	324,804	280,939	52,926	346,723	260,041	359,436	72,257	227,026
National GWTG-S (denominator)	34,771	386,489	332,745	288,827	54,973	351,916	268,827	364,406	73,978	238,675

Performance Measure Definitions:

(Definitions refer to the table on page 6.)

Tissue Plasminogen Activator (t-PA): Patients with ischemic stroke who arrive at the hospital within 2 hours of time last known well and for whom IV t-PA was initiated within 3 hours of time last known well.

Dysphagia: Stroke patients who undergo screening for dysphagia with an evidence-based bedside testing protocol approved by hospital before being given food, medication, or liquids by mouth.

Venous Thromboembolism (VTE): Patients with an ischemic stroke, a hemorrhagic stroke, or a stroke not otherwise specified who received VTE prophylaxis or have documentation why no VTE was given the day of or the day after hospital admission.

Early Antithrombotics (Early Antithrom): Patients with ischemic stroke or TIA who receive antithrombotic therapy by the end of hospital day two.

Atrial Fibrillation (Afib): Patients with ischemic stroke or TIA with atrial fibrillation/flutter discharged on anti-coagulation therapy.

Antithrombotics (Antithrom): Patients with ischemic stroke or TIA prescribed with antithrombotic therapy at discharge.

Low-Density Lipoprotein (LDL): Patients with ischemic stroke or TIA with LDL levels ≥ 100 , with LDL not measured, or on cholesterol-reducer prior to admission, who are discharged on statin medication.

Rehabilitation (Rehab): Stroke patients who were assessed for rehabilitation services.

Smoking Cessation (Smoke Cess): Stroke patients with a history of smoking cigarettes who or whose caregivers were given information about smoking cessation during their hospital stay.

Stroke Education (Stroke Ed): Stroke or TIA patients who or whose caregivers were given education and/or educational materials during the hospital stay addressing all of the following: the personal risk factors for stroke, warning signs, activation of emergency medical system, need for follow-up after discharge, and medications prescribed.

Stroke Severity and Length of Stay

Stroke severity can be measured by the National Institutes of Health Stroke Scale (NIHSS). The NIHSS is a 15-item scale, and the score can range from 0-42.

NIHSS Score	Stroke Severity
0	No Stroke Symptoms
1-4	Minor Stroke
5-15	Moderate Stroke
16-20	Moderate to Severe Stroke
21-42	Severe Stroke

For 2016, the average total NIHSS score for Ohio Coverdell patients was 6.2 at initial hospital evaluation.

Stroke severity affects patients' average length of stay (LOS). LOS varies significantly by stroke type and increases as the severity of the stroke increases.

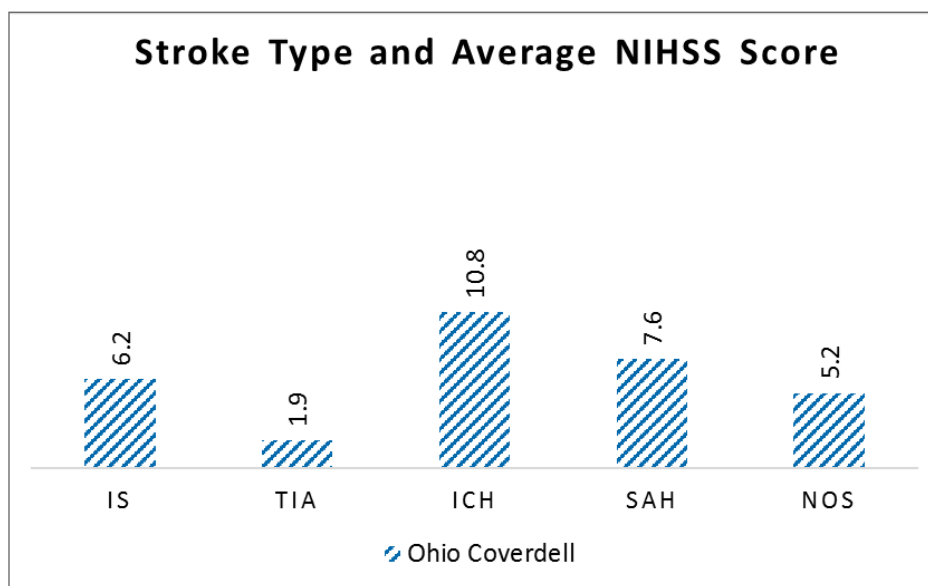
Certain stroke types such as subarachnoid hemorrhages are more severe than other stroke types and therefore have a longer LOS.

Average LOS for Ohio Coverdell patients:

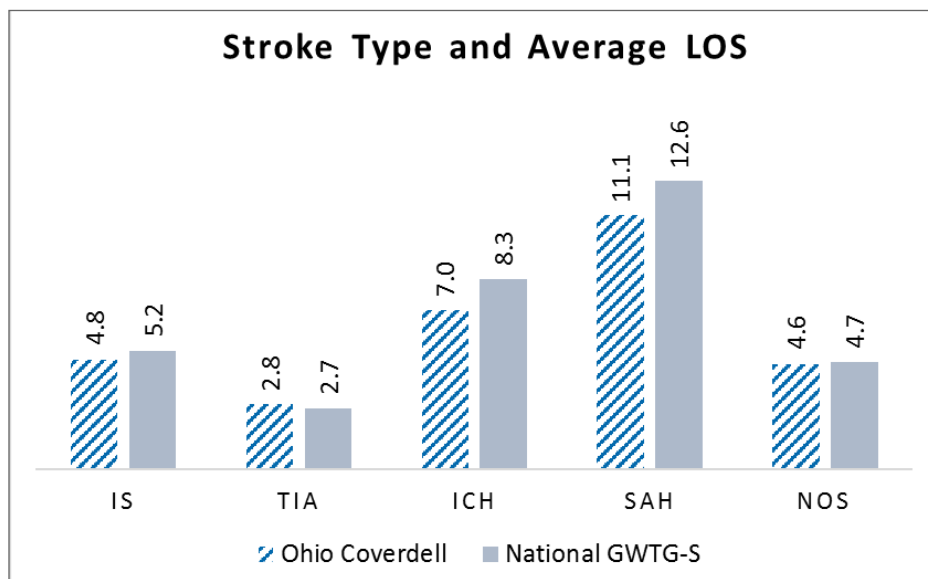
- All stroke types = 5.1 days
- IS = 4.8 days
- TIA = 2.8 days
- ICH = 7.0 days
- SAH = 11.1 days

Stroke Severity and Length of Stay

The graph below compares stroke type and the average National Institutes of Health Stroke Scale (NIHSS) score for patients at your hospital compared to all Ohio Coverdell hospitals. For stroke type abbreviations and definitions, see page 2.



The graph below compares length of stay (LOS) in days by stroke type for your hospital to all Ohio Coverdell hospitals and all hospitals nationwide using GWTG-S.



Discharge Destination

Discharge destination is an important component of planning for care transitions. Ohio Coverdell hospitals discharged 18,400 patients in 2016 with 8,261 (44.9%) discharged directly to home and 7,217 (39.2%) to other post-acute health care facilities.

Of the 7,217 patients discharged to an other health care facility from Ohio Coverdell hospitals, 3,464 (48.0%) went to an inpatient rehabilitation facility and 3,340 (46.3%) to a skilled nursing facility.

As part of Coverdell's ongoing focus on transitions of care, hospitals are improving transitions to the next setting of care.

Transitions of Care Summary

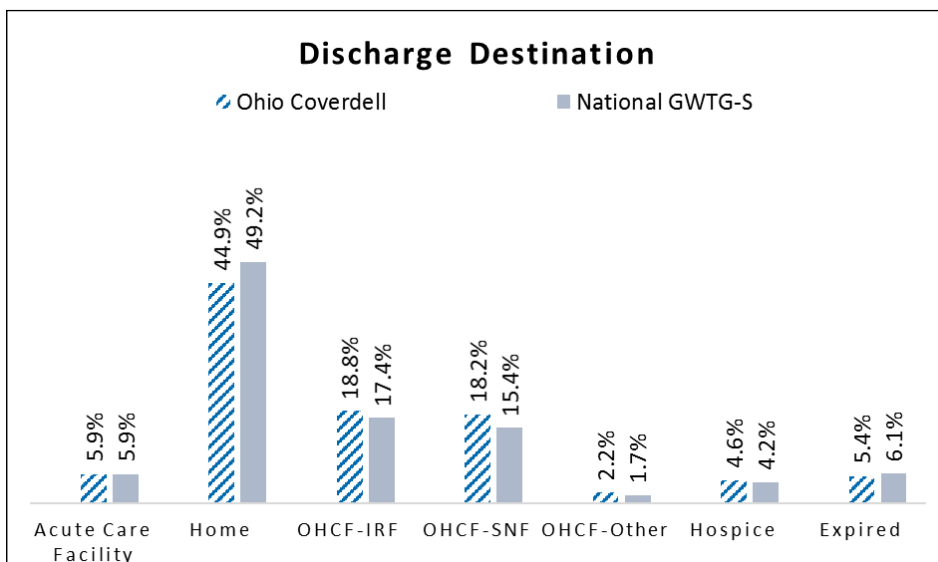
The Ohio Coverdell Stroke Program began a structured Transitions of Care initiative in 2013 to improve the quality of care transitions by asking hospitals to schedule follow-up appointments for eligible stroke patients prior to hospital discharge.

This quality improvement initiative was conducted as a Learning Collaborative of Coverdell hospitals. The goals were to:

- 1) Schedule a primary care provider appointment for at least 85% of stroke patients prior to discharge home.
- 2) Schedule recommended neurologist, neurosurgeon, or neurology provider appointments for at least 85% of stroke patients prior to discharge.

Discharge Destination

The graph below shows discharge destinations for stroke patients from your hospital compared to patients from all Ohio Coverdell hospitals and all hospitals nationwide using GWTG-S. Patients discharged to an "other health care facility" (OHCF) are classified below as inpatient rehabilitation facility (OHCF-IRF), skilled nursing facility (OHCF-SNF), or other (OHCF-Other) destination.



	Acute Care Facility	Home	OHCF-IRF	OHCF-SNF	OHCF-Other	Hospice	Expired
Ohio Coverdell (n = 18,400)	1,080	8,261	3,464	3,340	413	847	995
National GWTG – S (n = 494,001)	29,317	243,076	86,059	76,242	8,275	20,786	30,246

Transitions of Care

Your hospital's performance with scheduling and documenting follow-up appointments for stroke patients prior to hospital discharge is on the next three pages. This includes primary care and neurology appointments scheduled prior to discharge home and neurology appointments scheduled prior to discharge to another health care facility.

For more information on Ohio Coverdell Transitions of Care, see the *Ohio Department of Health* website, *Coverdell* section at:

<http://www.healthy.ohio.gov/hdsp/coverdell/Transitions%20of%20Care%20for%20Stroke%20Patients.aspx>

Transitions of Care to Primary Care Providers (PCP)

Follow-up care with a primary care provider can facilitate patient recovery from stroke. Stroke patients are at a significant risk of discontinuous care and consequently adverse events. With nearly 45% of Ohio Coverdell stroke patients discharged to their home, scheduling follow-up appointments with a PCP is an important component of the care continuum.

To improve care continuity post-stroke, the Ohio Coverdell Stroke Program continues to support inpatient providers to identify, plan, and implement organizational processes to schedule follow-up appointments for stroke patients prior to discharge.

Baseline Performance:

Statewide data from the Coverdell Learning Collaborative "baseline period" (April 2013-September 2013) indicated that only 13.4% of eligible stroke patients had an appointment scheduled with their PCP prior to hospital discharge.

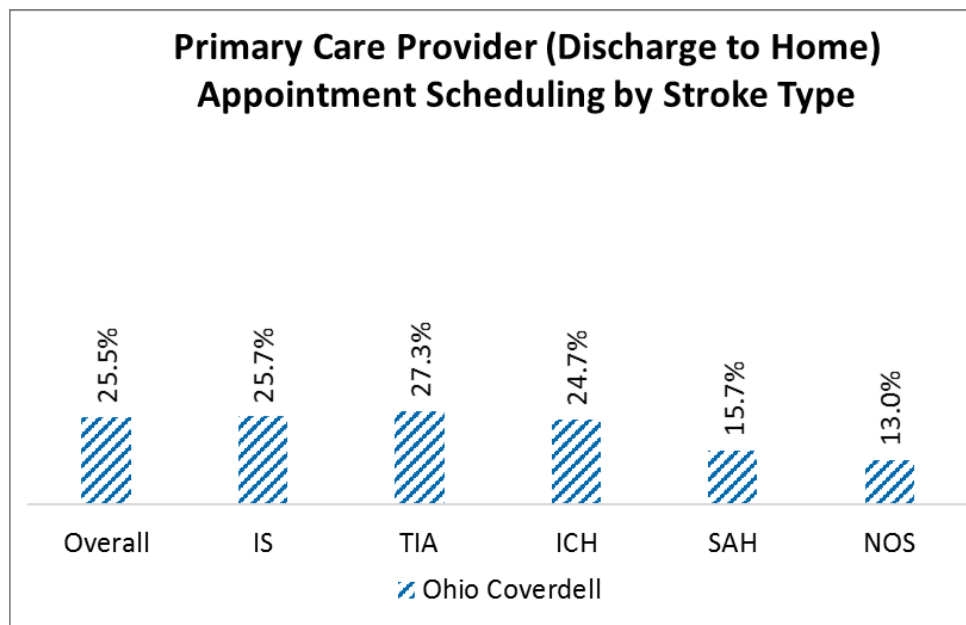
2016 Performance Improvement:

Throughout calendar year 2016, the 56 Ohio Coverdell hospitals continued to improve scheduling PCP follow-up appointments.

Overall, Ohio Coverdell hospitals scheduled PCP follow-up appointments for 1,949 of 7,639 (25.5%) total eligible patients in 2016. This demonstrates a 90.3% performance improvement from the 2013 baseline period.

Primary Care Provider Follow-Up Appointment Scheduling

The graph below shows the percentage of eligible stroke patients for whom your hospital scheduled, **prior to discharge home**, a follow-up appointment with a **Primary Care Provider (PCP)**, as documented in Get With The Guidelines®-Stroke, Ohio Special Initiatives Tab. The graph compares PCP appointment scheduling at your hospital to all Ohio Coverdell hospitals. Follow-up appointment scheduling data is displayed below for all stroke types combined (Overall) and for each stroke type. See page 2 for stroke type abbreviations and definitions. Inclusion and exclusion criteria are specified below the graph.



	(# of patients with scheduled appointment/total eligible patients)					
	Overall	IS	TIA	ICH	SAH	NOS
Ohio Coverdell	1949/7639	1415/5503	367/1343	118/477	46/293	3/23

Inclusion and Exclusion Criteria:

Primary Care Appointments for Patients Discharged to Home

- Includes patients: Final clinical diagnosis of Ischemic Stroke, Transient Ischemic Attack (<24 hours), Intracerebral Hemorrhage, Subarachnoid Hemorrhage, or Stroke Not Otherwise Specified; comfort care not documented/unable to determine; discharged home; age ≥ 18 years
- Excludes patients: age < 18 years; "comfort care only" specified; not admitted; discharge destination other than home

Transitions of Care to Neurology Providers

Follow-up care with a stroke specialist (neurologist, neurosurgeon, or neurology provider) can facilitate recovery for stroke patients.

For other disease states, follow-up with specialty care is known to facilitate care continuity and reduce hospital readmissions. However, this is not yet standard of care for stroke. To improve care continuity post-stroke, the Ohio Coverdell Stroke Program continues to support inpatient providers to identify, plan, and implement processes to schedule follow-up appointments for stroke patients prior to hospital discharge.

Baseline Performance:

Statewide data from the Coverdell Learning Collaborative "baseline period" (April 2013-September 2013) indicated that of eligible patients discharged home during the baseline period, 24.8% had a neurology follow-up appointment scheduled prior to discharge.

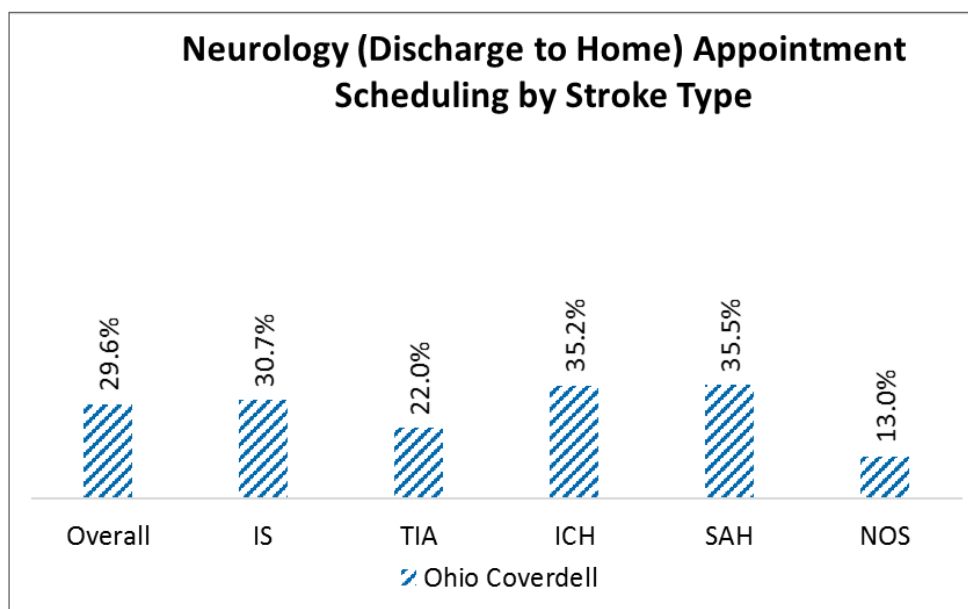
2016 Performance Improvement:

Throughout calendar year 2016, the 56 Ohio Coverdell hospitals continued to improve scheduling neurology follow-up appointments.

In 2016, Ohio Coverdell hospitals scheduled neurology follow-up appointments for 2,262 of 7,639 (29.6%) total eligible patients discharged home. This demonstrates a 19.4% performance improvement from the 2013 baseline period.

Neurology Provider Follow-Up Appointment Scheduling for Stroke Patients Discharged to Home

The graph below shows the percentage of eligible stroke patients for whom your hospital scheduled, **prior to discharge home**, a follow-up appointment with a **Neurology Provider**, as documented in Get With The Guidelines®-Stroke, Ohio Special Initiatives Tab. The graph compares neurology appointment scheduling at your hospital to all Ohio Coverdell hospitals. Follow-up appointment scheduling data is displayed below for all stroke types combined (Overall) and for each stroke type. See page 2 for stroke type abbreviations and definitions. Inclusion and exclusion criteria are specified below the graph.



	(# of patients with scheduled appointment/total eligible patients)					
	Overall	IS	TIA	ICH	SAH	NOS
Ohio Coverdell	2262/7639	1691/5503	296/1343	168/477	104/293	3/23

Inclusion and Exclusion Criteria:

Neurology Appointments for Patients Discharged to Home

- Includes patients: Final clinical diagnosis of Ischemic Stroke, Transient Ischemic Attack (<24 hours), Intracerebral Hemorrhage, Subarachnoid Hemorrhage, or Stroke Not Otherwise Specified; comfort care not documented/unable to determine; discharged home; age ≥ 18 years
- Excludes patients: age < 18 years; "comfort care only" specified; not admitted; discharge destination other than home; neurology/neurosurgery follow-up not ordered or recommended

Transitions of Care to Neurology Providers

Among Ohio Coverdell hospitals, nearly 40% of stroke patients are discharged from the hospital to another type of health care facility. By scheduling specialty care (neurologist, neurosurgeon, or neurology provider) follow-up appointments for this population of patients prior to discharge, hospitals can further improve care continuity post-stroke.

Stroke patients with a hospital discharge destination of “Other Health Care Facility” include those going to an Inpatient Rehabilitation Facility, Skilled Nursing Facility, Intermediate Care Facility, or Long Term Care Hospital.

Baseline Performance:

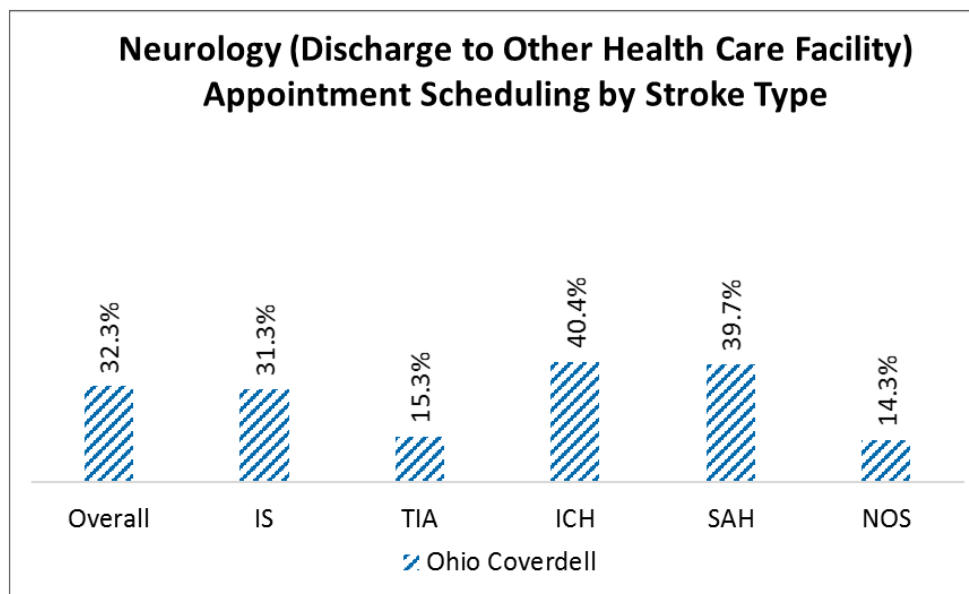
Statewide data from the Coverdell Learning Collaborative “baseline period” (April 2013-September 2013) indicated that, of eligible patients discharged to an other health care facility during baseline, 25.1% had a neurology follow-up appointment scheduled prior to hospital discharge.

2016 Performance Improvement:

For calendar year 2016, the 56 Ohio Coverdell hospitals scheduled neurology follow-up appointments for 2,260 of 6,992 (32.3%) total eligible patients discharged to other health care facilities. This demonstrates a 28.7% performance improvement from the 2013 baseline period.

Neurology Provider Follow-Up Appointment Scheduling for Stroke Patients Discharged to Other Health Care Facility

The graph below shows the percentage of eligible stroke patients for whom your hospital scheduled, **prior to discharge to an Other Health Care Facility**, a follow-up appointment with a **Neurology Provider**, as documented in Get With The Guidelines® -Stroke, Ohio Special Initiatives Tab. The graph compares neurology appointment scheduling at your hospital to all Ohio Coverdell hospitals. Follow-up appointment scheduling data is displayed below for all stroke types combined (Overall) and for each stroke type. See page 2 for stroke type abbreviations and definitions. Inclusion and exclusion criteria are specified below the graph.



	(# of patients with scheduled appointment/total eligible patients)					
	Overall	IS	TIA	ICH	SAH	NOS
Ohio Coverdell	2260/6992	1711/5473	36/236	417/1032	94/237	2/14

Inclusion and Exclusion Criteria:

Neurology Appointments for Patients Discharged to Other Health Care Facility

- Includes patients: Final clinical diagnosis of Ischemic Stroke, Transient Ischemic Attack (<24 hours), Intracerebral Hemorrhage, Subarachnoid Hemorrhage, or Stroke Not Otherwise Specified; comfort care not documented/ unable to determine; discharged to Other Health Care Facility; age ≥ 18 years
- Excludes patients: age < 18 years; “comfort care only” specified; not admitted; discharge destination other than Other Health Care Facility; neurology or neurosurgery follow-up not ordered or recommended.