# Hospital Compare Quality Measure Results for New York CAHs: 2016

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#### **KEY FINDINGS:**

- Compared to all other CAHs nationally, New York's CAHs reported at a rate that was lower for inpatient measures (77.8% of CAHs vs. 85.6% nationally) and higher for outpatient measures (72.2% of CAHs vs. 60.2% nationally).
- New York's CAHs rank #32 for inpatient measure reporting and #13 for outpatient measure reporting among the 45 states participating in the Flex Program.
- Compared to scores on process of care measures for all other CAHs nationally in 2016, New York's CAHs scored significantly better on 2 measures, significantly worse on 4 measures, did not have significantly different performance on 8 measures, and had insufficient data to compare 6 measures.

#### INTRODUCTION

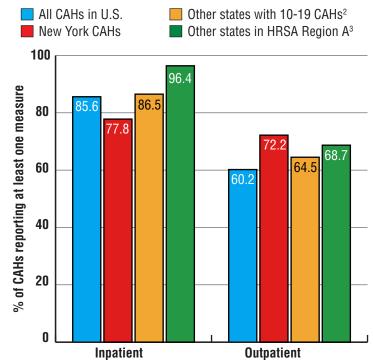
Since 2004, acute care hospitals paid under the Medicare Prospective Payment System (PPS) have had a financial incentive to publicly report quality measure data on the Centers for Medicare & Medicaid Services' (CMS) Hospital Compare website. Although Critical Access Hospitals (CAHs) do not face the same financial incentives as PPS hospitals to participate, the Hospital Compare initiative provides an important opportunity for CAHs to publicly report, assess and improve their performance on national standards of care.

This report is part of a series of 45 annual state-level reports that examine CAH participation in Hospital Compare, quality measure results, and trends. This set of state reports focus on data for inpatient and outpatient process of care and structural measures for 2016. State reports on Hospital Consumer Assessment of Healthcare Providers and Systems (HCAHPS) data for the same time period were previously released.

The report used the following data sources:

• Publicly-available Hospital Compare data down-

Figure 1. CAH Participation in Hospital Compare<sup>1</sup>, 2016



- Percentage of CAHs in each state or group of states reporting data to Hospital Compare on at least one measure.
- Group includes states with 10-19 CAHs: AK(14), AZ(14), FL(13), ME(16), NH(13), NV(13), PA(15), TN(15), UT(12), WY(16)
- 3. HRSA Region A includes MA(3), ME(16), NH(13), PA(15), VA(8), VT(8), WV(20)



loaded from the CMS Hospital Compare website on inpatient and outpatient process measures for 2016.

 Data for 2016 on process measures for which CAHs reported ten or fewer cases, which CMS suppresses from the Hospital Compare website, but makes available to the Federal Office of Rural Health Policy for aggregate CAH analyses.

Since the last set of CAH state reports, no measures have been added, though 19 inpatient measures were removed from Hospital Compare. This report includes 20 process of care measures and 6 structural measures that are potentially relevant to CAHs and for which some CAHs nationally have reported data; some states do not have any CAHs reporting some of these measures. This year, measures ED-1b and ED-2b were included as inpatient measures (where previously they were included as outpatient measures), to align with their CMS designation as inpatient measures. Definitions of the measures used in the report are provided on pages 8-9.

The Hospital Compare data in this report include several measures that are also measures for the Medicare Beneficiary Quality Improvement Project (MBQIP). Although the majority of CAHs report data on these measures to both Hospital Compare and MBQIP, the data in this report may differ from MBQIP reports because some CAHs only report data to one of these programs.

State Flex Grantees are required to work with all CAHs on all MBQIP core improvement activities in each of four quality domains: patient safety, patient engagement, care transitions, and outpatient care. States may also choose to work on additional improvement activities with CAHs based on need and relevance. The tables in the report indicate if a measure is an MBQIP core or additional improvement measure in addition to being a Hospital Compare measure. On the tables in this report, we have indicated measures that are core / additional improvement measures for MBQIP in FY 2018-21, although these data are from CY 2016.

#### **APPROACH**

For this report, summary measures were calculated to compare performance on the inpatient and outpatient process of care measures for all CAHs within New York to the performance of CAHs in all other states. The inpatient and outpatient measure scores were classified as:

1) insufficient data (less than 25 patients total); 2) not significantly different than CAHs in all other states; 3) significantly better than all other CAHs; or 4) significantly worse than all other CAHs. The percent of CAH patients receiving recommended care was not reported when the total number of CAH patients in a state (or nationally) with data on a measure was less than 25.

The percentages of patients that received recommended care for the inpatient and outpatient process of care quality measures were calculated by dividing the total number of patients in all CAHs in the state and all other CAHs nationally who received the recommended care by the total number of eligible patients in all CAHs in the state and all other CAHs nationally for each measure. For each inpatient and outpatient rate measure, the percent of CAH patients receiving recommended care in each state was then compared to the percent of CAH patients that received recommended care in all other states combined. Chi-square tests were used to calculate whether these differences were statistically significant (p <.05, which means that at least 95% of the time, the differences between CAHs in New York and all other CAHs nationally are equal to or more extreme than the observed differences in the data).

Median scores for the median time process measures were calculated by arranging the median times by quarter for all CAHs in the state and all other CAHs nationally from the lowest time to the highest time by hospital, and selecting the middle value based on number of patients. Wilcoxon-Mann-Whitney tests were used to compare the median times for CAHs in each state and all other CAHs.

For each structural measure, the percentages of CAHs in New York and all other states that reported no data, and those that reported yes or no on each measure, were calculated.



# REPORTING FOR PROCESS OF CARE MEASURES IN NEW YORK AND ALL OTHER STATES

As in previous years, the percent of CAHs reporting inpatient and outpatient process of care data to Hospital Compare varied considerably across states. In New York, 77.8% of the 18 CAHs reported data to Hospital Compare on at least one inpatient process of care measure for discharges in 2016. 72.2% of the 18 CAHs in New York reported data to Hospital Compare on at least one outpatient process of care measure for discharges in 2016.

Figure 2 (next page) compares the respective inpatient and outpatient reporting rates over time (2013 through 2016) among CAHs in four groups: those in New York, all CAHs nationally, other states with a similar number of CAHs as New York, and other states located in the same HRSA geographic region as New York.

Tables 1 and 2 (page 5) compare the respective inpatient and outpatient reporting rates of CAHs in New York to those located in the other 44 states participating in the Flex Program. The New York CAH inpatient reporting rate of 77.8% ranks #32 nationally; the New York CAH outpatient reporting rate of 72.2% ranks #13 nationally.

The number of CAHs reporting individual inpatient and outpatient process of care measures may differ by measure for several reasons. Some measures only apply to a portion of patients; others exclude patients with contraindications, or only apply to conditions not treated or procedures not performed in some CAHs

#### **RESULTS**

Process of Care Measures

Table 3 (page 6) displays the results for inpatient and outpatient process of care results for 2016 discharges for CAHs in New York and all other CAHs. Table 4 (page 7) displays results for median time measures (lower scores, indicating shorter median times, are better).

Structural Measures

Nationally, nearly three-fourths of CAHs did not report structural quality measure data. Table 5 (page 7) provides results for CAHs in New York and all other CAHs nationally that reported data for 2016.

#### **TOOLS AND RESOURCES**

The Flex Monitoring Team (FMT) provides free access to all publications and presentations on our website, <a href="www.flexmonitoring.org">www.flexmonitoring.org</a>, including a series of policy briefs on evidence-based QI programs and strategies that could be implemented by CAHs.

The Technical Assistance and Services Center (TASC) provides resources for State Flex Programs and CAHs on their website.

For profiles of State Flex Programs, State Contacts, and examples of Flex activities to support quality improvement, visit <a href="http://www.ruralcenter.org/tasc/flex-profile">http://www.ruralcenter.org/tasc/flex-profile</a>.

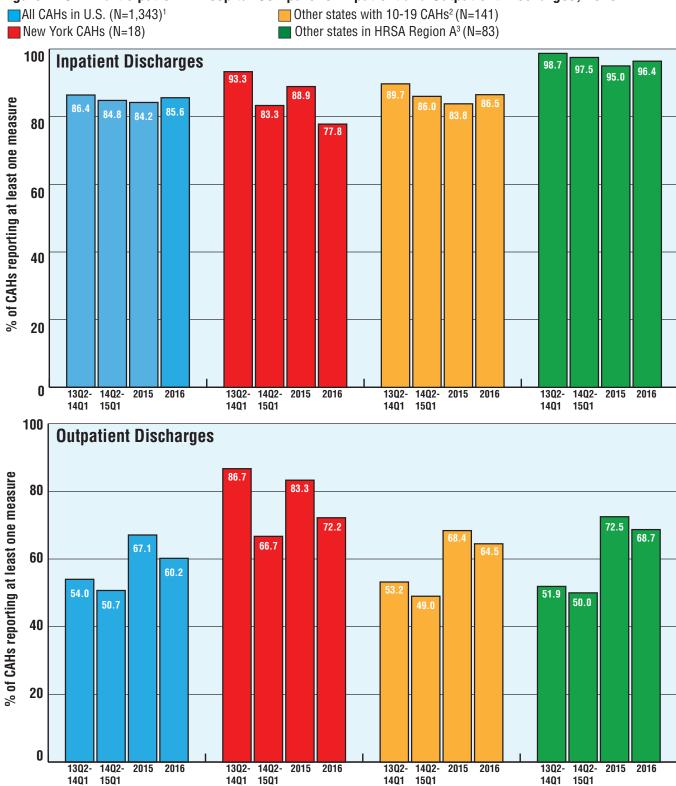
For resources focused on the Medicare Beneficiary Quality Improvement Program (MBQIP), visit <a href="https://www.ruralcenter.org/tasc/mbqip">https://www.ruralcenter.org/tasc/mbqip</a>.

### **REFERENCES**

- 1. The Flex Monitoring Team has published national Hospital Compare reports since 2006. All are available for download at <a href="http://www.flexmonitoring.org/publications/annualhospital-compare-results/">http://www.flexmonitoring.org/publications/annualhospital-compare-results/</a>.
- 2. Previous state-level reports are available on the Flex Monitoring Team website at <a href="http://www.flexmonitoring.org/data/state-level-data">http://www.flexmonitoring.org/data/state-level-data</a>.

(Figure 2, Tables 1–5, and measure definitions begin on next page)

Figure 2. CAH Participation in Hospital Compare for Inpatient and Outpatient Discharges, 2016



- 1. Listed N values refer to most recent data (2016) only.
- 2. Group includes AK(14), AZ(14), FL(13), ME(16), NH(13), NV(13), PA(15), TN(15), UT(12), WY(16)
- 3. HRSA Region A includes MA(3), ME(16), NH(13), PA(15), VA(8), VT(8), WV(20)

Table 1. State Rankings of CAH Reporting Rates for Inpatient Quality Measures, 2016

	State	-	% of CAHs
Rank	State	CAHs reporting	/o UI CATS
	Michigan	36	
	Indiana	35	
	Georgia	30	
	Arkansas	29	
	Maine	16	
1	Pennsylvania	15	100.0
	Utah	12	
	Virginia	8	
	South Carolina	5	
	Alabama	4	
	Massachusetts	3	
12	Minnesota	77	98.7
13	Wisconsin	57	98.3
14	Washington	38	97.4
15	Illinois	49	96.1
16	Nebraska	61	95.3
17	West Virginia	19	95.0
18	North Dakota	34	94.4
19	Wyoming	15	93.8
20	New Hampshire	12	92.3
21	Oregon	23	92.0
22	Kansas	75	89.3
23	Idaho	24	88.9
24	California	30	88.2
25	Vermont	7	87.5
26	Tennessee	13	86.7
27	North Carolina	18	85.7
	All CAHs	1,150	85.6
28	Kentucky	23	85.2
29	Colorado	25	83.3
30	Iowa	68	82.9
31	Ohio	27	81.8
	New York	14	01.0
32	New Mexico	7	77.8
	Nevada		
34	Florida	10	76.9
	Montana	36	
36	Missouri	27	75.0
38	Alaska	10	71.4
39	Oklahoma	26	70.3
40	Mississippi	20	64.5
41	Arizona	9	64.3
42	South Dakota	24	63.2
43	Louisiana	16	59.3
43	Texas	48	58.5
44			· · · · · · · · · · · · · · · · · · ·
40	Hawaii	5	55.6

Table 2. State Rankings of CAH Reporting Rates for Outpatient Quality Measures, 2016

Rank         State         CAHs reporting         % of CAH           1         Alabama         4         100.           2         Nebraska         63         98.           3         Michigan         35         97.           4         Pennsylvania         14         93.           5         Minnesota         70         89.           6         Indiana         31         88.           7         Maine Wyoming         13         81.           9         Wisconsin         45         77.           10         Virginia         6         75.	0 4 2 3 7 6	
2       Nebraska       63       98.         3       Michigan       35       97.         4       Pennsylvania       14       93.         5       Minnesota       70       89.         6       Indiana       31       88.         7       Maine Wyoming       13       81.         9       Wisconsin       45       77.	4 2 3 7 6	
3       Michigan       35       97.         4       Pennsylvania       14       93.         5       Minnesota       70       89.         6       Indiana       31       88.         7       Maine Wyoming       13       81.         9       Wisconsin       45       77.	2 3 7 6	
4       Pennsylvania       14       93.         5       Minnesota       70       89.         6       Indiana       31       88.         7       Maine Wyoming       13       81.         9       Wisconsin       45       77.	3 7 6	
5         Minnesota         70         89.           6         Indiana         31         88.           7         Maine Wyoming         13         81.           9         Wisconsin         45         77.	7 6	
6       Indiana       31       88.         7       Maine Wyoming       13       81.         9       Wisconsin       45       77.	6	
7 Maine 13 81. 9 Wisconsin 45 77.		
Y         Wyoming         13         81.           9         Wisconsin         45         77.	2	
	J	
<b>10</b> Virginia 6 75	6	
	0	
<b>11</b> Washington 29 74.	4	
<b>12</b> Tennessee 11 73.	3	
<b>13</b> New York 13 72.	2	
<b>14</b> Oregon 18 72.	0	
<b>15</b> Georgia 21 70.	0	
<b>16</b> North Dakota 25 69.	4	
<b>17</b> Nevada 9 69.	2	
<b>18</b> Oklahoma 25 67.	6	
Ohio 22 North Carolina 14 Utah 8 Massachusetts 2	7	
<b>23</b> lowa 54 65.	9	
24 New Hampshire 8 61.	5	
<b>25</b> Illinois 31 60.		
All CAHs 808 60.	2	
26 West Virginia 12 60.		
<b>27</b> Kentucky 16 59.		
<b>28</b> Mississippi 18 58.		
<b>29</b> Arizona 7 50.	_	
<b>30</b> Arkansas 13 44.	8	
31 New Mexico 4 44.	4	
<b>33</b> Kansas 33 39.	3	
<b>34</b> Florida 5 38.	5	
<b>35</b> Colorado 11 36.	7	
	36.1	
<b>37</b> California 12 35.		
<b>38</b> Texas 28 34.	1	
<b>39</b> Montana 16 33.	3	
Idaho 9		
Idaho         9           41         Louisiana         8         29.	6	
Idano 9		
10ano         9           41         Louisiana         8         29.	0	
41     Louisiana     8     29.       42     Vermont     2     25.	0 7	



# Table 3. Inpatient and Outpatient Process of Care Results for Patients Discharged from Reporting CAHs in New York and All Other States, 2016

Significantly better than rate for all other CAHs nationally (p<.05)

Significantly worse than rate for all other CAHs nationally (p<.05)

			NY	(n=18)	All other CAH	ls (n=1,325)
	Code	Description	CAHs reporting	% of patients <sup>1</sup>	CAHs reporting	% of patients <sup>1</sup>
Inpatient	IMM-2 <sup>†</sup>	Immunization for influenza	13	82.2	936	87.4
	OP-27/IMM-3 <sup>†</sup>	Healthcare workers given influenza vaccination	6	85.4	947	87.7
	PC-01 <sup>‡</sup>	Early elective delivery (lower is better)	1	*	198	*
	STK-4	Thrombolytic therapy	0	*	119	*
	VTE-5	Warfarin therapy discharge instructions	2	*	291	*
	VTE-6	Incidence of potentially-preventable VTE (lower is better)	0	*	94	*
	Code	Description	CAHs reporting	% of patients <sup>1</sup>	CAHs reporting	% of patients <sup>1</sup>
	0P-2 <sup>†</sup>	Fibrinolytic therapy received within 30 minutes	9	*	333	*
	0P-4 <sup>†</sup>	Aspirin at arrival	13	96.3	745	95.3
Outpatient	0P-22 <sup>†</sup>	Patient left without being seen (lower is better)	6	1.1	555	1.1
	0P-23 <sup>‡</sup>	Received head CT scan interpretation within 45 minutes	8	65.2	471	62.2
	OP-29	Appropriate follow-up interval, colonoscopy, average-risk patients	3	87.0	149	75.9
	0P-30	Appropriate follow-up interval, colonoscopy, patients with polyps	3	94.6	139	92.0

<sup>1.</sup> Rates without highlights were not significantly different from comparable rates in all CAHs nationally.

<sup>\*</sup> Insufficient data to calculate rate (<25 patients).

<sup>†</sup> MBQIP core measure FY 2018-21 (this table shows Hospital Compare data)

<sup>‡</sup> MBQIP additional improvement measure FY 2018-21 (this table shows Hospital Compare data)



# Table 4. Median Time to Patients Receiving Recommended Care at CAHs in New York and All Other States, 2016

Significantly better than rate for all other CAHs nationally (p<.05)

Significantly worse than rate for all other CAHs nationally (p<.05)

	Note: lower is better for all measures in this table.	NY (n=18)		All other CAHs (n=1,325)	
Code	Description	CAHs reporting	Minutes <sup>1</sup>	CAHs reporting	Minutes <sup>1</sup>
ED-1b <sup>†</sup>	Median time from ED admission to ED departure for admitted patients	9	255.5	642	201.0
ED-2b <sup>†</sup>	Admit decision time to ED departure time for admitted patients	9	86.8	642	46.5
0P-1 <sup>†</sup>	Median time to fibrinolysis	9	*	333	*
OP-3b <sup>†</sup>	Median time to transfer to another facility - acute coronary intervention	7	78.0	407	66.0
0P-5 <sup>†</sup>	Median time to ECG	13	8.0	744	7.5
OP-18b <sup>†</sup>	Median time from ED arrival to ED departure for discharged patients	9	88.0	715	104.8
0P-20 <sup>†</sup>	Median time from door to diagnostic evaluation	9	14.0	716	17.0
OP-21 <sup>†</sup>	Median time to pain management for long bone fracture	13	41.3	684	45

<sup>1.</sup> Median minutes to receiving care. Lower is better for all measures. Rates without highlights were not significantly different from comparable rates in all CAHs nationally.

# Table 5. Structural Quality Measures Reported by CAHs in New York and All Other States, 2016

		NY CAHs (n=18)			All other	All other CAHs (n=1,325)			
Code	Description	No data	No	Yes	No data	No	Yes		
0P-12	Ability to receive lab data directly to certified EHR	72.2	5.6	22.2	74.1	2.0	23.8		
0P-17	Ability to track clinical results between visits	77.8	0.0	22.2	74.3	2.7	22.9		
0P-25 <sup>‡</sup>	Use of safe surgery checklist: outpatient	77.8	0.0	22.2	71.2	1.9	26.9		
SM-PART-NURSE	Nursing care registry	77.8	16.7	5.6	75.2	17.7	7.1		
SM-PART-GEN-SURG	General surgery registry	77.8	22.2	0.0	75.4	22.6	2.0		
SM-SS-CHECK	Use of safe surgery checklist: inpatient	77.8	5.6	16.7	72.7	2.0	25.3		

<sup>‡</sup> MBQIP additional improvement measure FY 2018-21 (this table shows Hospital Compare data)

<sup>\*</sup> Insufficient data to calculate rate (<25 patients).

<sup>†</sup> MBQIP core measure FY 2018-21 (this table shows Hospital Compare data)

<sup>‡</sup> MBQIP additional improvement measure FY 2018-21 (this table shows Hospital Compare data)



#### **DEFINITIONS OF MEASURES**

Note: higher numbers reflect better performance, except where indicated below.

- ED-1b: Admit Decision Time to Emergency Department (ED) Departure Time for Admitted Patients median time from admit decision time to time of departure from the ED for patients admitted to inpatient status. (A lower number is better.)
- ED-2b: Median Time from Emergency Department (ED) Arrival to ED Departure for Admitted Patients median time from ED arrival to time of departure from the ED for patients admitted to the facility from the ED (A lower number is better.)
- IMM-2: Influenza Vaccination This prevention measure addresses acute care hospitalized inpatients age 6 months and older who were screened for seasonal influenza immunization status and were vaccinated prior to discharge if indicated. The numerator captures two activities: screening and the intervention of vaccine administration when indicated. As a result, patients who had documented contraindications to the vaccine, patients who were offered and declined the vaccine, and patients who received the vaccine during the current year's influenza season but prior to the current hospitalization are captured as numerator events.
- **OP-1**: Median Time to Fibrinolysis median time from arrival to fibrinolysis for patients that received fibrinolysis. (A lower number is better.)
- OP-2: Fibrinolytic therapy received within 30 minutes of arrival Acute Myocardial Infarction (AMI) patients receiving fibrinolytic therapy during the hospital stay and having a time from hospital arrival to fibrinolysis of 30 minutes or less.
- OP-3b: Median Time to Transfer to Another Facility for Acute Coronary Intervention – Median number of minutes before outpatients with heart attack who needed specialized care were transferred to another hospital. (A lower number is better.)
- **OP-4:** Aspirin at arrival Acute Myocardial Infarction (AMI) patients without aspirin contraindications who

- received aspirin within 24 hours before or after hospital arrival.
- OP-5: Median Time to echocardiogram (ECG) median number of minutes before outpatients with heart attack (or with chest pain that suggests a possible heart attack) got an ECG. (A lower number is better).
- OP-12: Ability to Receive Lab Data Directly to Electronic Health Record (EHR) the ability for providers with Health Information Technology (HIT) to receive laboratory data directly into their ONC-certified EHR system as discrete searchable data.
- OP-17: Ability to Track Clinical Results between Visits the ability for a facility to track pending laboratory tests, diagnostic studies, or patient referrals through the ONC-certified Electronic Health Record (EHR) system.
- OP-18b: Median Time from Emergency Department (ED) Arrival to ED Departure for Discharged Patients
   median time from ED arrival to time of departure from the ED for patients discharged from the ED (a lower number is better).
- OP-20: Door to Diagnostic Evaluation by Qualified Medical Personnel - median time from Emergency Department (ED) arrival to provider contact for ED patients (a lower number is better).
- OP-21: Median Time to Pain Management for Long Bone Fracture - median time from Emergency Department (ED) arrival to time of initial oral or parenteral pain medication administration for ED patients with a principal diagnosis of long bone fracture (a lower number is better).
- OP-22: Left Without Being Seen percent of patients who leave the Emergency Department (ED) without being evaluated by a physician, advanced practice nurse (APN), or physician's assistant (PA). (A lower number is better.)
- OP-23: Head CT or MRI Scan Results for Acute Ischemic Stroke or Hemorrhagic Stroke Patients who Received Head CT or MRI Scan Interpretation Within 45 Minutes of Emergency Department (ED) Arrival
   percentage of acute ischemic stroke or hemorrhagic

stroke patients who arrive at the ED within 2 hours of the onset of symptoms who have a head CT or MRI scan performed during the stay and have interpretation of the CT or MRI scan within 45 minutes of arrival.

- OP-25: Use of Safe Surgery Checklist (Outpatient) whether or not a facility used a checklist for outpatient surgical procedures during each of the three critical perioperative periods (prior to administration of anesthesia, prior to skin incision, and closure of incision / prior to patient leaving the operating room).
- OP-27/IMM-3: Health Care Workers Given Influenza Vaccination Facilities must report vaccination data for three categories of Healthcare Personnel (HCP): employees on payroll; licensed independent practitioners (who are physicians, advanced practice nurses, and physician assistants affiliated with the hospital and not on payroll); and students, trainees, and volunteers aged 18 or older. Only HCP physically working in the facility for at least one day or more between October 1 and March 31 should be counted. Data on vaccinations received at the facility, vaccinations received outside of the facility, medical contraindications, and declinations are reported for the three categories of HCP.
- OP-29: Appropriate Follow-up Interval for Normal Colonoscopy in Average Risk Patients - Percentage of patients aged 50 to 75 years of age receiving a screening colonoscopy without biopsy or polypectomy who had a recommended follow-up interval of at least 10 years for repeat colonoscopy documented in their colonoscopy repor
- OP-30: Colonoscopy Interval for Patients with a History of Adenomatous Polyps Percentage of patients aged 18 years and older receiving a surveillance colonoscopy, with a history of a prior colonic polyp(s) in previous colonoscopy findings, who had a follow-up interval of 3 or more years since their last colonoscopy.
- PC-01: Elective Delivery patients with elective vaginal deliveries or elective cesarean sections at greater than or equal to 37 and less than 39 weeks of gestation completed (a lower number is better).
- SM-PART-GEN-SURG (SM-4): General Surgery Registry – participation in a systematic clinical database for general surgery.

- SM-PART-NURSE (SM-3): Nursing Care Registry participation in a systematic clinical database for nursing-sensitive care.
- SM-SS-CHECK (SM-5): Use of Safe Surgery Checklist (inpatient) – whether or not a facility used a checklist for inpatient surgical procedures during each of the three critical perioperative periods (prior to administration of anesthesia, prior to skin incision, and closure of incision / prior to patient leaving the operating room).
- STK-4: Thrombolytic Therapy acute ischemic stroke patients who arrive at this hospital within two hours of time last known well and for whom intravenous tissue plasminogen activator (IV tPA) was initiated at this hospital within three hours of time last known well.
- VTE-5: Venous Thromboembolism (VTE) Warfarin Therapy Discharge Instructions the number of patients diagnosed with confirmed VTE that are discharged to home, home care, court/law enforcement or home on hospice care on warfarin with written discharge instructions that address all four criteria: compliance issues, dietary advice, follow-up monitoring, and information about the potential for adverse drug reactions/interactions.
- VTE-6: Hospital Acquired Potentially-Preventable Venous Thromboembolism (VTE) the number of patients diagnosed with confirmed VTE during hospitalization (not present at admission) who did not receive VTE prophylaxis between hospital admission and the day before the VTE diagnostic testing order date (a lower number is better).

For detailed measure specifications:

- Specifications Manual for National Hospital Inpatient Quality Measures <a href="http://bit.ly/InpManual">http://bit.ly/InpManual</a>, accessed January 2017
- Specifications Manual for National Hospital Outpatient Quality Measures <a href="http://bit.ly/OutpManual">http://bit.ly/OutpManual</a>, accessed January 2017
- Prenatal measure specifications <a href="http://bit.ly/Prenatal-Specs">http://bit.ly/Prenatal-Specs</a>, accessed January 2017

For more information on this study, please contact Megan Lahr at lahrx074@umn.edu



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