

Cardiac Rehabilitation Referral Strategy

Using Clinical Data Registries to Access Cardiac Rehabilitation Referral Data

Subject	Content
Definition/Description	Regularly extract and share data visualizations of cardiac rehabilitation (CR) referral data captured in formal data registries to improve CR referral performance.
Key Terms/ Abbreviations	<ul style="list-style-type: none"> • ACC = American College of Cardiology • AHA = American Heart Association • CABG = coronary artery bypass grafting • CAD = coronary artery disease • CR = cardiac rehabilitation • CR referral = includes documentation that (1) an order for CR was placed, (2) a discussion took place with the patient of the benefits of CR and the process of enrolling in CR, and (3) patient referral information was communicated to the receiving CR program. • CSA = chronic stable angina • EHR = electronic health record • GWTG = Get With The Guidelines • HF = heart failure • HFrEF = heart failure with reduced ejection fraction • MI = myocardial infarction • NQF = National Quality Forum • PCI = percutaneous coronary intervention • PM = performance measure • QI = quality improvement; in this case, improving the quality of patient care and outcomes related to CR. • Registry = Clinical data registries provide benchmarks and allow tracking of metrics over time. • STEMI = ST-elevation myocardial infarction. • STS = Society of Thoracic Surgeons
Background and Purpose	For some CR programs, accessing your institution's EHR data to generate reports on CR referral may be prohibitive for a number of reasons. Alternatively, your hospital may participate in one or more clinical data registries that already captures data on CR referral.

	<p>As of April 2018, the following six registries collect data on CR referral for patients who can benefit from CR:</p> <ul style="list-style-type: none"> • American College of Cardiology (ACC) – Chest Pain – MI Registry® (formerly the ACTION Registry®) • ACC – CathPCI Registry® • American Heart Association (AHA) – Get With The Guidelines (GWTG) – CAD • AHA – GWTG – HF • Society for Thoracic Surgery (STS) Adult Cardiac Surgery Database • ACC – PINNACLE Registry® <p>These registries generate reports with benchmark data on CR referral that can be accessed by participating hospitals and outpatient clinics. See Table 1 below for a summary of each registry.</p> <p>Registry participants can incorporate these data into dashboards or data visualizations that are regularly and systematically shared with cardiac care teams to improve performance in CR referral.</p>
<p>Relevant Metric(s)</p>	<p>To date, national registries include one the following two National Quality Forum-endorsed measures:</p> <ul style="list-style-type: none"> • CR Patient Referral from an Inpatient Setting: Percentage of eligible patients admitted to a hospital who are referred to an early outpatient cardiac rehabilitation/secondary prevention program (NQF 0642) • CR Patient Referral from an Outpatient Setting: Percentage of eligible patients evaluated in an outpatient setting who are referred to an outpatient cardiac rehabilitation/secondary prevention program (NQF 0643) <p>With the release of the 2018 ACC/AHA clinical performance and quality measures,¹ there is an opportunity for hospitals or health systems to extract and report on the following CR referral measures:</p> <ul style="list-style-type: none"> • PM-1 CR Patient Referral from an Inpatient Setting: Percentage of patients, age ≥18 y, hospitalized with a qualifying event/diagnosis for CR in the previous 12 mo including: an MI, CSA, or who, during hospitalization, have undergone CABG surgery, PCI, cardiac valve repair/replacement, or heart transplantation, are to be referred to an outpatient CR program.

	<ul style="list-style-type: none"> • PM-2 Exercise Training Referral for HF/EF From Inpatient Setting: Percentage of patients, age ≥ 18 y, hospitalized with a primary diagnosis of HF/EF in the previous 12 mo, who are referred for outpatient exercise training (or regular physical activity), typically delivered in the setting of an outpatient CR program. • PM-3: Cardiac Rehabilitation Patient Referral From an Outpatient Setting: Percentage of patients, age ≥ 18 y, evaluated in an outpatient setting, who within the previous 12 mo have had a qualifying event/diagnosis for CR including: MI, CABG surgery, a PCI, cardiac valve surgery, or heart transplantation, or who have CSA and have not already participated in a CR program for the qualifying event/diagnosis are to be referred to such a program. • PM-4: Exercise Training Referral for HF/EF From an Outpatient Setting: Percentage of patients, age ≥ 18 y, evaluated in an outpatient setting who within the previous 12 mo, have had a new HF/EF event or exacerbation, and have not participated in an exercise training program, such as provided in CR programs, for the qualifying event/diagnosis, are to be referred for exercise training.
<p>Process Description/ Processes Impacted</p>	<ol style="list-style-type: none"> 1. Identify in which of the above six mentioned registries your hospital or outpatient clinic(s) participates. 2. Determine which department participates in the registry, likely Cardiology and/or Cardiothoracic Surgery. Identify and talk with the registry steward(s) in the pertinent departments to gain regular access to pre-programmed reports on CR referral. You may be able to work with the registry steward to stratify by diagnoses, referring physicians, or other pertinent variables or to generate customized queries. 3. Use these reports as provided or repurpose the aggregated data into dashboards or other data visualizations and share with institution leadership, referring physicians and other staff engaged in the CR referral process, and QI staff as a tool to drive improvement in CR referral or to celebrate successes. For example, at the University of California Davis Medical Center, the hospital's performance on CR referrals of patients who have had a STEMI (from the Chest Pain – MI Registry®) and patients who had a PCI (from the CathPCI Registry®) is presented in a dashboard to the Cardiac Services Performance Improvement Committee on a quarterly basis. 4. Regularly review and discuss the CR referral metrics, goals, and the hospitals' overall CR referral performance. 5. Explore which evidence-based QI strategies your hospital may like to implement to improve CR referral performance.

<p>Key People/ Departments to Engage</p>	<ul style="list-style-type: none"> • CR Program’s Medical Director • CR Program’s Coordinator or Supervisor • QI/Clinical Effectiveness and Quality Department • Medical Staff Administrator • Referring Clinicians
<p>Data Sources</p>	<ul style="list-style-type: none"> • ACC – Chest Pain – MI Registry® • ACC – CathPCI Registry® • AHA – GWTG – CAD • AHA – GWTG – HF • STS – Adult Cardiac Surgery Database • ACC – PINNACLE Registry®
<p>Cost Concerns</p>	<p>There is a cost for subscribing to the national registries but no additional cost to access reports on CR referral. Please refer to their respective websites below to find this information.</p> <p>Remaining costs are attributed to the time and effort it takes to understand the facility’s and referring clinician’s systems to report quality data and to connect with the appropriate registry stewards in each department.</p>
<p>Timeline</p>	<p>The timeline varies upon which CR referral metrics are available to you.</p>
<p>Supporting Material</p>	<p>Table 1. Formal Clinical Data Registries that Capture CR Referral for Subsets of Eligible Patients</p> <p>Sample Registry Reports</p> <ul style="list-style-type: none"> • Figure 1. Box and whisker plot comparing your hospital’s data with US hospitals at the 50th and 90th percentiles (Chest Pain - MI) • Figure 2. Graph comparing your hospital’s quarterly performance data with a similar hospitals comparison group and the US hospitals’ average and 90th percentiles (Chest Pain - MI) • Figure 3. Quarterly numerator, denominator, and percent performance data for your hospital with aggregate comparisons of the four most recent quarters between your hospital, a similar comparison group, and participating US hospitals (Chest Pain - MI) • Figure 4. Cardiac rehabilitation patient referral from an inpatient setting including the discharging provider name and the National Provider Identifier (NPI) (Chest Pain - MI)

	<ul style="list-style-type: none"> • Figure 5. Quarterly numerator, denominator, and percent performance data for your hospital with aggregate comparisons of the four most recent quarters between your hospital, a similar comparison group, and participating US hospitals (CathPCI) • Figure 6. Cardiac Rehabilitation Referral from inpatient setting – by attending physician (GWTG – CAD) • Figure 7. Cardiac Rehabilitation Referral from inpatient setting – My Hospital compared to All GWTG-CAD Hospitals (GWTG – CAD) • Figure 8. Percent of heart failure patients referred to outpatient cardiac rehabilitation by race (GWTG – HF) • Figure 9. Annual performance of your hospital compared with a similar hospital group and all participating hospitals (Adult Cardiac Surgery Database) • Figure 10. Box and whisker plot comparing your hospital's data with US hospitals at various percentiles of performance (PINNACLE) • Figure 11. Interpreting Box and Whisker Plots <p>For more information:</p> <ul style="list-style-type: none"> • ACC registries: https://cvquality.acc.org/NCDR-Home/registries • AHA GTWG – CAD: http://www.heart.org/HEARTORG/Professional/GetWithTheGuidelines/GetWithTheGuidelines-CAD/Get-With-The-Guidelines-CAD_UCM_494972_SubHomePage.jsp • STS – Adult Cardiac Surgery Database: https://www.sts.org/registries-research-center/sts-national-database/sts-adult-cardiac-surgery-database
<p>References</p>	<ol style="list-style-type: none"> 1. Thomas RJ, Balady G, Banka G, et al. 2018 ACC/AHA clinical performance and quality measure for cardiac rehabilitation: a report of the American College of Cardiology/American Heart Association Task Force on Performance Measure. <i>J Am Coll Cardiol.</i> 2018. E-pub ahead of print 2. Harrison RW, Simon D, Miller AK, et al. Association of hospital myocardial infarction volume with adherence to American College of Cardiology/American Heart Association performance measures: Insights from the National Cardiovascular Data Registry. <i>Am Heart J.</i> 2016;178:95-101. 3. Virani SS, Maddox TM, Chan PS, et al. Provider Type and Quality of Outpatient Cardiovascular Disease Care: Insights From the NCDR PINNACLE Registry. <i>J Am Coll Cardiol.</i> 2015;66(16):1803-12. 4. Chui PW, Parzynsk CS, Nallamothu BK, et al. Hospital Performance on Percutaneous Coronary Intervention Process and Outcomes Measures. <i>J Am Heart Assoc.</i> 2017;6:e004276.

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Table 1 – Formal Clinical Data Registries that Capture CR Referral for Subsets of Eligible Patients

Organization	Registry	Patient Population	Setting
ACC	Chest Pain - MI	Patients with STEMI/NSTEMI	Inpatient
ACC	CathPCI	Patients who receive diagnostic catheterization and/or percutaneous coronary intervention (PCI) procedures	Inpatient
ACC	PINNACLE	Patients with coronary artery disease, hypertension, heart failure, and atrial fibrillation	Outpatient
AHA	GWTG – CAD	Patients with STEMI/NSTEMI	Inpatient
AHA	GWTG – HF	Patients hospitalized with heart failure	Inpatient
STS	Adult Cardiac Surgery Database	Patients with CABG, valve repair/replacement, or heart transplant	Inpatient

SAMPLE REGISTRY REPORTS

ACC Chest Pain - MI Registry – Executive Summary section

Figure 1. Box and whisker plot comparing your hospital's data with US hospitals at the 50th and 90th percentiles

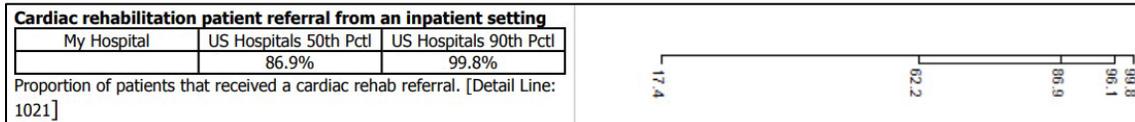
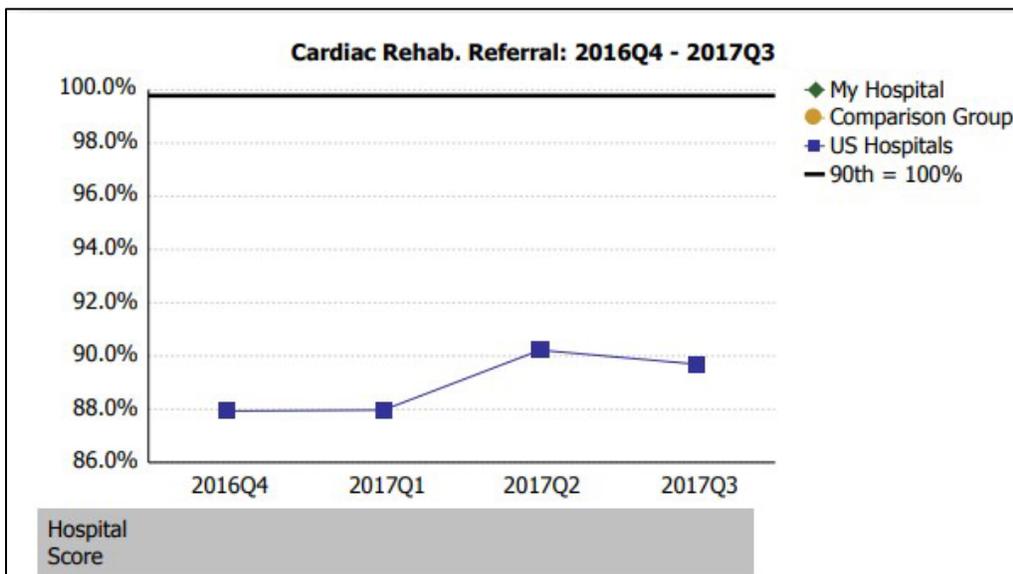


Figure 2. Graph comparing your hospital's quarterly performance data with a similar hospitals comparison group and the US hospitals' average and 90th percentiles



ACC Chest Pain – MI Registry – Detail Section

(Cardiac rehab referral is reported for all AMI and STEMI only patients)

Figure 3. Quarterly numerator, denominator, and percent performance data for your hospital with aggregate comparisons of the four most recent quarters between your hospital, a similar comparison group, and participating US hospitals

Description	2016Q4			2017Q1			2017Q2			2017Q3			My Hospital R4Q			US Comparison Group Pts R4Q		US Registry Pts R4Q	
	Num	Den	%	Num	Den	%	Num	%	Num	%									
Cardiac rehabilitation patient referral from an inpatient setting																		132,318	79.9

Figure 4. Cardiac rehabilitation patient referral from an inpatient setting including the discharging provider name and the National Provider Identifier

Patient Level Detail Report

Metric Description	Den	%	Den	%	Num	Den	%
21 - Cardiac rehabilitation patient referral from an inpatient setting	135	99.3			266	270	98.5

Patient Level Detail Report										
Year/Quarter	Arrival Date/Time	Payor Type	Discharge Date	STEMI/NSTEMI	Discharge Provider Name	NPI	Discharge Status	Discharge Location	Comfort Measures	Cardiac Rehab Referral
2018Q2	05/08/2018 11:21	Medicare	05/14/2018	NSTEMI			Alive	Home	No	Yes
2018Q2	06/06/2018 22:03	Private	06/10/2018	NSTEMI			Alive	Home	No	Yes
2018Q2	06/15/2018 20:17	Private	06/29/2018	STEMI			Alive	Home	No	Yes
2018Q2	05/18/2018 19:50	Private	05/21/2018	NSTEMI			Alive	Home	No	Yes
2018Q2	04/15/2018 01:17	Medicare	04/18/2018	NSTEMI			Alive	Home	No	Yes
2018Q2	05/03/2018 19:39	Private, Medicare	05/05/2018	NSTEMI			Alive	Home	No	Yes
2018Q2	06/02/2018 08:25	Private, Medicare	06/07/2018	NSTEMI			Alive	Home	No	Yes
2018Q2	06/03/2018 21:28	Private	06/07/2018	NSTEMI			Alive	Home	No	Yes
2018Q2	06/04/2018 16:32	Private, Medicare, Military	06/07/2018	STEMI			Alive	Home	No	Yes
2018Q2	06/21/2018 13:26	Private, Medicare	06/22/2018	NSTEMI			Alive	Home	No	Yes
2018Q2	04/06/2018 13:41	Private	04/11/2018	NSTEMI			Alive	Home	No	Yes
2018Q2	05/20/2018 05:51	Private	05/21/2018	NSTEMI			Alive	Home	No	Yes
2018Q2	05/23/2018 11:41	Medicare	05/27/2018	NSTEMI			Alive	Home	No	Yes
2018Q2	04/18/2018 19:03	Medicare, Military	04/20/2018	NSTEMI			Alive	Home	No	Yes
2018Q2	04/11/2018 13:51	None	04/13/2018	NSTEMI			Alive	Home	No	Yes
2018Q2	05/06/2018 15:01	Medicaid	05/14/2018	NSTEMI			Alive	Nursing home	No	Yes

ACC CathPCI Registry – Detail Section

Figure 5. Quarterly numerator, denominator, and percent performance data for your hospital with aggregate comparisons of the four most recent quarters between your hospital, a similar comparison group, and participating US hospitals

Description	2016Q4			2017Q1			2017Q2			2017Q3			My Hospital R4Q			US Vol Group Pts R4Q		US Registry Pts R4Q	
	Num	Den	%	Num	Den	%	Num	%	Num	%									
Cardiac rehabilitation referral																		418,968	63.1

GWTG – CAD

Figure 6. Cardiac Rehabilitation Referral from inpatient setting – by attending physician

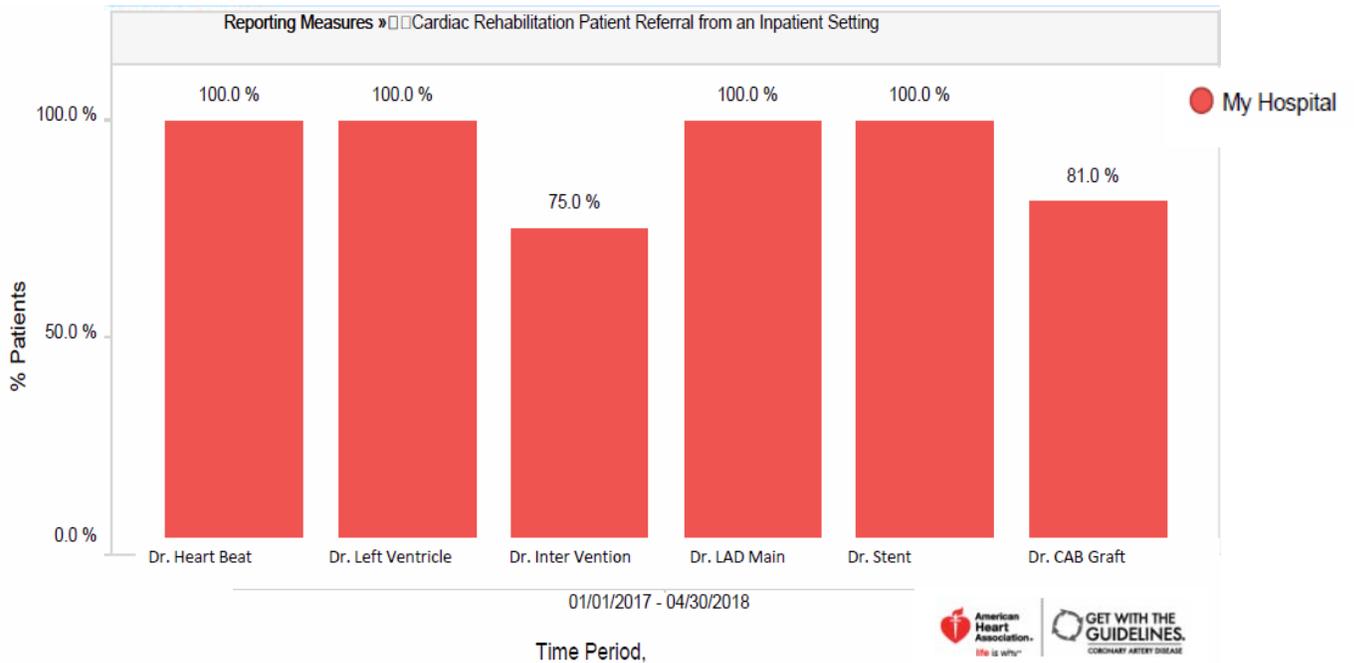
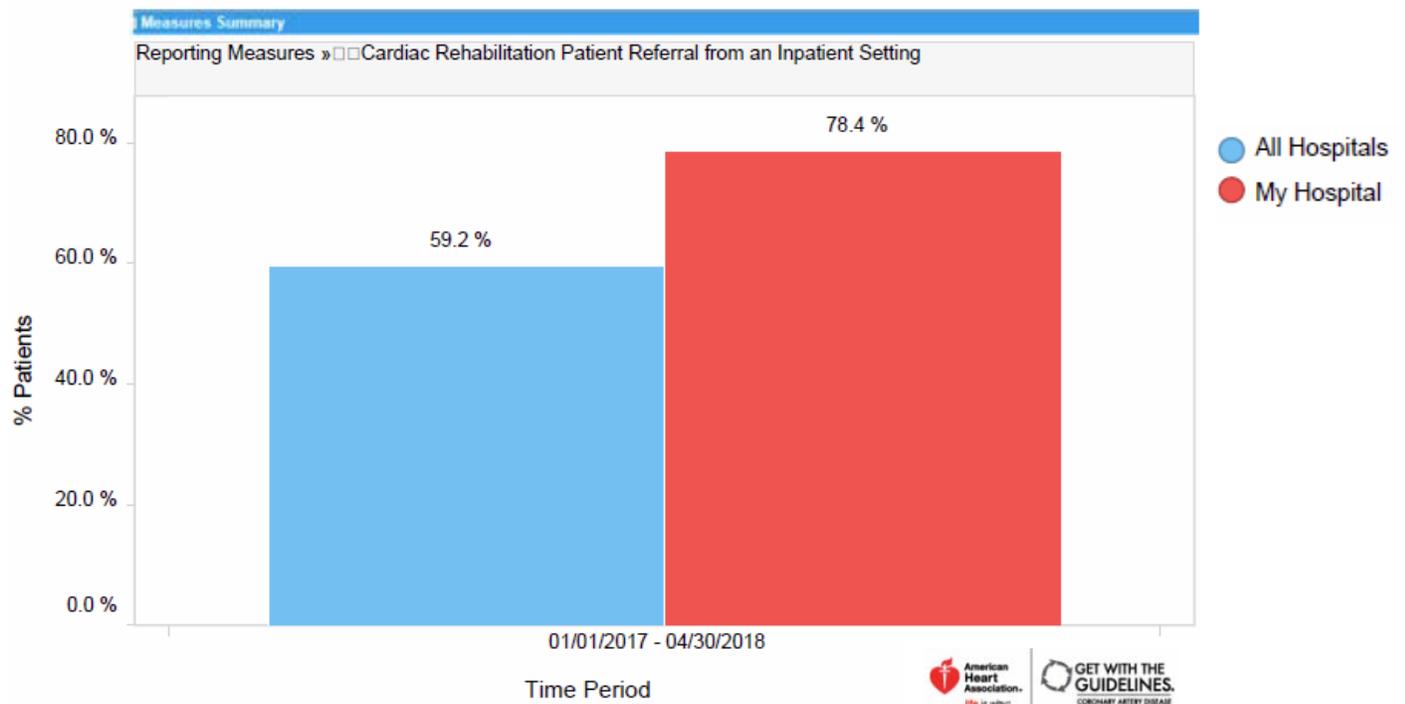
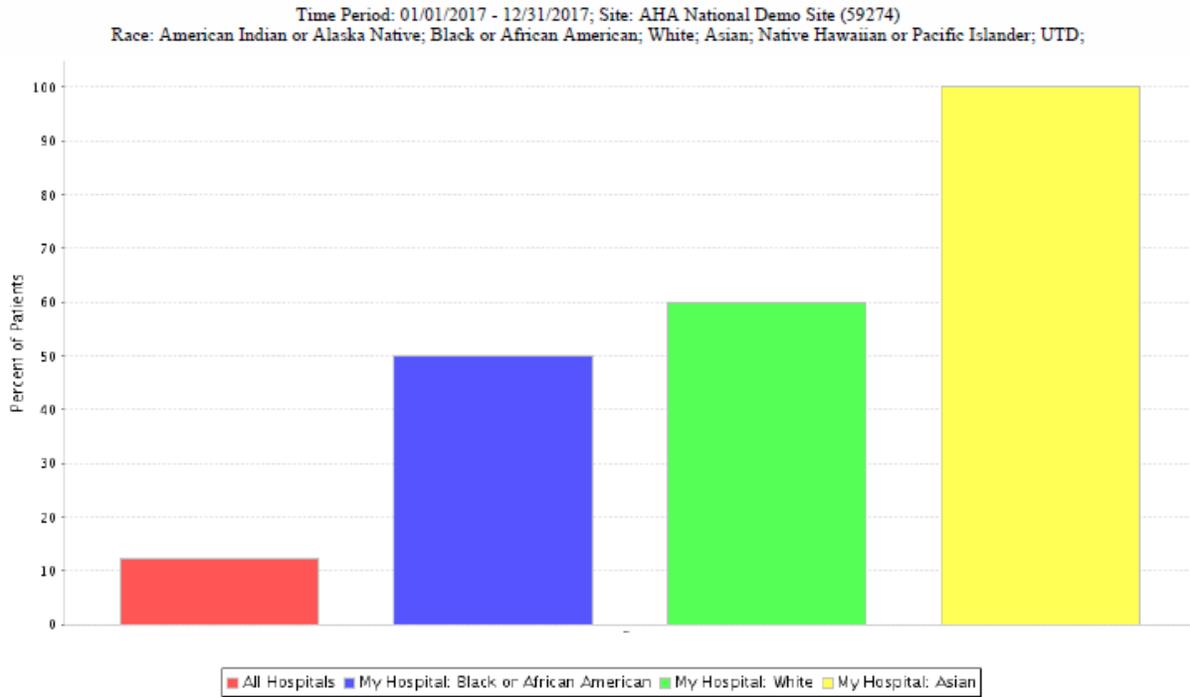


Figure 7. Cardiac Rehabilitation Referral from inpatient setting – My Hospital compared to All GWTG-CAD Hospitals



GWTG – HF

Figure 8. Percent of heart failure patients referred to outpatient cardiac rehabilitation by race



Data For: Outpatient Cardiac Rehab Program Referral

Benchmark Group	Time Period	Numerator	Denominator	% of Patients
All Hospitals	01/01/2017 - 12/31/2017	6	49	12.2%
My Hospital: Black or African American	01/01/2017 - 12/31/2017	1	2	50.0%
My Hospital: White	01/01/2017 - 12/31/2017	3	5	60.0%
My Hospital: Asian	01/01/2017 - 12/31/2017	2	2	100.0%

Date of report: 04/18/2018 15:48:01 GMT-05:00 run by User: Christina Sterzing (cs_staffdemo) at Site: AHA National Demo Site (59274)

STS Adult Cardiac Surgery Database

Figure 9. Annual performance of your hospital compared with a similar hospital group and all participating hospitals

	Isolated CABG Procedures Data Summary				
	Participant STS Period Ending 06/30/2017				
2017 is a partial year: Jan 2017 - Jun 2017					
	Participant			Like Group	STS
	2015	2016	2017	2017	2017
Discharge Referrals/Counseling¹					
Cardiac Rehabilitation Referral	100.0%	91.5%	97.7%	84.7%	89.3%
Missing	0.0%	0.0%	0.0%	0.1%	0.2%

PINNACLE Registry – Executive Summary

Figure 10. Box and whisker plot comparing your hospital's data with US hospitals at various percentiles of performance

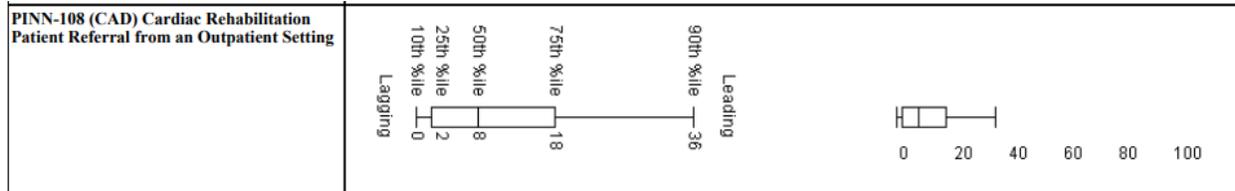


Figure 11. Interpreting Box and Whisker Plots

