# Cardiac Rehabilitation Referral Strategy

## Using Clinical Data Registries to Access Cardiac Rehabilitation Referral Data

<table>
<thead>
<tr>
<th>Subject</th>
<th>Content</th>
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<tr>
<td><strong>Definition/Description</strong></td>
<td>Regularly extract and share data visualizations of cardiac rehabilitation (CR) referral data captured in formal data registries to improve CR referral performance.</td>
</tr>
</tbody>
</table>
| **Key Terms/Abbreviations** | • 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. |
As of April 2018, the following six registries collect data on CR referral for patients who can benefit from CR:

- 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®

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.

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.

<table>
<thead>
<tr>
<th>Relevant Metric(s)</th>
<th>To date, national registries include one of the following two National Quality Forum-endorsed measures:</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td><strong>CR Patient Referral from an Inpatient Setting</strong>: Percentage of eligible patients admitted to a hospital who are referred to an early outpatient cardiac rehabilitation/secondary prevention program (NQF 0642)</td>
</tr>
<tr>
<td></td>
<td><strong>CR Patient Referral from an Outpatient Setting</strong>: Percentage of eligible patients evaluated in an outpatient setting who are referred to an outpatient cardiac rehabilitation/secondary prevention program (NQF 0643)</td>
</tr>
<tr>
<td></td>
<td>With the release of the 2018 ACC/AHA clinical performance and quality measures, there is an opportunity for hospitals or health systems to extract and report on the following CR referral measures:</td>
</tr>
<tr>
<td></td>
<td><strong>PM-1 CR Patient Referral from an Inpatient Setting</strong>: 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.</td>
</tr>
</tbody>
</table>
PM-2 Exercise Training Referral for HFrEF From Inpatient Setting: Percentage of patients, age ≥18 y, hospitalized with a primary diagnosis of HFrEF 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 HFrEF 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 HFrEF 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.

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.
### Key People/Departments to Engage

- CR Program’s Medical Director
- CR Program’s Coordinator or Supervisor
- QI/Clinical Effectiveness and Quality Department
- Medical Staff Administrator
- Referring Clinicians

### Data Sources

- ACC – Chest Pain – MI Registry®
- ACC – CathPCI Registry®
- AHA – GWTG – CAD
- AHA – GWTG – HF
- STS – Adult Cardiac Surgery Database
- ACC – PINNACLE Registry®

### Cost Concerns

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.

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.

### Timeline

The timeline varies upon which CR referral metrics are available to you.

### Supporting Material

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

Sample Registry Reports

- **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)
- **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

For more information:
- ACC registries: [https://cvquality.acc.org/NCDR-Home/registries](https://cvquality.acc.org/NCDR-Home/registries)

### References


*Questions should be directed to:* [aacvpr@aacvpr.org](mailto:aacvpr@aacvpr.org)
Table 1 – Formal Clinical Data Registries that Capture CR Referral for Subsets of Eligible Patients

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

<table>
<thead>
<tr>
<th>Cardiac rehabilitation patient referral from an inpatient setting</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>My Hospital</td>
<td>US Hospitals 50th Pctl</td>
</tr>
<tr>
<td>86.9%</td>
<td>86%</td>
</tr>
</tbody>
</table>

Proportion of patients that received a cardiac rehab referral. [Detail Line: 1021]

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

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

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
GWTG – CAD

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

![Bar chart comparing cardiac rehabilitation referral rates between My Hospital and all GWTG-CAD hospitals.](image1)

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

![Area chart comparing cardiac rehabilitation referral rates between My Hospital and all GWTG-CAD hospitals.](image2)
Figure 8. Percent of heart failure patients referred to outpatient cardiac rehabilitation by race

Data for Outpatient Cardiac Rehab Program Referral

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

Date of report: 04/18/2016 15:48:01 GMT-07:00 run by User: Christina Serafini (xx-xx-xxxx) 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

<table>
<thead>
<tr>
<th>Discharge Referrals/Counseling¹</th>
<th>2015</th>
<th>2016</th>
<th>2017</th>
<th>Like Group 2017</th>
<th>STS 2017</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cardiac Rehabilitation Referral</td>
<td>100.0%</td>
<td>91.5%</td>
<td>97.7%</td>
<td>84.7%</td>
<td>89.3%</td>
</tr>
<tr>
<td>Missing</td>
<td>0.0%</td>
<td>0.0%</td>
<td>0.0%</td>
<td>0.1%</td>
<td>0.2%</td>
</tr>
</tbody>
</table>

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

Distribution of Hospital Performance

10th percentile
25th Percentile
Median
75th Percentile
90th percentile

10th Percentile
90% of the hospitals achieved “better” scores than the 10th percentile.

25th Percentile or 1st Quartile
75% of the hospitals achieved “better” scores than the 25th percentile.

50th Percentile or 2nd Quartile
Middle of the distribution: Half of the hospitals’ data is above and half are below the median.

75th Percentile or 3rd Quartile
25% of the hospitals achieved “better” scores than the 75th percentile.

90th Percentile
10% of the hospitals achieved “better” scores than the 90th percentile.

Your Hospital Position
Your ‘Hospital Position’ in relation to all other hospitals’ data.

90th Percentile
If your hospital scores above the 90th percentile, the arrow will be on the right of this number.

10th Percentile
If your hospital scores below the 10th percentile, the arrow will be on the left of this number.