TAKEheart Automatic Referral Implementation Guide - Module 5

Module 5 Implementation Guide:
Building and Implementing a Successful Automatic Cardiac Rehab Referral System

Purpose and Overview

This implementation guide is designed to help you think through the steps you will need to address in designing and implementing a successful automatic referral (AR) system for your hospital/health system. Successful implementation of AR depends on the ability to:

- Systematically identify all eligible patients
- create patient exclusion criteria
- gather relevant stakeholders to design the EMR specifications
- secure IT support for programming and testing of the EMR specifications
- generate buy-in to promote adoption.

This guide is built on the expectation that you have completed the foundational activities associated with Modules 1 -4. By the time you reach this point, the hope is you have:

- Secured leadership and departmental support for automatic cardiac rehab referral.
- Created a multidisciplinary team with a project champion.
- Developed an aim statement and action plan for the project.
- Mapped referral workflow processes.
- Determined the data necessary to support automatic referral.

Patients take many paths to reach outpatient CR, and as a result, there are many referral patterns. TAKEheart focuses on creating an **automatic referral system from the inpatient/procedural environment to outpatient CR**. This Automatic Referral Implementation Guide maps out this specific referral workflow utilizing sequential steps the team can follow. The steps include:

- Understand automatic referral
- Determine eligible patients
- Create EMR specifications
- Testing and fine tuning specifications
- Implementing the E H R specifications and evaluating implementation
- Looking ahead

Review this guide before getting started!
Additional support and guidance will be provided in the upcoming Module 7.

Step One: Understand automatic referral

Before you get started, understand the basics!

What is automatic referral?

- Automatic referral is an electronic medical record (EMR)-based cardiac rehabilitation referral built into an order set in such a way that **all** patients with a qualifying diagnosis for cardiac rehabilitation are referred **by default** unless the clinical provider takes action to remove the order.
- Automatic referral is **NOT** a pop-up message that emerges in the patient's medical record giving the clinical provider a choice about referring the patient to cardiac rehabilitation.
- Automatic referral is **NOT** a substitute for a clinician conversation with the patient about the benefits of cardiac rehabilitation and follow up by clinical professionals. *The "human touch" has been shown to be a very strong influencer of patient participation* in cardiac rehabilitation and this component will be described in more detail in Module 9.

Who needs to be involved?

Prior modules have discussed the need for and the value of a diverse team. A **common error is to relinquish the design and implementation of automatic referral to the IT department.** As you work on the design and implementation of automatic referral, you need to actively engage:

- **Executive IT Leadership**: must approve alterations to existing early EMR system to support AR; their support and involvement is critical to make AR an organizational priority.
- **QI Leader**: understands challenges associated with a quality improvement project and can lend support to manage change.
- **IT Lead/staff**: possess deep understanding of the EMR system and will need to prioritize introducing automatic referral or improving existing procedures for electronic referrals.
- **Clinical staff**: as the ultimate users of the referral system, their needs, insights and experience with workflow are critical for building a system that they can and will use.
- **CR Champion**: advocates for IT and executive support; creates a bridge between the needs of patients, staff, and management.
- **Data analytics coordinator:** manages the collection and interpretation of data to support automatic referral and supports analysis of data on referral testing and implementation.
- **Patients:** provide key information about the workability of the referral process, sometimes referrals get stuck in the queue.
- **Representatives of external CR programs**: offer information about CR services that are available outside the organization and how to refer patients to these programs.

What is a completed referral?

Keep in mind AR is only one step in the referral process. CR referral process measures require a verbal conversation between the ordering clinician and the referred patient. Best practice dictates that the referred patient should be scheduled for the first session before discharge. Hospitals can only get credit for the CR referral if the patient conversation takes place. Care coordination activities work in

tandem with the AR to ensure the patient reaches CR. More will be discussed about the relationship between AR and care coordination to achieve a complete referral in upcoming modules.

Step Two: Defining eligible and inappropriate patients

Automatic referral requires knowing which patients are eligible and deciding which are inappropriate for cardiac rehabilitation and ensuring that eligible patients are referred. Stakeholder discussions need to be held to reach consensus and buy-in on both groups of patients.

Patients to include
All patients with an agreed-upon set of codes should be automatically referred/opted in. In general, the patient conditions listed in Table 1 qualify for CR.

Table 1: CR Eligibility

Heart attack in the last 12 months
Coronary artery bypass surgery
Current stable angina
A heart valve repair or replacement
A coronary angioplasty or coronary stent
A heart or heart-lung transplant
Stable chronic heart failure

Important Discussions

- Dedicate time to discuss coding combinations with the billing/coding representatives.
- Use Table 2 to help guide discussions.
- Involve all the necessary stakeholders to walk through the EMR system with them to identify the best source for codes. Many EMR systems store diagnosis codes in multiple places. The visit diagnosis often indicates the ICD-10 code for a clinical encounter. While the problem list contains all the ICD-10 codes associated with a patient. Many times, the problem list is not up to date.
- Spend time creating an agreed-on set of codes to include:
    - Ask referring providers to review the list to gain provider buy-in
    - Use the skills of the CR champion to help with diagnosis and/or procedure codes that are sticking points.
- EMR systems often contain modules with various programming capabilities. Work with IT to understand:
    - Does the current system have the means for AR?
    - Does it need to be turned on?
    - Do you need to acquire the ability?

Patients to exclude:
Just as important as identifying eligible patients is filtering out patients for whom CR is not appropriate. Even if a patient is identified as eligible for CR, there may be good reasons not to refer him or her. For example, a patient only receiving palliative care or one with advanced dementia should probably not be referred.

- Set aside dedicated time to discuss exclusion criteria and get feedback from stakeholders.
- Compile a list of patient exclusions, comorbidities/conditions (dementia/cancer) that are contraindications to CR.
- Work to filter out redundancy (e.g., patients already with an active referral)
- Clinicians should have the ability to opt out, collecting the reason will help to refine the exclusion criteria over time

Table 2: CR eligible ICD-10 diagnosis/procedure codes and CPT codes

Condition /Procedure	ICD-10 Diagnosis codes	ICD-10 Procedure codes	CPT codes
Acute myocardial infarction	I21.0, I21.01, I21.02, I21.09, I21.1, I21.11, I21.19, I21.2, I21.21, I21.29, I21.3, I21.4, I21.9, I21.A1, I21.A9, I22.0, I22.1, I22.2, I22.8, I22.9		
Coronary artery bypass surgery (CABG)		0210X, 0211X, 0212X, 0213X	33510,33511,33512,33513,33514, 33516,33517,33518,33519, 33521,33522,33523,33530,33533, 33534,33535,33536,33572, 35600, S2205, S2206, S2207, S2208, S2209
Valve Repair/Replacement Procedures		(*Includes all codes with these as the first four identifiers*) 027F, 027G ,027H, 027J, 02CF, 02CG, 02CH, 02CJ,02NF, 02NG, 02NH, 02NJ, 02QF, 02QG, 02QH, 02QJ, 02RF, 02RG, 02RH, 02RJ, 02TH, 02VG, 02UF, 02UG, 02UH, 02UJ	33361-33417,33418-33430, 33460-33468, 33470-33478
Percutaneous transluminal coronary angioplasty (PTCA) or coronary stenting		02703ZZ, 02704ZZ, 02713ZZ, 02714ZZ, 02723ZZ, 02724ZZ, 02733ZZ, 02734ZZ, 3E07017, 3E070PZ, 3E07317, 3E073PZ, 02700ZZ, 02710ZZ, 02720ZZ, 02730ZZ, 02C00ZZ, 02C10ZZ, 02C20ZZ, 02C30ZZ,02C03ZZ, 02C04ZZ, 02C13ZZ, 02C14ZZ, 02C23ZZ, 02C24ZZ, 02C33ZZ, 02C34ZZ	92920,92921,92924, 92925, 92928,92929, 92933,92934, 92937, 92938,92941,92943, 92944, 92973, 92974
Heart or heart-lung transplant		02YA0Z0, 02YA0Z1, 02YA0Z2,	33945, 33927, 33928, 0051T, 0052T,0053T

		0BYM0Z0,0BYM0Z1,0BYM0Z2, 02YA0Z0, 02YA0Z1, 02YA0Z2, 02RK0JZ, 02RL0JZ, 02WA0JZ, 02WA0JZ	
Current stable angina pectoris	I20.1, I20.8, I20.9		
Stable*, chronic heart failure (LVEF ≤35% and NYHA class II to IV)	I50.22, I50.42, I50.82 ** "Stable" defined as no recent (≤6 weeks) or planned (≤6 months) major cardiovascular hospitalizations/ procedures)*		
Implantable (intracorporeal) ventricular assist device insertion		02HA0QZ	33979
Bi-ventricular pacemaker insertion		0JH609Z, 0JH639Z, 0JH809Z, 0JH839Z, 0JH607Z, 0JH637Z, 0JH807Z, 0JH837Z	33224, 33225

Step Three: Create EMR specifications

Preparing to design EMR specifications

Successful design and implementation of an automatic referral requires close collaboration with the IT department and those involved in creating/updating order sets for the EMR.

- Involve **ALL** the necessary people.
- Review the referral process failures identified during the mapping exercise in Module 3.
- Build a referral system that fits as seamlessly as possible with existing workflow processes
- Assign roles and responsibilities and set targets for completion.
- Ensure that all eligible patients are referred unless the clinical provider takes action to stop the referral from moving forward.
- Make sure the team has a shared vision about what work needs to be done and how to accomplish it.
- Review the Data Module 4 Implementation Guide for additional suggestions.

Suggested variables

To design an automatic referral system, you'll need to create several variables and/or EMR specifications:

- Patient eligibility
- Patient exclusions

- Referring physician/practice
- Location of origin for the referral
- Referral destination
- Date of referral
- Reason provider takes action to stop the referral ("opt-out")
- Provider feedback

The Design

How

Sit down with your IT professionals and look at how your system currently identifies, or will identify, appropriate patients for cardiac rehabilitation. If you did not involve IT in the mapping process, get their perspective on the CR workflow process. Do not be surprised if they themselves – the IT staff -- learn that the EMR system does not function as they thought it did. Often, projects such as these uncover underlying issues with the EMR system itself. Work closely with your IT team to understand your system's abilities and limitations.

Your team will need to decide how easy or difficult to make the opt-out feature. Just clicking a box to opt the patient out is easy. Taking it a step further by requiring the provider to type in the reason for the opt-out adds a level of difficulty but can be useful to inform system refinements. Middle ground would involve working with IT to build a drop down list of reason codes into the EMR system. If this is not possible, survey a sample of physicians who override to uncover reasons. This data may help to inform future refinements of your automatic referral.

When:

For referrals from the inpatient/procedure environments, it is recommended that the automatic referral be built into the discharge order set. Discharge is the time in the patient care cycle where patient conversations are routine. Making the referral at discharge increases the chances it will be discussed with the patient prior to the patient leaving the hospital or procedure suite. Hospitals can only get credit for the CR referral if this conversation is had. While this is the ideal situation, EMR systems vary.

For referrals from the outpatient or community care environment, the recommendation is to embed the automatic referral into an actual care encounter. Care encounters offer the provider an opportunity to discuss the referral with the patient. (Guidance for clinicians on how to use these conversations to motivate patient enrollment and participation in CR will be provided in an upcoming module.)

For referrals from outpatient or community providers, create a "hard-stop "alert, one that forces appropriate providers, e.g., cardiologists, and internists, to stop during the care encounter and decide whether to refer patients with qualifying diagnoses, for example heart failure.

Make sure alerts reach community providers who need to see them, and equally, that they do not reach providers who do not need them, as it will just be a nuisance for them.

Where:

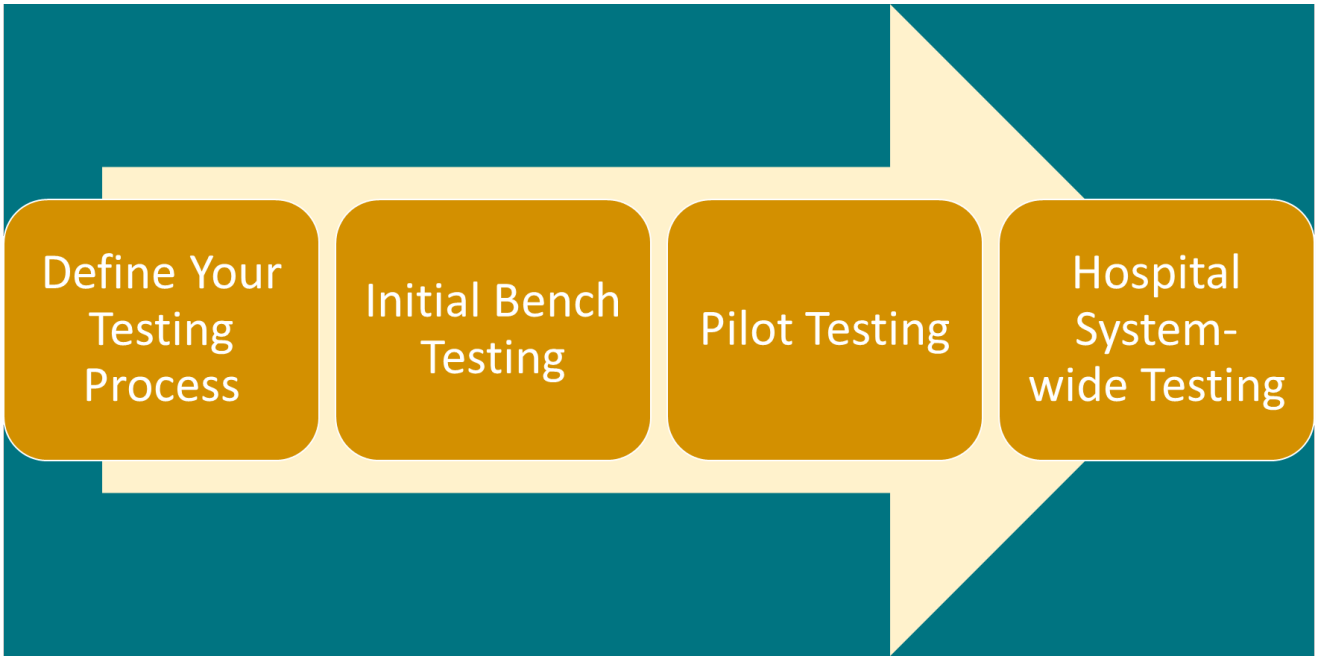
The design of the automatic referral system should have the ability to send referrals to multiple programs. *Patient convenience is a major factor in patient participation in CR.* Be aware of CR

programs locally as well as in surrounding communities and create a list that includes days and hours of operation and establish a way to regularly update the listing. Remind the team that increasing referrals to cardiac rehabilitation may require referrals to external programs. Here is a resource from the Cardiac rehabilitation Change Package (CRCP) that lists the CR programs in the United States that were reported to the American Hospital Association: How to Find Cardiac Rehabilitation Programs. Use the skills of the CR champion to help eliminate potential friction around external referrals.

Feedback:
Include a mechanism to collect and respond to continual feedback from users. Feedback can be used to suggest needs for system refinements. Responding to feedback makes frontline workers feel heard and part of system change.

Step 4: Testing

Once you have designed the automatic referral system, it is important to take time to test your design before implementing. Testing can be broken down into phases as shown in the graphic below.



First, the team needs to define the testing process. Start by answering the following questions:

- What is the purpose of each testing phase?
- Who will do the testing?
- How will the testing be performed? (define the process)
- What is the timeframe for testing?
- How will you define testing success?
- Once consensus is reached on the process the next step is bench testing.

Bench testing

Bench testing is a process used to identify the correctness, completeness, and quality of the newly programmed EMR to identify eligible patients for CR. It includes a set of activities conducted with the

intent of finding errors so that they can be corrected before the system is released to end-users. It is a check to see if the system is defect free.

Manually executing test cases without using automation tools can help find bugs in the system. The goal is to ensure the application is error-free and is working to the specified functional requirements.

Step 1: Selecting cases for testing

- Choose test cases which cover the entire field of patient eligibility for CR.
- Include cases which should and should not be referred
- Include both straightforward scenarios and ones that may need to take into account several factors—some of which may be based on discussions you have had with your cardiologists and others involved with your program. The overall goal is to locate and correct programming errors using hypothetical patients **BEFORE** you begin making (or not making) automatic referrals of actual patients.
- **Examples:**
  Table 3 includes example patient characteristics as well as an explanation for why such a scenario may be worth testing. You should add additional scenarios and perhaps adjust some of these scenarios to ensure that the programming reflects the criteria your program has agreed on for how the AR system should work.

Table 3: Sample Test Cases

Test Case Patient Characteristics	Rationale
Patients who meet one of the main eligibility criteria	Make sure the system flags patients that meet one of the 7 main criteria for eligibility for CR.
Patients who under 18 years of age that meet each one or more of the main eligibility criteria (Table 1) for CR	While there is no set age criteria for CR eligibility, you may conclude that under or beyond some age limit, automatic referrals are not appropriate. You will need to decide whether any such patients should be referred or whether they should be flagged for follow-up with their cardiologist regarding whether a referral is appropriate.
A patient who had bypass surgery 15 months ago, went to cardiac rehabilitation, then was recently hospitalized for a non-cardiac condition	Because heart attack meets the eligibility requirements for CR, you should verify that your EMR is correctly excluding patients who are current or recent past participants.
A patient with a heart attack that occurred 15 months ago, that was recently hospitalized for a non-cardiac condition	Because eligibility requires a heart attack in the past 12 months, you should verify that your EMR is correctly excluding patients with a heart attack longer than 12 months ago.

Patients meeting one of the criteria for AR but that are identified as being in palliative care or experiencing advanced dementia	While such patients should be excluded, you should review with relevant clinicians the exact diagnosis codes or other data that will be used for such exclusions. If you decide that your system cannot correctly identify patients with extreme dementia, then you may choose to not exclude any patients for this condition. However, you'll also need to explain this to cardiologists so they understand that they may periodically need to opt-out such patients based on their knowledge of their level of dementia.
Patients meeting one of the criteria for AR but with a physical address a considerable distance away	The criteria for external referrals will need to be defined. Ideally, a list of external programs should be included in the referral process. You will need to check to make sure these patients are identified by the system.
Chronic heart failure patients with a major cardiovascular hospitalization or procedure 5 weeks ago	CR eligibility requires no major cardiovascular hospitalizations or procedures for at least 6 weeks. So this patient would not yet meet the criteria for stable chronic heart failure. However, you should decide whether you want to begin the AR process for patients before they meet the six week criteria so they can begin CR as soon as possible after they are eligible.
A patient hospitalized for internal injuries incurred in a car accident who had received PTCA 9 months ago	Your EMR should be able to distinguish between prior treatment episodes and the most recent hospitalization. In general, you may want to exclude prior treatment episodes because the patient may have already had a CR referral (or been opted-out of CR) already.

Step 2: Using the test cases

- Proposed testing cases should be reviewed by relevant stakeholders to ensure agreement about which case should and should not be referred. This is an important step because it facilitates reaching consensus about standards and helps to build buy-in to the process of automatic referral.

- Run the test cases through the automatic referral logic to see what happens.
- Adjust the EMR specifications as needed to remedy any error that surface.
- Start with basic straightforward test patients, verify they work correctly, while you have continued discussions about more detailed criteria to include.

Step 3: Using actual former patients records

- Identify real patient records that were and were not eligible for referral over the last year
- Run those patients through the automatic referral logic to determine if the system identifies eligibility appropriately

Step 5: Looking Ahead: Additional Testing, Training, Implementation and Refinement

Successful AR implementation usually requires multiple, iterative phases of testing, staff training and evaluation/refinement using Plan, Do Study Act (PDSA) improvement cycles. More guidance on implementing these steps will be provided in Module 7. If you are well along in the process, you may start laying groundwork for those steps now. Below is a list of suggested activities to build into your timeline as you prepare to roll out your automatic referral.

Pilot/User testing:

- Lets you know if automatic referral actually works
- Improves confidence that the system will increase referrals
- Provides a preliminary estimate of the degree of improvement
- Helps provide information about whether the system works as expected
- Uncovers potential unintended consequences
- Helps minimize resistance upon implementation

Run PDSA cycles. The Institute for Healthcare Improvement (IHI) has a helpful worksheet to facilitate the process: PDSA Worksheet

- **Plan:**
  - Plan and formulate a timeline for the test.
  - Create success criteria.
  - Establish test patient records with the help of IT.
  - Choose a small group of willing volunteers to participate.
  - Develop methods for tracking the behavior of the automatic referral along with feedback from test participants.
- **Do:**
  - Run all alerts on "silent" before making them provider-facing to ensure the frequency of the firing is what is to be expected.
  - Turn the alerts on.
  - Watch and observe what happens.
  - Track performance behavior over time.
  - Spot check to make sure that alerts are firing appropriately.
- **Study:**
  - Analyze the results and compare them with what you expected.

- Did the automatic referral behave as expected?
- Were there any unintended consequences?
- What lessons can be learned from failed tests or unintended outcomes?

- **Act:**
  - Did you meet your performance criteria?

If you need to adjust or reconfigure, make the modifications and test again. Repeat this process until you are satisfied with the performance of the automatic referral.

Key Resources:

1. Emory Healthcare. "Cardiac Rehabilitation: Electronic Referral Process Communication Tool." Available at: https://www.aacvpr.org/Portals/0/Million%20Hearts%20Change%20Package/4.11.2018%20Files/R-14-34-CRCP-Emory%20Healthcare-CR%20Electronic%20Ref%20Process%20_%20Comm%20Tool.pdf

   This slide deck, presented by Emory Saint Joseph's Hospital in Atlanta, provides screenshots of the health system's standardized electronic process to support CR referral.

2. Traynor, Kate. "Case Study: Self-Referral of Patient to a Cardiac Rehabilitation Program, Massachusetts General Hospital." *American Association of Cardiovascular and Pulmonary Rehabilitation*. Available at: https://www.aacvpr.org/Portals/0/Million%20Hearts%20Change%20Package/4.18.2018%20Files/R-10-CRCP-Case%20Study-MGH-Patient%20Self%20Referral.pdf?timestamp=1524151616416

   This interview with Massachusetts General Hospital includes examples of fax cover sheets and other forms to facilitate patient self-referrals to CR.

3. Traynor, Kate. "Case Study: Referral of Patient to External Cardiac Rehabilitation Program, Massachusetts General Hospital." *American Association of Cardiovascular and Pulmonary Rehabilitation*. Available at: https://www.aacvpr.org/Portals/0/Million%20Hearts%20Change%20Package/4.25.2018%20Files/R-5-CRCP-Case%20Study-MGH-External%20CR%20Referral.pdf?timestamp=1524684401393
   This interview with Massachusetts General Hospital discusses their implementation of a more efficient process to facilitate referrals to external CR programs. The case study includes examples of fax cover sheets and other forms used to facilitate these referrals.

4. Jolly, Elizabeth. "A Systemic Approach to Increasing Cardiac Rehabilitation Referrals, Penn Medicine." *American Association of Cardiovascular and Pulmonary Rehabilitation*. Available at: https://www.aacvpr.org/Portals/0/Million%20Hearts%20Change%20Package/4.18.2018%20Files/R-36-CRCP-Case%20Study-Penn-Systematic%20Approach%20to%20Increasing%20CR%20Referrals....pdf
   This interview with a nurse from Penn Medicine summarizes the hospital's transition to an "opt-out" CR referral process. This case study provides screenshots of "nudge" alerts and dashboards that track eligible patients.

5. "Cardiac Intermediate Care Unit CR Referral Process." *University of Pennsylvania School of Medicine*. Available at: https://www.aacvpr.org/Portals/0/Million%20Hearts%20Change%20Package/6.8.2018%20Files/R-12.5-CRCP-Penn%20Med-CICU%20CR%20Referral%20Process%20Map.pdf
   This diagram outlines the CR referral process for Penn Medicine's cardiac intermediate care unit.

6. "Cardiopulmonary Rehabilitation Referral Process Map." *Lake Regional Health System*. Available at: https://www.aacvpr.org/Portals/0/Million%20Hearts%20Change%20Package/4.11.2018%20Files/R-12-CRCP-LRHS-Referral%20Process%20Map.pdf

This diagram outlines the CR referral process for Lake Regional Health System.

7. "Bridging the Rehabilitation Care Continuum: Spotlight on NYU Langone Health." *American Association of Cardiovascular and Pulmonary Rehabilitation*. Available at: https://www.aacvpr.org/Portals/0/Million%20Hearts%20Change%20Package/R-38-CRCP-Turnkey-Bridging%20the%20Rehab%20Continuum.pdf?timestamp=1525103139064
   This case study summarizes efforts by NYU Langone Health to establish a system-wide integration of a care continuum infrastructure to increase the transitions of cardiac patients to cardiac rehabilitation.

8. "EHR Automatic Referral to CR." *Massachusetts General Hospital*. Available at: https://www.aacvpr.org/Portals/0/Million%20Hearts%20Change%20Package/4.18.2018%20Files/R-20_1_2-CRCP-MGH-Automatic%20Referral%20to%20CR-EMR%20Screenshots.pdf
   These screenshots highlight features in Massachusetts General Hospital's automatic order set for CR referral.