

Screen, Refer and Track:

A Personalized Medicine and Systems-based Approach to Improve the Outcomes of Patients with Rheumatoid Arthritis at Risk for Cardiovascular Disease at an Academic Medical Center

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1. **Structured Abstract** (Max of 250 words addressing the following elements: Purpose, Scope, Methods, Results, Key Words)

Patients with RA have an increased risk of CVD as compared to the general population. The European League Against Rheumatism (EULAR) recommends that rheumatologists assess the CVD risks in RA patients. Multiple barriers such as limited time and lack of familiarity of CVD screening guidelines challenge the feasibility of this practice. A gap in patient care was identified by our rheumatology and cardiology teams related to RA patients who had modifiable cardiovascular risk factors. Physician leads from each of these clinical areas joined with members of our Professional Education, Biostatistics, Nursing, Medical Assistants, and Health Initiative departments to initiate a 28-month performance and quality improvement (QI) project, with the ultimate goal of implementing a novel rheumatology-focused cardiology consultation service and intervention program for rheumatoid arthritis patients with increased risk for cardiovascular disease (CVD)

2. **Purpose** (Objectives of Study).

The European League Against Rheumatism recommends rheumatologists engage in assessing cardiovascular disease (CVD) risks in rheumatoid arthritis (RA) patients. At National Jewish Health, gaps in patient care were identified by our rheumatology and cardiology teams related to RA patients who had modifiable cardiovascular risk factors. We developed a 28-month collaborative initiative to create a streamlined way to educate and evaluate these patients about risks.

Program Aims:

- Increase patient awareness of CV risks.
- Improve screening and documenting CV risk factors.
- Increase referrals to systems-based resources.
- Promote collaboration between rheumatology and cardiology divisions.
- Demonstrate improved patient outcomes related to modifiable risk factors.

Key Objectives

Implement a rheumatology-focused cardiology consult to:

- Facilitate rheumatologists' identification and screening of patients with rheumatoid arthritis (RA) and increased risk for CVD for additional risk factor assessment and modifications using a system-based method
- Increase referrals to systems-based wellness resources to improve modifiable risk factors

- Bolster collaborative multidisciplinary patient care
- Increase awareness of the increased CV risk associated with RA
- Train and utilize a dedicated Patient Case Manager (PCM) to:
 - Identify the current or potential NJH RA patients at increased risk for CVD and engage the rheumatologist in considering the patient for the referral program
 - Periodically meet with and educate RA patients at risk for CVD, and motivate patients to participate in the recommended systems-based interventions
 - Navigate the patient through the consultative visits and participation in systems-based wellness resources for improved patient health
 - Track program data and outcomes
 - Follow-up with patients to make adjustments to care plans accordingly
 - Report outcomes to health care team
 - Perform qualitative patient focus groups to inform the patient education aspects of the initiative, and again at the conclusion of the activity to measure a change in patient awareness of risk factors
 - Distribute and collect patient surveys to quantitatively measure awareness of CVD risk factors pre and post-program interventions

Provide practical strategies to increase:

- Patient awareness of modifiable risk factors
- Patient awareness of their specific target goals related to modifiable risk factors (i.e., goal BP, goal weight/BMI, etc.)
- Patient participation and adherence to systems-based health improvement tools for the management of modifiable risk factors, including weight management and smoking cessation wellness programs
- Track outcomes for patients in a program-specific registry who have been identified, referred to, and who participate in internal resources for weight management and smoking cessation, and compare participant outcomes to matched patients who elect not to participate in the interventions and report on the findings.

3. **Scope** (Background, Context, Settings, Participants, Incidence, Prevalence).

In 2014, National Jewish Health (NJH), an academic research and tertiary referral center, implemented a novel rheumatology-focused cardiology consultation service and intervention program for rheumatoid arthritis (RA) patients with increased risk for cardiovascular disease (CVD). The initiative aligned with European League Against Rheumatism (EULAR) recommendations that rheumatologists engage in assessing CVD risks in RA patients, as well as

gaps in patient care identified by our rheumatology and cardiology teams related to RA patients who had modifiable cardiovascular risk factors.

A 28-month collaborative initiative was developed to create a streamlined way to educate and evaluate RA patients about their CVD risks. We engaged the divisions of rheumatology and cardiology as well as professional education, research informatics services and health initiatives staff in the design and implementation of this project. We had a physician lead from both rheumatology and cardiology divisions, but also actively engaged the medical assistants, nurses and mid-level providers in the implementation and education of the project. Of the 788 RA patients by rheumatology practice during the study interval, a total of 371 RA patients were identified through the program at risk for cardiovascular disease.

One goal was to assess RA patient awareness of their CVD risks and whether they had discussed these risks with their providers in the past. We also wanted to determine if they were interested in trying to learn more about their risks or engage in programs that would potentially change their behavior and ultimately reduce their CVD risks. We determined the effectiveness of this intervention by administering random patient surveys throughout the study interval.

Another aim of this project was to implement the changes within each division to assess and address the CVD risk and keep the concept sustainable long term. We engaged with our information support staff to improve our electronic medical record (EMR) workflows and created a means of CVD risk assessment that would be easy for the providers. Using our current EMR, we built frameworks to meet the needs of both the rheumatology and cardiology divisions. For the rheumatology providers, we created an accessible set of orders that would allow for CVD risk assessment in RA patients that included a specific cardiology referral, electrocardiogram, and laboratory assessment that included lipids and diabetes screening. During this implementation, we also elected to add in routine disease and functional assessments for RA patients. For the cardiology providers, we created a set of orders that included further diagnostic cardiac testing, nutrition and CVD risk calculators. For both divisions, there were additional options to refer patients to a smoking cessation program and/or weight loss intervention program.

A patient case manager (PCM) was utilized to identify potential patients appropriate for a cardiology consult. These charts were flagged in rheumatology so that the rheumatology provider could elect to begin the RA CVD risk assessment. The PCM also was available to the patients and providers to help navigate any of the processes, and to gather patient feedback. The PCM followed the patients longitudinally, allowing for patient continuity and reduced loss to follow-up for any of the programs. The PCM was supported through the project, and

ultimately is not likely a sustainable aspect of this project. However, the PCM provided support to existing division staff to help with implementation and also recognition of where the gaps in the flow occur.

4. **Methods** (Study Design, Data Sources/Collection, Interventions, Measures, Limitations).

Study Design

Provider measures were tracked at six time points and reported back to the provider as individual and division aggregate numbers. Metrics included best practice assessments and referral to patient resources. Patients were surveyed to understand how well we were educating on the relationship between RA and CVD, and the impact of interventions and resources implemented for patients. The format selected for the initiative was the Plan-Do-Study-Act (PDSA) evidence-based model to: 1) Test the change (Plan) September 2014 – December 2014, 2) Carry out the test (Do) January 2015 – December 2016 and 3) Observe and learn from consequences (Study & Act) January 2017 – February 2017.

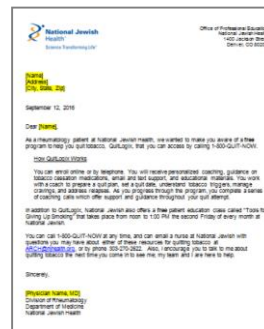
Key Interventions

Multiple interventions were employed throughout the initiative to achieve goals that included provider education, system-based change, EMR edits, patient education, and provision of resources.

- Grand Rounds presentation to increase initiative awareness
- Electronic Medical Record (EMR) edits:
 - ✓ BMI recording adjustments for MA ease of use
 - ✓ Order sets specific to rheumatology and cardiology divisions for prioritization of best care practices for RA patients
 - ✓ Addition of referral to tobacco quitline services
- Division meetings with rheumatology and cardiology
 - ✓ Brought in expert presenters to council on talking to patients about weight
 - ✓ Troubleshoot challenges or barriers in best practice implementation
 - ✓ Announce new division processes such as MDHAQ/RAPID3 assessment
- Provider and patient education about system resources
 - ✓ FitLogix (52 week behavioral weight management program)
 - ✓ QuitLogix (telephonic tobacco quitline service)
 - ✓ Patient education conference for RA patients, caregivers and providers
- Addition of weight intervention prompt in cardiology division paper record that MAs administer



- Development of a 6-month rehabilitation membership program targeted for RA patients
- BMI poster developed for clinic rooms
- Letter sent to all RA patients who identified as smokers about tobacco cessation resources from their physician



Measures

Metrics tracked for providers were identified:

- Referred to cardiology for CV risk assessment and appointment scheduled
- Document smoking status
- Tobacco cessation intervention
- Referred to QuitLogix, tobacco cessation support program
- Weight loss intervention if applicable (FitLogix, nutrition consult, BMI card)
- MDHAQ and RAPID3 assessments
- Lipid panel ordered
- Hemoglobin A1C ordered

To determine how well the initiative met the overall goals, we incorporated provider measures tracked at six time points and reported back to the provider as individual and division aggregate

numbers. Providers were given this data in a timely fashion to learn more about their own practice patterns and to be able to compare with others in their division.

Baseline data was gathered on multiple metrics for each rheumatology division physician as well as each cardiology division physician. Metrics for both divisions included implementation of a weight loss intervention, referral to tobacco cessation quitline services, documentation of smoking status, lipid panel order, and hemoglobin A1c order. Additional measures for rheumatology physicians included referral to cardiology, administration of the Multi-Dimensional Health Assessment Questionnaire (MDHAQ) and administration of the Routine Assessment of Patient Index Data (RAPID3). Additional measures for the cardiology physicians included administration of the Atherosclerotic Cardiovascular Disease (ASCVD) 10-year risk assessment, and administration of the ASCVD lifetime risk assessment. Thirteen physicians participated in the data collection, six from rheumatology and seven from cardiology.

We also incorporated patient surveys administered cross-sectionally at two time points. These were administered by the PCM and likely would not be a sustainable practice long-term. However, the data collection was intended to provide a means of how well the project was going overall and where the gaps existed in the workflows.

Eighty-one (81) patients with RA seen by a rheumatologist at NJH were surveyed over the phone by the PCM between April 2015 and August 2016, prior to a clinic visit with cardiology, regarding the aggregate group's understanding of the relationship between RA and CVD. We also asked about understanding of the role of chronic inflammation in coronary artery disease, BMI awareness, health risks associated with smoking and obesity, what modifiable risk factors are, the amount of calorie-containing drinks consumed, and the servings of fruits and vegetables consumed. Utilizing a cross-sectional design, we asked the same questions again of patients with RA who had completed a cardiology clinic visit. Thirty-five (35) patients responded to the follow-up phone survey administered by the PCM between February 2016 and October 2016. This patient group was also asked about the impact of any resources utilized in the program, such as tobacco cessation or weight management support, and about the perceived sustainability of these lifestyle changes.

Limitations

Rheumatologists can be involved in the CVD risk assessment for RA patients. A multi-disciplinary approach to engage in CVD risk for RA patients can help achieve the goal, but must be done intentionally with roles for each team member specified in the process.

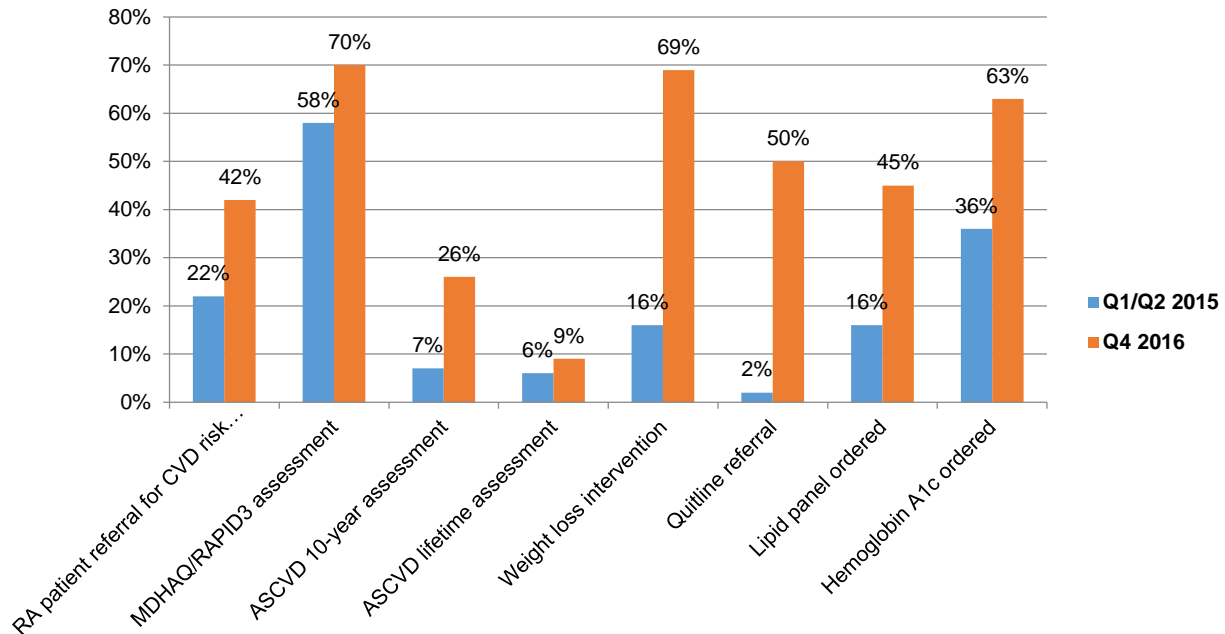
Implementation of routine disease activity and functional assessment in RA patients can be done if many team members are actively included in the participation and documentation. Smoking cessation and weight management discussions can begin with the rheumatologist and cardiologist caring for the patient, but it is important to have resources available and reminder education that persists until data indicates practices have been adopted. Options for patient engagement help to promote the utility of the CVD risk assessment and achievement of the goals.

5. **Results** (Principal Findings, Outcomes, Discussion, Conclusions, Significance, Implications).

Principal Findings/Outcomes

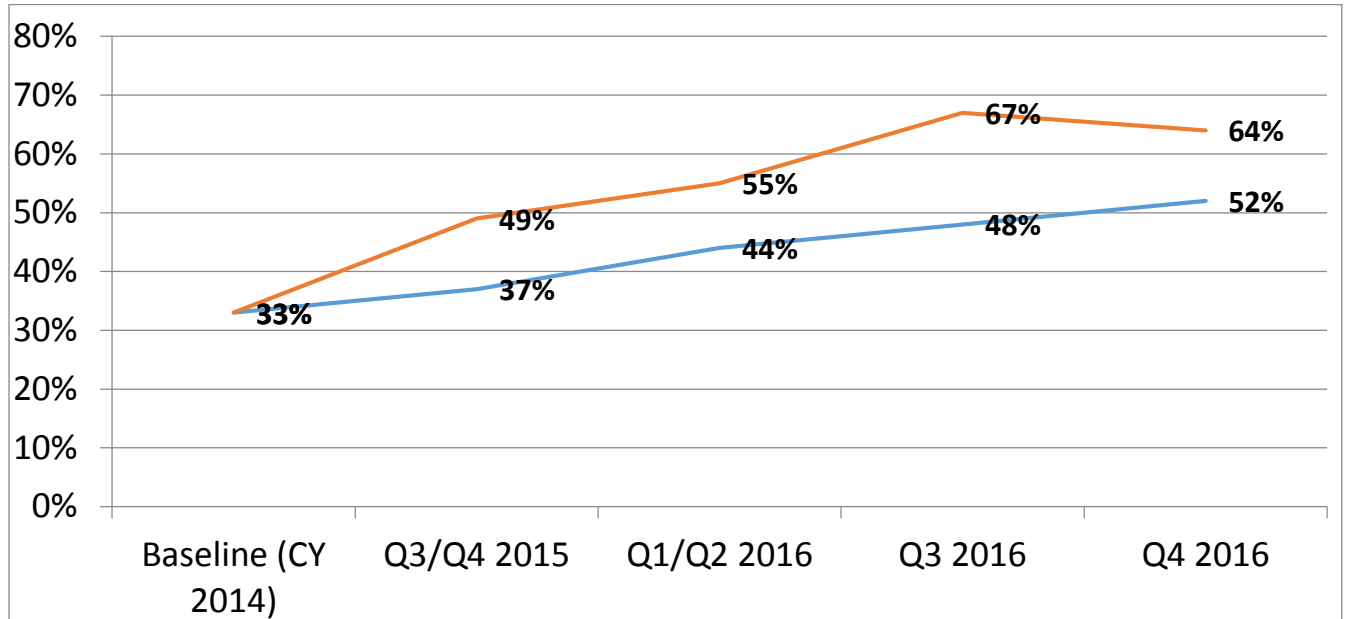
Aggregate provider metrics in each division improved over time in all areas measured. From initiative implementation to conclusion, there was a 91 percent increase in referrals of RA patients for CVD risk assessment. Referral to tobacco quitline services increased from 2 percent to 50 percent. Weight loss interventions documented in the EMR also increased over time, from 11 percent to 69 percent at initiative conclusion.

Aggregate provider measures over time for rheumatology and cardiology divisions.



The performance over time for all data shows that within both divisions, there was a rapid acceptance of the program initiatives. The improvement was increased quickly and maintenance of the rate of practice implementation and/or documentation over the last several time points measured indicates they will be sustained into the future. Baseline data (calendar year 2014) was not available for referral of RA patients for CVD risk assessment because prior to the initiative, there was no process for tracking this data easily and there was no specific program to assess CVD health for RA patients. From initiative implementation to conclusion (2015 to 2016), there was a 91 percent increase in referral of RA patients for CVD risk assessment (22 percent in Q1 and Q2 of 2015 to 42 percent in Q4 of 2016).

Combined metrics over time for rheumatology providers (orange) and cardiology providers (blue)



Combined Rheumatology metrics reflected above:

- Referred to Cardiology for CV risk assessment & appointment scheduled
- MDHAQ / RAPID 3 Assessment
- Weight loss intervention (FitLogix, nutrition consult, BMI card) – for BMI ≥ 25
- Referred to QuitLogix – for current smoker
- Tobacco cessation intervention – for current smoker
- Document smoking status
- Lipid panel ordered
- Hemoglobin A1c ordered

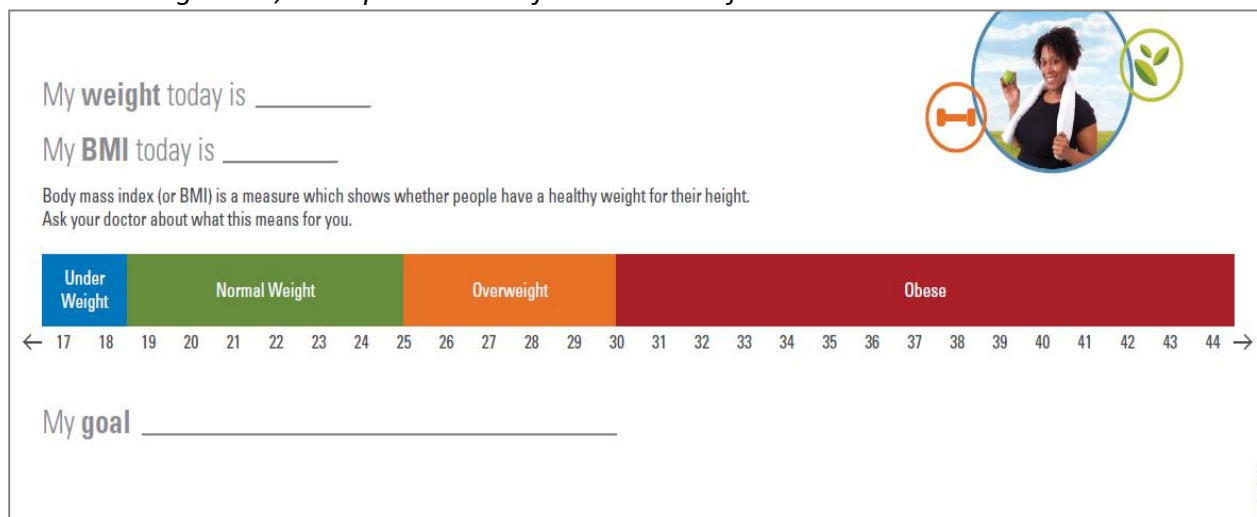
Combined cardiology metrics reflected above:

- ASCVD 10 year risk assessment
- ASCVD lifetime risk assessment
- Weight loss intervention (FitLogix, nutrition consult, BMI card) – for BMI ≥ 25
- Referred to QuitLogix – for current smoker
- Document smoking status
- Lipid panel ordered
- Hemoglobin A1c ordered

Performance over time for the resource referrals also improved early on and was clearly sustained to the end of the measurement cycle. Referral to QuitLogix, the tobacco quitline

serving 17 states including Colorado, was limited prior to the initiative because there was no electronic process to do so in our EMR. From initiative implementation to conclusion, QuitLogix referrals increased from 2 percent in Q1 and Q2 of 2015 to 50 percent in Q4 of 2016. Weight loss interventions documented in the EMR also increased over time. Interventions included referral for a nutrition consult, provision of an educational card detailing a patient’s BMI (see Figure 2), or referrals to FitLogix, a 52-week behavioral weight management program made available to patients with RA during this initiative. The baseline division aggregate percentage for these interventions was 11 percent, and increased to 69 percent in Q4 of 2016.

Educational BMI card utilized in clinic visits with RA patients to address weight management, an important modifiable CVD risk factor.



My **weight** today is _____

My **BMI** today is _____

Body mass index (or BMI) is a measure which shows whether people have a healthy weight for their height. Ask your doctor about what this means for you.

Under Weight	Normal Weight	Overweight	Obese
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← 17 18 19 20 21 22 23 24 25 26 27 28 29 30 31 32 33 34 35 36 37 38 39 40 41 42 43 44 →

My **goal** _____

For both the rheumatology and cardiology divisions, there was encouragement to begin recording routine disease and functional assessments and the CVD risk assessment calculations. Rheumatology quickly accepted the change in practice, and that change was sustained through the end of the project. At initiative commencement, MDHAQ and RAPID3 scores were recorded by rheumatology division providers in 58 percent of RA patients. At initiative conclusion, there was a 21 percent increase (70 percent of RA patients). Recording of the CVD risk assessments by cardiology division providers also improved over time, from 7 percent and 6 percent of ASCVD 10-year and lifetime recorded at initiative onset, respectively, to 26 percent and 9 percent at initiative conclusion in Q4 or 2016.

Surveys were completed by 81 patients with RA prior to or early in the process of being part of the program (“early” group), and by 35 patients with RA after they were seen in a cardiology consult (“after” group). Knowledge of the relationship between RA and CVD was higher in the

after group; 64 percent of the early group stated there was no relationship, and 26 percent of the after group stated no relationship. Eighty (80) percent of the after group agreed that they have a better understanding of the role of chronic inflammation in coronary artery disease and RA.

Survey responses provided insight into the impact of tobacco cessation and weight management support resources utilized in the program, and about the perceived sustainability of these lifestyle changes. Thirty-three (33) percent of tobacco users that responded in the after group (N=9) participated in QuitLogix. Those that did not indicated they either did not want to quit, or wanted to quit on their own. Forty-three (43) percent of patients eligible to enroll in FitLogix in the after group (N=21) participated in the program; 88 percent of those patients indicated they felt the changes they made in the program were sustainable. For the patients that chose not to participate in FitLogix, the primary reasons cited were 1) patients felt they knew what to do to lose weight and wanted to do so on their own, 2) patients were limited by other medical conditions, and 3) patients felt the program did not sound appealing and would be too time consuming.

Qualitative Achievements

- Revised clinic workflow in two divisions for improved assessment, documentation impacting best patient care
- Educational material sustained
 - Posters prompting weight management discussion
 - Med Facts institution document added to address weight management discussion
- Processes sustained
 - Order sets for best practice approach to RA patients
 - EMR referral to tobacco quitline
- Initiative certified for 20 AMA PRA Category 1 Credits™
- Initiative approved for ABIM MOC Part IV points (practice assessment)
- Abstracts accepted and posters presented:
 - Alliance for the Continuing Education in the Health Professions/ ACEhp 2016 Annual Conference
 - European League of Associations for Rheumatology 2016 EULAR Annual Conference
 - American College of Radiology, ACR Annual Conference, 2016
- Articles submitted for publication to two peer-reviewed journals; 1) *Arthritis Care & Research* (AC&R), an official journal of the American College of

Rheumatology and the Association of Rheumatology Health Professionals and 2) *The Journal of Continuing Education in the Health Professions* is the official journal of the Alliance for Continuing Education in the Health Professions, the Association for Hospital Medical Education, and the Society for Academic Continuing Medical Education.

ACEhp 2016 Annual Conference



Maximizing Collaboration in QI and PI: An Initiative to Improve Quality of Care for Rheumatoid Arthritis Patients
 S. Meadows, D. Kim, P. Zelmer, C. Egidio, M. Stern, B. Goldstein | National Jewish Health | Denver, Colorado

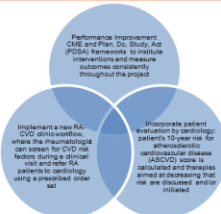
PURPOSE: Increase rheumatoid arthritis patient awareness of cardiovascular risks, improve the process for screening and documenting risk factors, increase referrals to systems-based resources that target modifiable risk factors, and demonstrate improved patient outcomes related to those modifiable risk factors

Gaps & Barriers

Patients with rheumatoid arthritis (RA) have an increased risk of cardiovascular disease (CVD) as compared to the general population. The European League Against Rheumatism (EULAR) recommends that rheumatologists engage in assessing the CVD risks in RA patients.

Multiple barriers such as limited time and lack of familiarity of CVD screening guidelines challenge the feasibility of this practice. Furthermore, recent data suggest that primary care providers fail to assess RA patients consistently or aggressively.

Approach



Interventions & Resource Development

- Develop steering committee consisting of members from multiple disciplines:
 - Professional Education
 - Rheumatology
 - Cardiology
 - Nursing
 - Biostatistics
 - Information Services
- Align initiative with CMS Meaningful Use/PQRS Measures
- Define patient case manager role to facilitate patient flow and access to resources
- Select patient evaluation tools:
 - MDHAQ
 - RAPID 3
 - ASCVD 10 year & lifetime assessment
- Incorporate weight management and smoking cessation referral capability into the National Jewish Health EMR
 - Approach to weight management
 - Approach to smoking cessation and referral
- Develop educational activities for clinical teams:
 - Approach to weight management
 - Approach to smoking cessation and referral
- Develop resources for clinicians to use with patients, including patient education materials
- Develop order set within the EMR, available to all rheumatologists starting January 2015:
 - Referral to the RA-CVD clinic
 - Electrocardiogram
 - Lipid profile or vertical auto profile (VAP)
 - Hemoglobin A1C
 - Complete blood counts
 - Comprehensive metabolic panel
 - Sedimentation rate
 - C reactive protein
 - The option for smoking cessation program
 - The option for behavioral weight loss program

Rheumatoid Arthritis: Periodic Assessment of Disease Activity (PQRS 177)
 Percentage of patients aged 18 years and older with a diagnosis of rheumatoid arthritis (RA) who have an assessment and classification of disease activity within 12 months.

Rheumatoid Arthritis: Functional Status Assessment (PQRS 178)
 Percentage of patients aged 18 years and older with a diagnosis of rheumatoid arthritis (RA) for whom a functional status assessment was performed at least once within 12 months.

Preventive Care and Screening: Tobacco Use: Screening and Cessation Intervention (CDS 135a), PQRS 329c
 Percentage of patients aged 18 years and older who were screened for tobacco use one or more times within 24 months AND who received cessation counseling intervention if identified as a tobacco user.

Preventive Care and Screening: Body Mass Index (BMI) Screening and Follow-Up (CDS 89v), PQRS 128
 Percentage of patients aged 18 years and older with a calculated BMI in the past six months or during the current reporting period documented in the medical record AND if the most recent BMI is outside of normal parameters, a follow-up plan is documented within the past six months or during the current reporting period.

Selected Quality Metrics

For baseline, interim and final reporting:


Physician Name, MD	Progress Report - ARCH				
	My metrics		Group metrics		Goal
Measure	No. of Patients	Percentage	No. of Patients	Percentage	
Screening patients with RA (Target population)	65		517		
— BMI of 25 or greater only	64		490		
— Current smoker	11		117		
Referred to Cardiology for CV risk assessment	N/A	N/A	N/A	N/A	95%
MDHAQ assessment	N/A	N/A	N/A	N/A	75%
Referred to a nutrition consult	11	17%	56	11%	95%
Referred to Dietitians	N/A	N/A	N/A	N/A	95%
Document Smoking Status	65	100%	517	100%	100%
Lipid Panel ordered	5	8%	43	8%	N/A
Hemoglobin A1C ordered	5	14%	64	12%	N/A

Results To-Date

- Of 663 RA patients seen by the rheumatology practice, 190 were referred for evaluation in the RA-CVD clinic because they had at least one modifiable CVD risk factor. 117 patients have been seen by cardiology for assessment thus far.
- A significant number of patients are current or past smokers. 56% of current smokers in the RA-CVD clinic have been referred to **Quitlogix** (smoking cessation intervention), which is a referral added to the EMR as a result of this project (baseline = 0%).
- The majority of patients in the RA-CVD clinic have a BMI ≥ 25 . 23% have been referred to **Fatlogix** (52-week behavioral weight management program), which is a referral added to the EMR as a result of this project (baseline = 0%).
- We have recorded an MDHAQ on 75% of the RA patients and 30% have an ASCVD risk score. Prior to this project, we had not done routine assessments of disease activity or recorded them in our EMR.
- Between the project inception (January 2015) and October 2015, there have been 18/72 (25%) patients with an LDL > 130 mg/dL. Of these patients, 6/18 (33%) patients were started on a statin and 1 had a change in statin therapy based on their ASCVD score and cardiology evaluation.
- One RA patient received a new diagnosis of diabetes which can be attributed to the workflow changes and screening done within rheumatology.

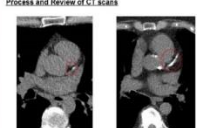
Funded by an educational grant from Pfizer

2016 EULAR Annual Conference Poster




Advocating for Rheumatoid Arthritis and Cardiovascular Health (ARCH): A Systems-Based Screening Initiative in a US Tertiary Referral Center

Barbara L Goldstein, Carmen Egidio, Matthew Stern, Sarah Meadows, Pearlanne Zelarney, and Darlene Kim
National Jewish Health, Denver, Colorado, USA


Background	Methods (continued)	Demographic and Clinical Characteristics	Limitations																																												
<p>Patients with rheumatoid arthritis (RA) have an increased risk of cardiovascular disease (CVD). Cardiovascular events account for roughly half of all deaths in RA patients. CVD occurs early in patients with RA, and with nearly twice the event rate compared to the general population. The increased CVD risk persists despite marked improvements in RA treatment. Although patients with RA appear to have equally frequent and as severe CVD as patients with diabetes mellitus (DM), recent data suggests that primary care providers fail to screen RA patients for CVD risk as consistently or aggressively as patients with DM.</p> <p>Multiple barriers such as limited time and lack of familiarity of CVD screening guidelines challenge the feasibility of this practice.</p> <p>A gap in patient care was identified by our rheumatology and cardiology teams related to RA patients who had modifiable cardiovascular risk factors. Physicians from each of these clinical areas joined with members of our Professional Education, Biostatistics, Nursing, Medical Assistants, and Health Initiative departments to initiate a 28-month performance and quality improvement (QI) project.</p>	<p>Analyses for this study</p> <p>We reviewed the medical records of all RA patients presenting to our hospital for new or follow-up appointments in 2015 when the rheumatology CVD risk assessments began. Charts were reviewed for baseline characteristics, a recent chest CT scan, and medication use. A cardiovascular CT board-certified cardiologist reviewed the CT reports for the presence or absence of coronary calcification. In cases where coronary calcification was not explicitly mentioned in the report, review of the primary images was performed.</p>	<p>Demographic and Clinical Characteristics</p> <table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th>Characteristic</th> <th>Total (n=321)</th> <th>Female (n=199)</th> <th>Male (n=122)</th> </tr> </thead> <tbody> <tr> <td>Age, years</td> <td>56.5</td> <td>55.9</td> <td>59.7</td> </tr> <tr> <td>Female</td> <td>20.4</td> <td>21.8</td> <td>20.9</td> </tr> <tr> <td>RA > 20</td> <td>197 (79%)</td> <td>142 (79%)</td> <td>49 (79%)</td> </tr> <tr> <td>Current smoker</td> <td>145 (45%)</td> <td>135 (52%)</td> <td>47 (38%)</td> </tr> <tr> <td>Medication use</td> <td></td> <td></td> <td></td> </tr> <tr> <td> Methotrexate</td> <td>56 (28%)</td> <td>41 (42%)</td> <td>15 (24%)</td> </tr> <tr> <td> NSAIDs</td> <td>100 (31%)</td> <td>72 (36%)</td> <td>28 (23%)</td> </tr> <tr> <td> Hydroxychloroquine</td> <td>65 (20%)</td> <td>49 (24%)</td> <td>16 (13%)</td> </tr> <tr> <td> Disease-modifying antirheumatic drugs</td> <td>44 (19%)</td> <td>32 (16%)</td> <td>12 (10%)</td> </tr> <tr> <td> Statins</td> <td>10 (3%)</td> <td>6 (3%)</td> <td>4 (3%)</td> </tr> </tbody> </table>	Characteristic	Total (n=321)	Female (n=199)	Male (n=122)	Age, years	56.5	55.9	59.7	Female	20.4	21.8	20.9	RA > 20	197 (79%)	142 (79%)	49 (79%)	Current smoker	145 (45%)	135 (52%)	47 (38%)	Medication use				Methotrexate	56 (28%)	41 (42%)	15 (24%)	NSAIDs	100 (31%)	72 (36%)	28 (23%)	Hydroxychloroquine	65 (20%)	49 (24%)	16 (13%)	Disease-modifying antirheumatic drugs	44 (19%)	32 (16%)	12 (10%)	Statins	10 (3%)	6 (3%)	4 (3%)	<p>This is a quality improvement project which limits the strength of the associations. A prospective study to assess CVD screening and the impact on care over time would strengthen the conclusions from this study.</p>
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<p>Purpose</p> <p>This QI project aimed to increase RA patient awareness of CV risk, improve the process for screening and documenting CV risk factors, increase referrals to systems-based resources that target modifiable risk factors, and demonstrate improved patient outcomes related to modifying those risk factors.</p> <p>In this abstract, we evaluated the efficacy of our practice improvement project. In addition, we assessed whether patients with chest computed tomography (CT) imaging and evidence of coronary disease were screened and medications changed to target their CVD risks.</p>	<p>Process and Review of CT scans</p>  <p>Visual scoring of coronary artery calcium (CAC) has been shown to have good agreement with Agatston CAC scores, which in turn, correlate to clinical outcomes. Rising rates of cardiovascular deaths with increasing CAC scores has been demonstrated.</p>	<p>Results</p> <p>There were 683 RA patients seen during the study interval and 251 were screened and referred for CVD risk assessment. A significant number of patients are current or past smokers. The majority are seropositive and have normal lipoprotein and hemoglobin A1C levels.</p> <p>We found 104 (26%) of the patients had a chest CT available for review. 51 (50%) (49%) had some presence of coronary calcifications on chest CT and 29 (29%) were either on or started on a statin. Other more recent scans were found to have had a chest CT, men with a chest CT were more likely (70% vs. 43%) to have positive coronary calcium.</p> <p>We have recorded MCHADs on 74% of the RA patients and 24% have an ASCVD risk score. Prior to this project, we had not done routine assessments or recorded them in our electronic medical records.</p>	<p>Conclusions</p> <p>RA patients seen in our tertiary hospital were effectively screened for CVD risk and aggressively treated, but we found that not all patients could be screened. Our institution was amenable to the practice changes which utilized multiple members of the health care team, and implementation among other hospitals may be a feasible option.</p> <p>The cardiology assessments are useful and can lead to medication additions or changes. Furthermore, the new workflow has enabled the rheumatologists to take part in CVD and diabetes screening and discovery of these diseases.</p> <p>Our study suggests that RA patients would benefit from a CVD assessment to determine the necessary interventions and recommendations to optimize care. Our program allows for a streamlined approach to screening and facilitates easy access for the evaluation.</p>																																												
<p>Methods</p> <p>General overview of the QI initiative</p> <p>A National Jewish Health tertiary referral center we implemented an integrated system to provide RA patients direct access to evaluation by a cardiologist for CVD risk assessment. This quality improvement project offers an innovative approach that has not previously been employed.</p> <p>In the new RA-CVD clinic workflow, the rheumatologist can screen for CVD risk factors during a clinic visit and refer RA patients to cardiology using a preauthorized order.</p> <p>Once the order is placed, the patient is scheduled for evaluation by cardiology. During that evaluation, the patient's 10-year risk for atherosclerotic cardiovascular disease (ASCVD) score is calculated and strategies aimed at decreasing that risk are discussed and/or initiated.</p> <p>The initiative utilizes Performance Improvement Continuing Medical Education (P-CE) and Plan, Do, Study, Act (PDSA) frameworks to initiate interventions and measure outcomes consistently throughout the project.</p>	<p>Take Control. 1.800.QUIT.NOW</p> <p>Call Now: 9 AM-8 PM</p>	<p>References</p> <p>Phelan M, et al. 2014. An evidence-based decision tool for cardiovascular risk management in patients with rheumatoid arthritis and other forms of inflammatory arthritis. <i>Ann Rheum Dis</i>. 2015 Feb;34(2):235-31.</p> <p>Deane L, et al. Challenges of cardiovascular risk assessment in the routine rheumatology outpatient setting: an observational study of 110 rheumatoid arthritis patients. <i>Arthritis Care Res</i>. 2011 May;23(5):712-7.</p> <p>Robb R, et al. ESCAR risk factor recommendations on annual cardiovascular risk assessment for patients with rheumatoid arthritis: an audit of the accuracy of implementation in rheumatology outpatient clinic. <i>Scand J Rheumatol</i>. 2015;24(5):320-3. Epub 2015 Mar 1.</p> <p>Martin-Marsaus MA, et al. Recommendations for the management of cardiovascular risk in patients with rheumatoid arthritis: scientific evidence and expert opinion. <i>Semin Arthritis Rheum</i>. 2014 Aug;44(1):1-8.</p> <p>Rousseau-Alexandre J, et al. Cardiovascular risk assessment in rheumatoid arthritis: impact of the EULAR recommendations on a national validated score risk index. <i>Clin Exp Rheumatol</i>. 2014 Mar-Apr;32(2):237-42.</p> <p>Prinsloo J, et al. Effects from a systematic screening for cardiovascular risk in patients with rheumatoid arthritis: in accordance with EULAR recommendations. <i>Ann Rheum Dis</i>. 2013 Nov;32(11):1717-9.</p> <p>Combes-Vaquero C, et al. Assessment of cardiovascular risk in rheumatoid arthritis: impact of the new EULAR recommendations on the score cardiovascular risk index. <i>Clin Rheumatol</i>. 2012 Jun;32(6):328-9.</p> <p>Phelan M and Muntzman M. Cardiovascular risk management in rheumatoid arthritis: are we still waiting for the first step? <i>Arthritis Res Ther</i>. 2013;15(1).</p>																																													

ACR Annual Conference, 2016



Advocating for Rheumatoid Arthritis and Cardiovascular Health (ARCH): A Collaborative and Systems-Based Approach to Improve Access to Care

Barbara L Goldstein, JoAnn Zell, Carmen Egidio, Matthew Stern, Sarah Meadows, Meg Dingae, Pearlanne Zelarney, and Darlene Kim
National Jewish Health, Denver, Colorado

Background	Methods (continued)	CMS Meaningful Use/PQRS Measures	Results																																																																																																			
<p>Patients with rheumatoid arthritis (RA) have an increased risk of cardiovascular disease (CVD) as compared to the general population. The European League Against Rheumatism (EULAR) recommends that rheumatologists engage in assessing the CVD risks in RA patients.</p> <p>Multiple barriers such as limited time and lack of familiarity of CVD screening guidelines challenge the feasibility of this practice. Furthermore, recent data suggest that primary care providers fail to assess RA patients consistently or aggressively.</p> <p>A gap in patient care was identified by our rheumatology and cardiology teams related to RA patients who had modifiable cardiovascular risk factors. Physician leads from each of these clinical areas joined with members of our Professional Education, Biostatistics, Nursing, Medical Assistants, and Health Initiative departments to initiate a 28-month performance and quality improvement (QI) project.</p>	<p>Operationalizing the Initiative</p> <ul style="list-style-type: none"> Development of a steering committee consisting of members from: <ul style="list-style-type: none"> Multiple disciplines Development of resources for clinicians to use with patients and access to resources Development of patient education materials Development of quality metrics for providers Selected patient evaluation tools: <ul style="list-style-type: none"> MDHAG RAPID 3 ASCCO 15 year & lifetime assessment Incorporate weight management and smoking cessation referral capability into the National Jewish Health EHR. Educational activities for clinical teams Approach to weight management Approach to smoking cessation and referral Developed order set within the EHR, available to all rheumatologists starting January 2015 <ul style="list-style-type: none"> Referred to the RA-CVD clinic Electrocardiogram Lipid profile or vertical auto profile (VAP) Hemoglobin A1C Comprehensive lipid counts Comprehensive metabolic panel Serum ferritin C reactive protein The option for smoking cessation program The option for behavioral weight loss program <p>Patient education materials</p> 	<p>Rheumatoid Arthritis (RA): Periodic Assessment of Disease Activity (PQRS 177)</p> <p>Percentage of patients aged 18 years and older with a diagnosis of rheumatoid arthritis (RA) who have an assessment and classification of disease activity within 12 months.</p> <p>Rheumatoid Arthritis (RA): Functional Status Assessment (PQRS 178)</p> <p>Percentage of patients aged 18 years and older with a diagnosis of rheumatoid arthritis (RA) for whom a functional status assessment was performed at least once within 12 months.</p> <p>Preventive Care and Screening: Tobacco Use: Screening and Cessation Intervention (CMS 130v3, PQRS 238)</p> <p>Percentage of patients aged 18 years and older who were screened for tobacco use one or more times within 24 months AND who received cessation counseling intervention if identified as a tobacco user.</p> <p>Preventive Care and Screening: Body Mass Index (BMI) Screening and Follow-Up (CMS 89v3, PQRS 133)</p> <p>Percentage of patients aged 18 years and older with a calculated BMI in the medical record AND if the most recent BMI is outside of normal parameters, a follow-up plan is documented within the past six months or during the current reporting period.</p>	<p>There were 608 RA patients seen by the rheumatology practice during the study interval and 164 were referred for evaluation in the RA-CVD clinic because they had at least one modifiable CVD risk factor and 36 were already cardiology patients. Only 99 patients have been seen by cardiology for assessment thus far.</p> <p>A significant number of patients are current or past smokers. The majority of patients are seropositive with no inflammation by laboratory biomarkers level and have normal lipid and hemoglobin A1C levels.</p> <p>We have recorded an MDHAG on 72% of the RA patients and 30% have an ASCVD risk score. Prior to the project, we had not done routine assessments of disease activity or recorded them in our EHR.</p> <p>Since the project began, there have been 10/72 (25%) patients with an LDL > 130 mg/dL. Of these patients, 6/18 (33%) patients were started on a statin and 1 had a change in statin therapy based on their ASCVD score and cardiology evaluation.</p> <p>One RA patient received a new diagnosis of diabetes which can be attributed to the workflow changes and screening done within rheumatology.</p>																																																																																																			
<p>Purpose</p> <p>The QI project aimed to increase RA patient awareness of CV risks, improve the process for screening and documenting CV risk factors, increase referrals to systems-based resources that target modifiable risk factors, and demonstrably improve patient outcomes related to modifying those risk factors.</p> <p>The initiative is also aimed to address institutional gaps related to the Centers for Medicare and Medicaid Services Meaningful Use Clinical Quality Measures for assessment of RA patients (CMS 177 and 178), Tobacco Use: Screening and Cessation Intervention (CMS 130v3) and Body Mass Index (BMI) Screening and Follow-Up (CMS 89v3).</p> <p>In this abstract, we describe our experience during the first 9 months of implementing this initiative. Specifically, we focus in particular on low density lipoprotein (LDL) levels of RA patients, whether they were on a statin medication at baseline and whether there was a change to statin therapy after ASCVD scores were completed.</p>	<p>Methods</p> <p>General overview of the QI initiative</p> <p>At National Jewish Health, a tertiary referral center, we implemented an integrated system to provide RA patients direct access to evaluation by a cardiologist for CVD risk assessment. This quality improvement project offers an innovative approach that has not previously been employed.</p> <p>In the new RA-CVD clinic workflow, the rheumatologist can screen for CVD risk factors during a clinical visit and refer RA patients to cardiology using a prescribed order set.</p> <p>Once the order is placed, the patient is scheduled for evaluation by cardiology. During that evaluation, the patient's 10-year risk for atherosclerotic cardiovascular disease (ASCVD) score is calculated and therapists aimed at decreasing that risk are discussed and/or initiated.</p> <p>The initiative utilizes Performance Improvement Coordinating Medical Education (PI-CME) and Plan, Do, Study, Act (PDSA) frameworks to evaluate interventions and measure outcomes consistently throughout the project.</p>	<p>Demographic and Clinical Characteristics</p> <table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th></th> <th>Total (N=200)</th> <th>Women (N=153)</th> <th>Men (N=47)</th> </tr> </thead> <tbody> <tr> <td>Age, years</td> <td>58.7</td> <td>57.9</td> <td>60.9</td> </tr> <tr> <td>Latest body mass index, kg/m²</td> <td>30.32</td> <td>30.38</td> <td>28.81</td> </tr> <tr> <td>Current or past smoker, no (%)</td> <td>129 (64%)</td> <td>82 (80%)</td> <td>47 (98%)</td> </tr> <tr> <td>Never smoker, no (%)</td> <td>71 (36%)</td> <td>41 (40%)</td> <td>30 (21%)</td> </tr> <tr> <td>Hypertension, no (%)</td> <td>66 (33%)</td> <td>36 (36%)</td> <td>30 (21%)</td> </tr> <tr> <td>Ischemic heart disease, no (%)</td> <td>21 (11%)</td> <td>14 (11%)</td> <td>7 (15%)</td> </tr> <tr> <td>Coronary artery, no (%)</td> <td>14 (8%)</td> <td>12 (8%)</td> <td>2 (4%)</td> </tr> <tr> <td>Diabetes, no (%)</td> <td>38 (19%)</td> <td>29 (19%)</td> <td>9 (19%)</td> </tr> </tbody> </table> <table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th></th> <th>Total</th> <th>Women</th> <th>Men</th> </tr> </thead> <tbody> <tr> <td>HDL, mg/dL (N=200)</td> <td>53.1</td> <td>53.4</td> <td>53.0</td> </tr> <tr> <td>LDL, mg/dL (N=200)</td> <td>22</td> <td>23</td> <td>18</td> </tr> <tr> <td>HF positive (N=14,846)</td> <td>127 (64%)</td> <td>84 (82%)</td> <td>43 (70%)</td> </tr> <tr> <td>HF negative (N=20,414)</td> <td>132 (66%)</td> <td>86 (83%)</td> <td>46 (76%)</td> </tr> <tr> <td>ACE inhibitor (N=14,846)</td> <td>8.69</td> <td>8.69</td> <td>8.70</td> </tr> <tr> <td>LDL (mg/dL) (N=9)</td> <td></td> <td></td> <td></td> </tr> <tr> <td>Total cholesterol, mg/dL</td> <td>186</td> <td>188</td> <td>176</td> </tr> <tr> <td>HDL cholesterol, mg/dL</td> <td>52</td> <td>55</td> <td>40</td> </tr> <tr> <td>LDL cholesterol, mg/dL</td> <td>104</td> <td>103</td> <td>105</td> </tr> </tbody> </table> <p>Medications</p> <table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th></th> <th>Total</th> <th>Women</th> <th>Men</th> </tr> </thead> <tbody> <tr> <td>Antiplatelet, no (%)</td> <td>91 (45%)</td> <td>73 (47%)</td> <td>18 (38%)</td> </tr> <tr> <td>Statin, no (%)</td> <td>36 (18%)</td> <td>24 (16%)</td> <td>12 (26%)</td> </tr> <tr> <td>Aspirin, no (%)</td> <td>29 (15%)</td> <td>20 (13%)</td> <td>9 (19%)</td> </tr> <tr> <td>Oral diabetes, no (%)</td> <td>53 (27%)</td> <td>38 (25%)</td> <td>15 (32%)</td> </tr> <tr> <td>Metformin, no (%)</td> <td>88 (43%)</td> <td>61 (40%)</td> <td>27 (55%)</td> </tr> </tbody> </table>		Total (N=200)	Women (N=153)	Men (N=47)	Age, years	58.7	57.9	60.9	Latest body mass index, kg/m ²	30.32	30.38	28.81	Current or past smoker, no (%)	129 (64%)	82 (80%)	47 (98%)	Never smoker, no (%)	71 (36%)	41 (40%)	30 (21%)	Hypertension, no (%)	66 (33%)	36 (36%)	30 (21%)	Ischemic heart disease, no (%)	21 (11%)	14 (11%)	7 (15%)	Coronary artery, no (%)	14 (8%)	12 (8%)	2 (4%)	Diabetes, no (%)	38 (19%)	29 (19%)	9 (19%)		Total	Women	Men	HDL, mg/dL (N=200)	53.1	53.4	53.0	LDL, mg/dL (N=200)	22	23	18	HF positive (N=14,846)	127 (64%)	84 (82%)	43 (70%)	HF negative (N=20,414)	132 (66%)	86 (83%)	46 (76%)	ACE inhibitor (N=14,846)	8.69	8.69	8.70	LDL (mg/dL) (N=9)				Total cholesterol, mg/dL	186	188	176	HDL cholesterol, mg/dL	52	55	40	LDL cholesterol, mg/dL	104	103	105		Total	Women	Men	Antiplatelet, no (%)	91 (45%)	73 (47%)	18 (38%)	Statin, no (%)	36 (18%)	24 (16%)	12 (26%)	Aspirin, no (%)	29 (15%)	20 (13%)	9 (19%)	Oral diabetes, no (%)	53 (27%)	38 (25%)	15 (32%)	Metformin, no (%)	88 (43%)	61 (40%)	27 (55%)
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<p>Limitations</p> <p>This is a quality improvement project which limits the strength of the associations and is a means to preliminary data for use in a prospective project to assess CVD screening and the impact on care over time.</p>	<p>Conclusions</p> <p>In less than 9 months, we have implemented a practice improvement protocol that has effectively improved the capture of CVD risk assessment by the rheumatologist, but left time to see cardiology has increased.</p> <p>The changes to our workflow have enabled the rheumatologists to assess and refer patients. We are successfully meeting 4 CMS Meaningful Use measures which will be useful when reporting becomes obligatory.</p> <p>The cardiology assessments are useful and can lead to medication additions or changes. Furthermore, the new workflow has enabled the rheumatologists to take part in CVD and diabetes screening and discovery of these diseases.</p> <p>Our study suggests that RA patients would benefit from a CVD assessment to determine the necessary interventions and recommendations to optimize care. Our program allows for a streamlined approach to screening and facilitates easy access for the evaluation.</p>	<p>Contact information</p> <p>Barbara Goldstein, MD, MMS, FACC goldsteinb@njhealth.org</p> <p>Darlene Kim, MD, FACC kimd@njhealth.org</p>																																																																																																				

Significance and Discussion of Implications

This 28-month education, practice improvement initiative increased performance on target measures in quality care for patients with RA. Throughout the project we assessed the effectiveness of our interventions. For example, one aim was to educate patients on their modifiable risk factors such as weight. We created BMI education cards for patients to review during their cardiology visit and discuss further with the provider. We engaged with our health initiatives team and offered patients a one year behavioral weight intervention program for free. We also encouraged both rheumatology and cardiology physicians to become more comfortable discussing weight with the patients by hosting division meetings for the healthcare professional team that focused on how to talk to patients about weight. This included assessing patient readiness, where to find weight management resources for patients, and the important role of each healthcare professional on the team in the process of addressing weight with

patients. In September 2016, we also added an option for patients to begin a physical rehabilitation program that focused on a routine exercise regimen tailored to their needs.

Prior to this initiative, the rheumatology division had not been recording routine disease and functional assessments on RA patients, despite this being the current recommended standard of care. There had been tremendous hesitation and lack of resources to complete this regularly. However, with this initiative, we were able to implement routine MDHAQ and RAPID3 assessments and based on our data collection the practice has been implemented with success, and sustained over the initiative duration.

The cardiology division placed a significant emphasis on developing a process for addressing weight with all patients, including those with RA. Division leaders encouraged the medical assistant (MA) staff to initiate a conversation by providing any patient with a BMI ≥ 25 the educational card with BMI number circled, and a directive to share the card with their provider in the visit. Providers would then indicate target goals on the patient education card to encourage reasonable lifestyle changes. MAs would also indicate overweight in the patient's chart. Both actions were reminders to providers to engage in a brief weight management conversation, which maximized clinic time and therefore was adopted as a regular process by most division providers.

Of the 788 RA patients seen by the rheumatology practice during the study interval, 371 were referred for evaluation in the RA-CVD clinic because they had at least one modifiable CVD risk factor. The cardiology assessments are useful and lead to medication additions or changes. Furthermore, the new workflow has enabled the rheumatologists to take part in CVD and diabetes screening and discovery of these diseases. Our study suggests that RA patients would benefit from a CVD assessment to determine the necessary interventions and recommendations to optimize care. Our program demonstrates a streamlined approach to screening and facilitates easy access for the evaluation.

Conclusion

Our program was an innovative and multi-disciplinary approach to begin routine CVD risk assessment in RA patients that will be sustainable long term. The workflow changes, ease of use, and multi-team member engagement were critical in the implementation of the program. We believe that the overall changes will be long lasting and continue to improve the delivery of care for our RA patients.

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6. **List of Publications and Products** (Bibliography of Published Works and Electronic Resources from Study—Use [AHRQ Citation Style for Reference Lists](#)).
1. Peters MJ et al. EULAR evidence-based recommendations for cardiovascular risk management in patients with rheumatoid arthritis and other forms of inflammatory arthritis. *Ann Rheum Dis*. 2010 Feb;69(2):325-31.
 2. Gossec L et al. Challenges of cardiovascular risk assessment in the routine rheumatology outpatient setting: an observational study of 110 rheumatoid arthritis patients. *Arthritis Care Res*. 2013 May;65(5):712-7.
 3. Ikdahl E et al. EULAR task force recommendations on annual cardiovascular risk assessment for patients with rheumatoid arthritis: an audit of the success of implementation in a rheumatology outpatient clinic. *Biomed Res Int*. 2015;2015:515280. Epub 2015 Mar 1.
 4. Martin-Martinez MA, et al. Recommendations for the management of cardiovascular risk in patients with rheumatoid arthritis: scientific evidence and expert opinion. *Semin Arthritis Rheum*. 2014 Aug;44(1):1-8.
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 8. Peters MJ and Nurmohamed M. Cardiovascular risk management in rheumatoid arthritis: are we still waiting for the first step? *Arthritis Res Ther* 2013,15:111.