Health Care Quality Improvement & Education in Rheumatoid Arthritis:

Improving Cardiovascular Risk Assessment and Management

Final Report

Principal Investigator:

Yusuf Yazici, MD (NYU)

Key Team Members:

Joann Carpana (NYU)

Ranit Shriky (NYU)

Nieca Goldberg, MD (NYU)

Brian Golden, MD (NYU)

Pamela Rosenthal, MD (NYU)

Audrey Zhang (iMD)

Gregory Liptak (iMD)

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NYU School of Medicine
NYU LANGONE MEDICAL CENTER

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Contents

Abstract

Patients with rheumatoid arthritis (RA) have higher mortality than the general population and the leading cause of death is cardiovascular disease (CVD). Nevertheless, screening rates of CVD risk factors among this patient population has been consistently shown to be suboptimal. We designed a quality improvement (QI) initiative targeting rheumatologists at New York University (NYU) Center for Musculoskeletal Care (CMC), to address practice barriers related to the timely assessment and management of CVD risk factors. In addition, the program aimed to encourage more effective care coordination among rheumatologists, cardiologists and primary care providers (PCPs) by raising awareness and facilitating cross-specialty dialogues.

To that end, we engaged a multifaceted approach and designed a highly engaging 2-year curriculum that included audit & feedback mechanisms, multidisciplinary didactic workshops, and a checklist-based continuous QI pilot. At the foundation of each educational tactic are various types of practice data ranging from patient charts to attitudinal surveys that uncovered practice gaps, challenges and barriers specific to NYU practices.

Follow-up assessment at the end of the initiative showed that lipid screening rates nearly doubled (19% at baseline vs. 36% at follow-up) among rheumatologists who attended the workshops. Among physicians who enrolled in the QI pilot, 56% of their RA patients received an updated lipid assessment. As a result, patients who received complete CVD risk screening improved from 10.5% to 32% for physicians who attended the workshops and 48% for physicians who enrolled in the QI pilot. In addition, management of hypertension, smoking cessation and cardiology referral also saw varying degrees of improvement.

Objectives

1. Establish a broad baseline of patient- and system-level data on how NYU rheumatologists and PCPs work together to manage patients with RA, with a focus on diagnosis, referral and CVD risk assessment;
2. Analyze the baseline results to develop data-driven educational interventions for a broad audience that identify best practices, persistent gaps, and actionable processes that can result in an overall improvement in RA and cardiovascular risk management between and amongst rheumatologists. PCPs and cardiologists
3. Broadly re-assess the percentage of adults receiving optimal RA management and CVD risk assessment after the interventions to identify successful strategies and persistent challenges to optimal care
4. Leverage quality improvement techniques to explore team-based interventions that may lead to sustainable practice change
5. Disseminate the findings to a national audience (via publications and online educational offerings) focusing on all issues – from policy to patient – that positively or negatively impact the management of patients with RA.

Scope

Patients with rheumatoid arthritis (RA) have higher mortality than the general population and the leading cause of death is cardiovascular disease. It has been demonstrated that the absolute risk of a cardiovascular event rose dramatically if traditional cardiovascular risk factors such as hypertension, dyslipidemia, smoking, diabetes and obesity were present. A study of patients with RA in a national health plan show that recommended processes of care specific to RA management were performed only 62% of the time. Through a broader assessment of need locally at NYU, we have identified several key areas toward improving appropriate diagnosis, timely referral, disease management and CVD risk assessment in patients with RA.

The project starting point is to establish a regional baseline at NYU using quality measures defined by this assessment of need and the overall goals & objectives of this initiative. Several sources of quality measures (i.e., The NCQA/PCPI/ACR RA Physician Performance Measure Set, ACR/EULAR classification criteria, and CVD risk assessment measures) were applied. This was accomplished by looking at patients in both the NYU Division of Rheumatology and Bellevue Hospital Division of General Internal Medicine, supplemented by primary research such as practice surveys. The primary target audience included rheumatology care providers – physicians, nurses and PAs – at NYU Center for Musculoskeletal Care (CMC); secondary target audience included primary care physicians at Bellevue Hospital, NYU cardiologists, as well as rheumatologists in the greater New York region.

Methods

Design

This multifaceted QI initiative combined real-time clinical chart audit/feedback, didactic physician education, and a checklist-based quality improvement (QI) intervention, targeting rheumatologists at the NYU Center for Musculoskeletal Care (CMC) as well as a secondary audience of primary care providers at Bellevue Hospital.

Data collection

Practice baseline was established for both CMC and Bellevue between August 2013 and April 2014. Data from 1036 RA patients were extracted from CMC RA patient registry to assess practice performance around CVD risk assessment. In addition, data from 6778 primary care patients >18 years of age were extracted from Bellevue EMR to identify opportunities for improvement in RA patient referral. Data collection for followup assessment commenced in January 2015 and concluded in May 2015. Additional data for 532 RA patients were collected and evaluated against pre-defined performance metrics. Apart from clinical chart data collection, we also collected practice data via attitudinal surveys to assess system-level and provider-level barriers to change.

Interventions

We adopted a multi-modal intervention design that included three different mechanisms: audit/feedback, didactic lectures, and quality improvement facilitation. Audit/feedback and didactic lectures were implemented simultaneously via small group grand rounds/workshop sessions, and enrolled all providers at the NYU CMC as participants. Workshop contents were recorded and made available online, allowing for further dissemination to a broader audience both within NYU and beyond.

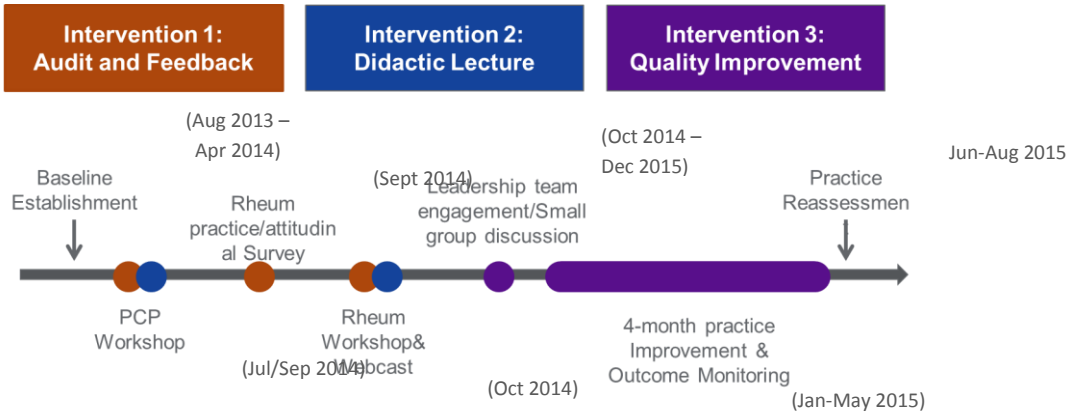

Figure 1: Intervention design at a glance

Intervention 1 & 2 – data-driven small group workshops: Key findings were disseminated at two General Medicine grand rounds at Bellevue Hospital. Two cardiology experts (Dr. Nieca Goldberg and Dr. Harmony Reynolds) and a rheumatology expert (Dr. Pamela Rosenthal) presented findings from data and related clinical research. Parallel to this process, a group of the rheumatologists at NYU CMC conducted a mid-program evening workshop in Oct 2014 to discuss continued barriers to CV risk assessment. 27 rheumatologists also completed a practice survey, the results of which were disseminated at the workshop. The discussion was led by the Associate Director of CMC, Dr. H.Michael Belmont, and a CMC rheumatologist, Dr. Brian D. Golden. The webcast for this workshop was disseminated to the New Jersey Rheumatism Society and the NY Rheumatism Society.

Intervention 3 - Quality Improvement (QI) Team: To further augment these interventions, CMC leadership initiated a practice improvement project to test interventions that may optimize practice workflow for better CV risk assessment. The project was not part of the original proposal but was fully implemented despite having little budgetary support. 7 rheumatologists, 2 research assistants and several nurses were enrolled into a QI team to test an alert/flagging protocol, which, if proven useful, could be built into the EMR system for sustainability and scalability.

Chart flagging protocol

Remarks: For all RA patients lacking lipid values, check all that apply

	Risk factors	**Recommend lipid panel**?**	**Other recommended Interventions** *(If not already prescribed)*
☐	Hx of CHD or risk equivalent*	✓	+ Statin
☐	BP>140/90	✓	+ Anti-hypertensives
☐	Diabetic	✓	+ Statin
☐	+ RF/+CCP	✓	
☐	Extra-articular manifestations	✓	
☐	>10 year RA history	✓	
☐	Smoker	✓	+ Smoking cessation counseling
Final Recommendations			

Figure 2: Sample chart flagging protocol used by the QI team

Between February and June 2015, research assistants reviewed every patient chart that belonged to participating rheumatologists and flagged eligible patients according to a rigorous protocol. Final data collection commenced in June and concluded in August. Data from 532 RA patients were collected. A summary report was developed and circulated among all providers at CMC. The team is working towards a publication as a final conclusion.

Quality measures

Clinical measures were specifically designed to track the progress of key interventions against program objectives. These measures were derived from patient chart data from either patient registries or EMRs. Key chart review measures are summarized in the table below

Measure domain	Clinical Measures
CVD risk Assessment	% patients with lipid panel (LDL-C, HDL-C, triglycerides) performed in the past 6 months
	% patients with BP measured in the past 6 months
	% patients with BMI measured in the past 6 months
	% patients with smoking status assessed
	% patients with documented family history of premature CHD
CHD risk management	% of patients on statin
	% patients on BP medication
	% of current smokers who received smoking cessation
	% of patients with LDL-C<100mg/dL
	% of patients with BP<120/90 mmHg
Referral status	% of RA patients with significant CV risk referred to cardiologists
	% of primary care patients with significant RA risk factors referred to rheumatologists
Composite measure	% patients who received full documentation of CVD risk factors required for the calculation of Framingham risk scores

Table 1: Key quality measures used for baseline establishment and follow-up assessment

Results

Principal Findings

1) CVD risk assessment rate in RA patients at NYU was low

The analysis of chart data from 1036 RA patients provided a highly relevant and system-specific snapshot of the current state of care received by patients seen in the NYU rheumatology division. Key demographic data from baseline chart review is summarized in the table below

Gender	Female	N=855
	Male	N=169
Age	<40	N=115
	40-55	N=353
	55-65	N=272
	>65	N=292
Ethnicity	African American	N=32
	Asian	N=104

	Caucasian	N=193
	Hispanic	N=96
	Other	N=2
	Missing	N=609

Table 2: Summary of key demographic data (patients with established RA diagnosis; N=1036)

This baseline assessment revealed that the percentage of patients receiving guideline recommended assessment in CV risk was far less than optimal. Only 56 out of 1036 patients had CV risk assessed and recorded, and only 109 patients had the requisite chart data to calculate Framingham risk scores. The most frequently missing CV risk factors were LDL-C and HDL-C, documented in only 19% of total patients assessed.

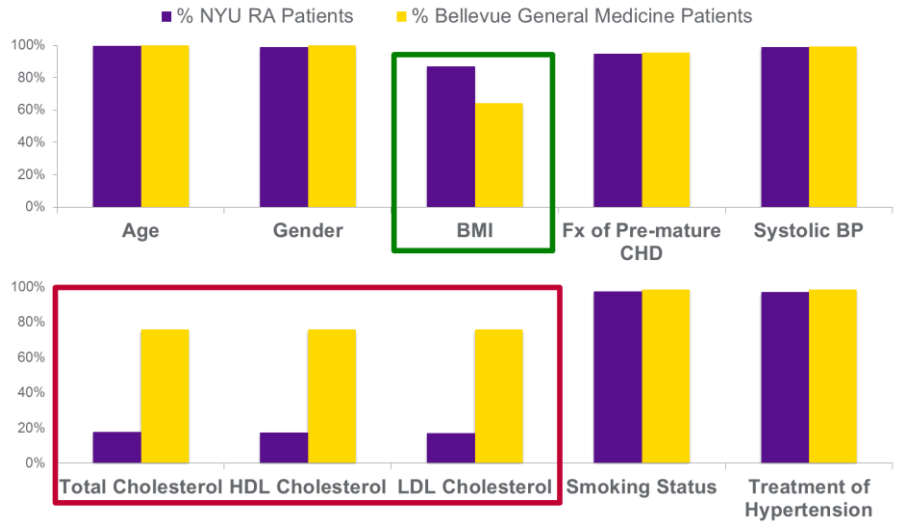

Figure 3: Practice baseline for CVD risk assessment at NYU CMC

2) Management of CV risk factors by rheumatologists showed room for improvement

Statin use in CHD secondary prevention was poor, and as many as 40% of patients with hypertension were not on any anti-hypertensive medications. Among patients with full lipid profiles, a significant number of them were not at lipid goals. Furthermore, nearly 60% of high-risk patients with diabetes and/or history of CHD or equivalent were not on statins or hypertensive medications. Smoking cessation among smokers was not carried out consistently. These were important care gaps that needed to be addressed.

3) There is significant confusion among rheumatologists, PCPs and cardiologists regarding who should be accountable for RA patients' CV risk management

In a practice survey fielded to 16 NYU rheumatologists, 53% of respondents reported that CVD risk assessment was not part of their routine; for the 35% who did assess for risk, none used a formal risk score calculator. When asked about barriers to CVD risk assessment at their practices, 40% of physicians cited reasons related to the lack of clear guidelines; another 30% cited the expectation that the patient's PCP/cardiologist should be responsible for the management of CV risk. Nevertheless, among physicians

with such expectations, a majority of them did not actively monitor CV risk management outcomes. Such confusion may lead to significant number of patients falling through the cracks.

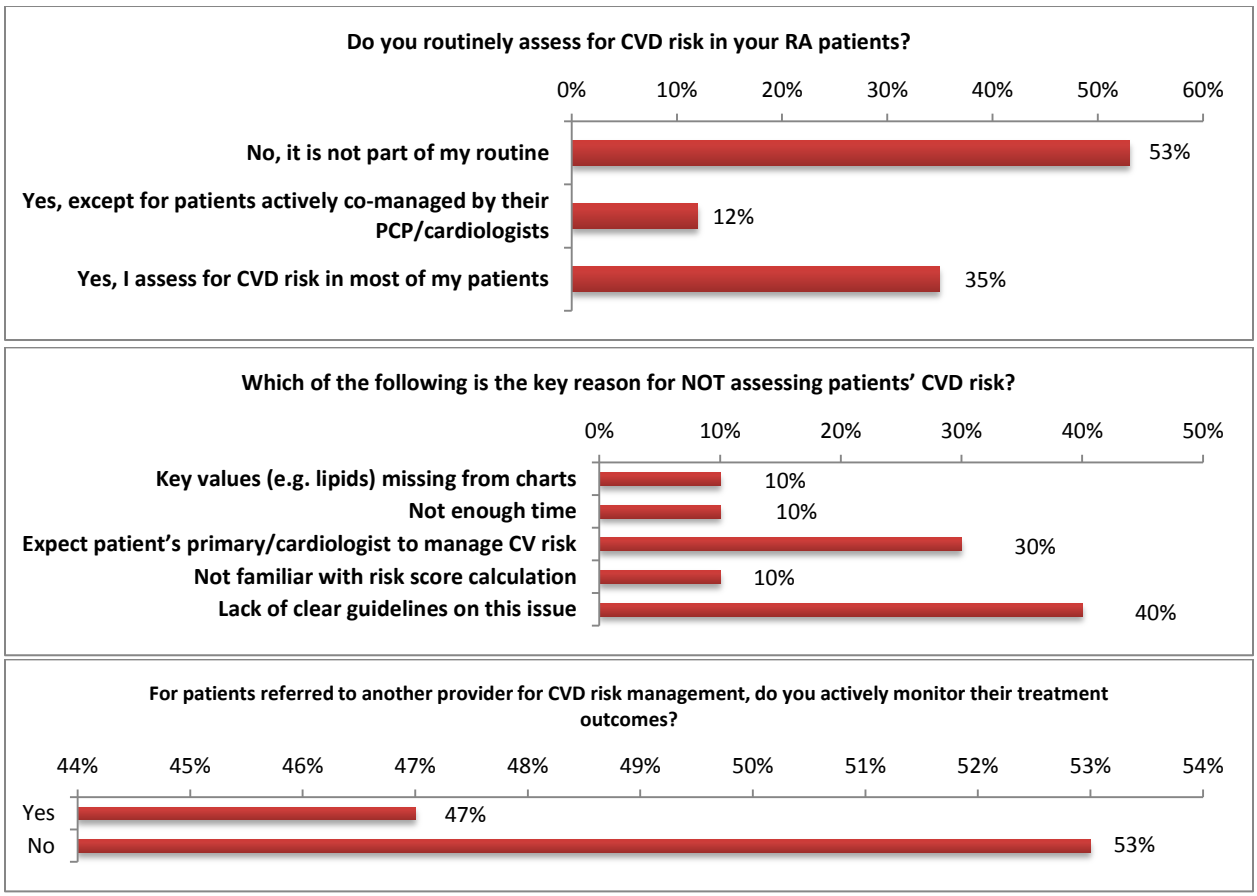

Figure 4: Select responses to attitudinal survey (N=16)

4) Few RA patients are referred to cardiologists

Out of all RA patients (n=1036) that were included in the chart study, only 8 of them were referred to cardiologists for CV risk management, even though a significant number of patients were at medium to high risk of CVD. This practice behavior was a departure from our practice survey results, which showed that one third of rheumatologists deem cardiology referral as the appropriate course of action for their patients with elevated CV risk profiles. This practice gap was, once again, identified as a potential area for intervention moving forward.

Program Outcomes

Program interventions were closely tailored to key findings from patient chart reviews and physician surveys, which ensured a highly targeted and relevant curriculum. The multi-pronged approach that involved three different interventions – audit & feedback, didactic lectures and a 4-month QI pilot – aimed to educate providers from multiple touch points, addressing practice gaps at both knowledge and behavioral levels. All participants attended workshops that incorporated elements of audit/feedback and didactic lectures; a select group of 8 rheumatologists were recruited to the QI pilot. Program

outcomes were evaluated separately for rheumatologists who participated in the workshops only, and those who participated in both workshops and engaged with the QI Team.

We collected patient data between Jan 2015 to May 2015, a total of 532 RA patients. Among which, 261 patients were seen by physicians who participated in both the workshops and the QI program. With a keen focus on enforcing lipid testing among RA patients, the various interventions resulted in a significant improvement in lipid panel testing and documentation. Compared to baseline data which showed only 17-18% of patients had documented lipid panels, 36% of patients seen by workshop-only rheumatologists received an updated lipid profile, and 56% of patients seen by the QI team physicians had lipids assessed within the recent 6 months. Taken together, among physicians from the QI team, 48% of patients received full documentation of all CVD risk factors, compared to 10.5% at baseline.

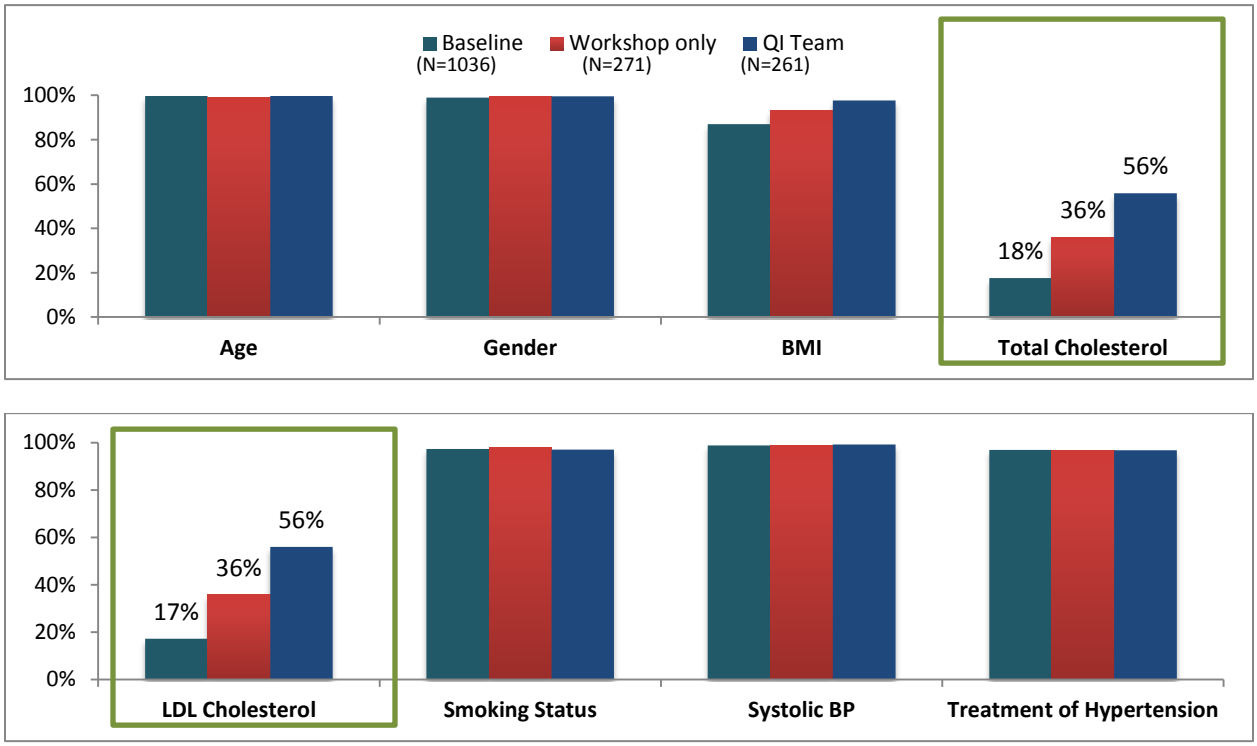

Figure 5: Summary of key risk assessment measures at follow-up

In terms of CVD risk management, there was a slightly more aggressive use of hypertension treatment (defined by number of hypertensive medications prescribed) among rheumatologists from the QI team. A similar trend was not seen among physicians who attended only the workshops. While improvement trend was mostly directional, it was indicative of a practice change that places more focus on CV risk management. Documentation of smoking cessation was another performance area that saw much improvement, particularly among the QI team members. 26% of RA patients at reassessment received documented smoking cessation counseling, compared to 4% at baseline.

In addition to CVD risk assessment and management, the follow-up assessment also revealed an increase in cardiologist referral among rheumatologists who were part of the QI team. A similar

improvement was not present in physicians who attended the workshops only. While only 8 out of 1036 patients were referred at baseline, 22 out of 261 patients seen by the QI team members received a cardiologist referral. This was indicative of closer collaboration and better co-management of patients between specialists.

Discussion

Our program adopted a multi-faceted approach with 3 different interventional tactics, and achieved a 2-3 fold increase in CV risk factor screening among RA patients within NYU Center for Musculoskeletal Care. Participants who were engaged in the 4-month QI activity achieved greater improvement compared to those who attended the workshops alone. Leveraging the power of data was at the center of the audit/feedback mechanism. Comprehensive analysis and visualization of local clinical practice data served as the foundation of the entire initiative – it not only created a highly relevant and engaging curriculum, but also motivated the leadership to self-initiate a QI activity which was not part of the original grant proposal.

In addition, the didactic workshops during which data insights and clinical evidence were reviewed in small groups allowed institutional leadership to champion improvement efforts internally while fostering a non-judgmental environment for candid introspection. Local data from both chart reviews and practice surveys revealed both provider- and system-level issues that resonated with workshop participants, giving them a chance to openly discuss root causes and brainstorm solutions. In addition, we made sure to include all members of the clinical care team – not just rheumatologists – into these discussions, with the goal of encouraging collaborative, inter-disciplinary and inter-specialty problem solving.

While the workshops proved to be highly engaging, the QI team effort, while not part of the original protocol, further enhanced the effectiveness of the entire QI initiative. While both groups of physicians were able to demonstrate positive outcomes in CV risk screening – which was the primary objective of this program – the QI team members were able to further improve upon CV risk factor management in areas of hypertension management, co-management of patients with cardiologists, and smoking cessation. These achievements from the QI team demonstrated the potential of a checklist-based chart flagging protocol to improving the process of care. A simple and straightforward solution, the checklist allowed the busy clinicians to review key care processes without being disruptive to his/her workflow. While we implemented the checklists manually, the solution could be easily incorporated into the NYU EMR system, in the form of decision support or alert add-ons, to ensure sustainability and scalability.

Conclusion

This QI initiative effectively combined practice data (audit & feedback), provider education (didactic workshops) and improvement science (QI pilot), resulting in significant improvement across a variety of process measures. Not only was it effectual in raising clinical awareness around the issues of CVD risk in RA patients, it was also able to facilitate the process of translating knowledge into action, eventually leading to practice behavior change. The program design is easily scalable and can be widely adopted by other specialties to address their practice improvement needs.