

# Preparation for and Implementation of Shared Medical Appointments to Improve Self-Management, Knowledge, and Care Quality Among Patients With Atrial Fibrillation

Joan M. Griffin, PhD; Lynette G. Stuart-Mullen, MSN, APRN, CNS;  
Monika M. Schmidt, DNP, APRN, AGNP-C; Pamela J. McCabe, PhD, APRN, CNS;  
Thomas J. O'Byrne, BS; Megan E. Branda, MS;  
and Christopher J. McLeod, MBChB, PhD, FHRS

## Abstract

Atrial fibrillation (AF) is the most common cardiac arrhythmia in adults and is associated with an increased risk of stroke, heart failure, and death. Therapy for this pervasive arrhythmia is complex, involving multiple options that chiefly manage symptoms and prevent stroke. Current therapeutic strategies are also of limited efficacy, and can present potentially life-threatening side effects and/or complications. Emerging research suggests that the burden of AF can be reduced by improving patient understanding of the arrhythmia and teaching patients to adopt and maintain lifestyle and behavior changes. Shared medical appointments (SMAs) have been successfully used to deliver education and develop patient coping and disease management skills for patients with complex needs, but there is a paucity of studies examining the use of SMAs for managing AF. Moreover, few studies have examined strategies for implementing SMAs into routine clinical care. We detail our approach for (1) adapting a patient-centered SMA curriculum; (2) designing an evaluation comparing SMAs to routine care on patient outcomes; and (3) implementing SMAs into routine clinical practice. We conclude that evaluation and implementation of SMAs into routine clinical practice requires considerable planning and continuous engagement from committed key stakeholders, including patients, family members, schedulers, clinical staff, nurse educators, administrators, and billing specialists.

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From Mayo Clinic Rochester, Rochester, MN (J.M.G., L.G.S.-M., M.M.S., P.J.M., T.J.O.B., M.E.B.); and Mayo Clinic Jacksonville, Jacksonville, FL (C.J.M.).

Atrial fibrillation (AF) is the most common sustained cardiac arrhythmia in adults.<sup>1-3</sup> It is a global health epidemic and is associated with increased risk of stroke, heart failure, and death.<sup>4,5</sup> Common therapeutic strategies used to help manage AF symptoms include antiarrhythmic medications to maintain a regular rhythm and percutaneous cardiac catheter ablation, a procedure to isolate the source of arrhythmia.<sup>2,6,7</sup> Malignant arrhythmias and major adverse cardiac events are unfortunate side effects and complications of these 2

therapeutic approaches, respectively, and success rates are less than ideal, varying between 30% and 70%.<sup>8</sup> Recent research has confirmed that specific lifestyle modifications, including a controlled diet, exercise, and weight loss programs, not only reduce AF recurrence but also improve patient quality of life while considerably reducing cardiovascular disease risk factors.<sup>9-11</sup> The European Heart Rhythm Association and Heart Rhythm Society have emphasized the need for effective self-management of AF and patient-provider communication to improve patient outcomes,

but they have also raised concerns about the lack of patients' understanding about their disease process and patient engagement in healthier behaviors to reduce their risk.<sup>7,12</sup> With far fewer harmful side effects or complications than pharmacological or procedural therapies,<sup>2</sup> promoting lifestyle behaviors and self-management practices should be a clinical priority. However, few evidence-based interventions have been tested among patients with AF to increase their knowledge and improve their confidence and capacity to change the behaviors that can reduce symptoms.<sup>13</sup> Compounding the scarcity of these kinds of interventions are challenges in busy clinical environments that allow adequate clinician time and resources for education. Time constraints often compromise communication about potential lifestyle modifications and behavior change, and minimize the amount of comprehensive education that can be done.

One potential alternative to enhance patient self-management of AF symptoms is to provide education and skill building through shared medical appointments (SMAs).<sup>14</sup> Shared medical appointments allow for groups of 6 to 8 patients to share the same clinical visit with an emphasis on learning, modeling, supporting, and reinforcing behaviors. Grounded in Social Cognitive Theory, a theory that posits that learning and behavior are social activities and best done by engaging in activities and practicing behaviors in the presence of others,<sup>15-17</sup> SMAs are led by a nurse or advanced practice provider. Time is budgeted for education, coping skill development and support, promotion of sustainable lifestyle modification, and sharing experiences and questions together to enhance learning.<sup>18</sup> Because of the group format, SMAs can also be used to engage family members and caregivers of patients who influence patient behaviors and often share the burden of chronic disease management. Family members can learn about effectively managing symptoms and medications, encouraging and supporting lifestyle modifications, and participate in setting care management goals.<sup>19,20</sup>

Growing evidence supports the use of SMAs in improving patient management of chronic conditions, including heart failure,<sup>21</sup> diabetes,<sup>22-24</sup> neuromuscular disease,<sup>25</sup> and

pulmonary hypertension,<sup>26</sup> but there is a paucity of studies examining the use of SMAs for managing AF symptoms. To our knowledge, no published research has examined the effect of SMAs on improving symptom management, quality of life, or quality of health care for patients with AF. In addition, despite the impact of SMAs on chronic disease management in controlled trials, one ongoing criticism of SMAs is the lack of implementation studies that assess both their "real-world" impact on patients and providers and the barriers for integrating them into routine clinical care.<sup>23,27</sup>

### STUDY PURPOSE

That our lessons learned may be helpful for other clinical practices considering the implementation of SMAs, we present our approach for developing a standardized patient-centered format and SMA curriculum based on current evidence for management of AF, designing an evaluation to compare the effectiveness of SMAs to standard care on patient outcomes, and illustrating necessary steps for the implementation of SMAs into routine clinical care.

### METHODS

#### Setting

This quality improvement project was conducted in the Heart Rhythm Services division at a large Midwestern quaternary care center with patients being assessed for catheter ablation of arrhythmia.

#### Planning the Development of SMAs for AF

The Heart Rhythm clinic staff identified a need for greater efficiency and consistency in both the delivery and content of education to patients considering cardiac ablation to manage their AF. Time constraints often compromised communication about potential lifestyle modifications and behavior change, and minimized the amount of comprehensive education that could be provided. The SMAs, therefore, were considered an alternative for delivering education and behavior change strategies. The project's clinical team, consisting of an electrophysiologist, a clinical nurse specialist, and a nurse practitioner, however, did not find any preexisting SMA curriculum

for AF. Therefore, the team evaluated existing educational content used in the clinic and reviewed current evidence and clinical guidelines for managing AF and symptoms associated with the cardiac ablation procedure.<sup>2,7,28,29</sup> On the basis of this review, they determined broad categories for the content of a preprocedure and 3-month postprocedure SMA and then the specific content within each category for the curriculum. The curriculum content was based on published recommendations,<sup>12</sup> recommendations from the Heart Rhythm practice chair, and then reviewed by an advisory board comprised of cardiac patients. The team then examined frameworks for best practices on conducting SMAs from the literature and integrated the AF-specific information into the SMA framework<sup>14,18</sup> to develop the SMA curriculum.

#### Methods for Evaluation of SMA Outcomes Compared with Standard Care Outcomes

The project's clinical team collaborated with a health services researcher, nurse researcher, and statistician in the same institution to develop the evaluation and implementation strategies using the Reach, Effectiveness, Adoption, Implementation and Maintenance (RE-AIM) framework.<sup>30,31</sup> Outcome results of the evaluation between SMAs and standard care will be reported in a separate publication.

During the evaluation phase of the project, a clinic nurse scheduled all appointments for patients who had previously been deemed clinically appropriate for cardiac ablation. Because this was a quality improvement project to improve care delivery and not a randomized controlled trial, patients were not randomized, but rather assigned to either SMA or standard care on the basis of either the next available clinician appointment or personal preference for procedure date. The SMAs were originally offered twice a month, and therefore, those requesting appointments during weeks with SMAs were assigned to the SMA group.

**Standard Care.** Standard care appointments occurred before the scheduled ablation procedure and 3 months postprocedure. Patients met with an electrophysiologist, a certified nurse practitioner, fellow, or physician assistant for up to 60 minutes. During the

preprocedure appointment, the expectation was for clinicians to review the results of diagnostic testing, conduct a history and physical examination, review treatment options, deliver patient education, and, when appropriate, obtain signed consent for catheter ablation of arrhythmia. For the 3-month postprocedure appointment, the expectation was for clinicians to review the results of the procedure, assess ongoing symptoms, conduct a history and physical examination, modify medications, and deliver patient education.

**The SMA Group.** Identical to the schedule for patients in standard care appointments, patients assigned to the SMA group were scheduled for both a preprocedure SMA and a 3-month postprocedure SMA. A nurse practitioner led the 90-minute SMA based on the developed curriculum. At the 3-month postprocedure appointment, the same cohort of patients would return for another 90-minute SMA. During this appointment, patients reported back on their progress and challenges for meeting lifestyle and behavior change goals that were created during the preprocedure SMA.

To comply with billing requirements for the Center for Medicare & Medicaid Services (CMS), each patient was scheduled to meet individually with a nurse practitioner after the SMA. During this visit, the nurse practitioner conducted a brief physical examination, discussed any additional questions that the patient might have, and reviewed and obtained consent for the cardiac ablation. After the 3-month postprocedure SMA, each patient, again, was scheduled to meet with the nurse practitioner to review tests and discuss medications and the plan of care.

**Data Collection and Instruments.** Surveys using standardized outcome assessments were collected before the preablation appointment for patients in SMAs and standard care. The Knowledge about Atrial Fibrillation (KAF)<sup>32</sup> test was also administered to patients in SMAs and standard care immediately after the preablation appointment.

To determine short-term outcomes, all assessments except for the KAF test were also administered at 3 months postablation.

**TABLE 1. Clinical Redesign Guidelines Using RE-AIM Framework Dimensions for SMA Implementation<sup>38</sup>**

RE-AIM framework dimension for SMA implementation	Initial decisions	Promoting factor	Hindering factor
<b>Reach:</b> The number of patients willing to participate in the intervention	Identify appropriate patients	Schedulers engaged but not always able to assess eligibility criteria for SMAs	Not automated and time and effort needed to screen upcoming appointments
	6-8 needed to maximize effect and minimize additional work in clinic	Smaller groups allowed for working through and refining curriculum flow	Unpredictability of no-shows or of number of caregivers who accompany patients
	Required provider appointment after SMA (billing requirement)	Additional time for clinicians to answer questions privately	Requires additional patient time and flexibility in provider schedules; no-shows affect clinical capacity
<b>Effectiveness:</b> The impact of an intervention on important outcomes	Strategies for data collection within the clinical setting	Data collection was integrated into SMA	Staff was required to keep track of data collection forms
<b>Adoption:</b> The number of clinical staff able to deliver the intervention	Development of training guide; Train 2 providers to conduct SMAs, with training to include group facilitation skills	Dedicated providers with both clinical and research interests in promotion of self- management	With attrition, training new personnel to conduct SMAs
<b>Implementation:</b> Consistency of intervention delivery as intended and the time and cost of the intervention	Fidelity checks	Assure that curriculum is being followed and standard units of education provided	Time spent on curriculum units could vary depending on the groups' need
	Assure Medicare billing approved	Clinical stakeholders collaborating with CMS contractors for billing	Regional CMS contractor approved, but national approval pending
	Secure space	Clinical commitment allowed for dedicated space	Limited options for appropriate and consistent meeting space
<b>Maintenance:</b> The extent to which the intervention becomes routine clinical care		Scheduling templates created	

CMS = Center for Medicare & Medicaid Services; RE-AIM = Effectiveness, Adoption, Implementation and Maintenance; SMA = shared medical appointment.

Initially surveys were administered in person before the 3-month postprocedure visit, but after review, there was variation in the time range of follow-up for standard care appointments, and therefore, the team changed the procedure so that surveys were mailed to all patients 3 months after the ablation procedure. Surveys were also sent to patients at 6 months to assess longer-term changes from preprocedure assessment to 6 months postablation.

Measured outcomes included patient confidence and motivation to self-manage, using the Patient Activation Measure-Short Form<sup>33</sup>; patient knowledge, using the KAF test<sup>32</sup>; Atrial Fibrillation Symptom Severity scale<sup>34</sup>; Hospital Anxiety Depression Scale<sup>35</sup>; amount of physical activity (Godin Leisure-Time Exercise Questionnaire)<sup>36</sup>; and patient perceptions about the quality of their health care team's chronic disease management, including activation, decision support, goal setting, problem solving, and follow-

**TABLE 2. SMA Curriculum for Preprocedure and 3-mo Postprocedure Visits**

Preprocedure visit	3-mo postprocedure visit
1. AF etiology and disease process	1. Lifestyle modification
2. Symptom management	2. Barriers to long-term disease management
3. Impact of AF on everyday life	3. Anticoagulation and stroke risk
4. Anticoagulation	4. Creating an individualized treatment plan
5. Stroke risk	5. How to manage symptoms in the future
6. Treatment options	6. Follow-up and longitudinal care
7. Lifestyle modification research	7. Creating continuity of care with other health care providers
8. Goal setting	8. Support network/support groups
9. Ablation procedural information	
10. Risks, benefits, and alternatives	
11. What to expect during hospitalization	
12. Activity restrictions postprocedure	
13. Follow-up and longitudinal care	
14. Meditation exercise	

AF = atrial fibrillation; SMA = shared medical appointment.

up care/coordination, using the Patient Assessment of Chronic Illness Care.<sup>37</sup>

### Methods for Evaluation of Implementation Efforts into Routine Care

Because SMAs touched multiple parts of the clinical practice, the team collaborated and routinely engaged with clinic staff about the evaluation and implementation process. Members of our project team regularly met with clinic nursing and physician leadership, administrators, clinical assistants, schedulers, the billing office, and our state contractor for the CMS to better understand their views of the implementation challenges and brainstorm on effective solutions.

The team used the RE-AIM framework to guide implementation. This framework was developed specifically to evaluate how successful interventions are implemented in a real-world setting.<sup>30,31</sup> The standard and operational definitions for each component in the framework are presented in Table 1, column 1.

## RESULTS

### SMA Curriculum for AF

Curriculum units are found in Table 2. In addition to basic education about the AF disease process and its impact on everyday life, curriculum units were included on AF self-management

through lifestyle changes<sup>21,24,25,39,40</sup> and on simple and sustainable changes that could be achieved for early success, including stress management.<sup>9-11</sup> Units on treatment options, their risks and benefits, and what to expect as part of treatment were also included. The 3-month postprocedure appointment also included units on lifestyle modification, barriers to long-term disease management, anticoagulation and stroke risk, creating an individualized treatment plan, and managing symptom recurrence.

The SMA curriculum was structured to allow patients and family members to have time to interact with others, openly discuss questions and experiences about each unit throughout the appointment, and set management goals. For example, after the discussion on AF etiology and disease process, patients were asked to identify how their AF felt to them and to describe it to the other patients within the SMA. After identifying goals for their self-management, patients discussed how they wanted to work on meeting those goals between their preprocedure SMA and their 3-month postprocedure SMA.

### Design of SMA Evaluation and Implementation Challenges

Table 1 outlines the guidelines used to design the evaluation of SMAs on patient outcomes and implement them into clinical care. Column 2 of Table 1 lists the initial decisions

made during the design process for each dimension of the RE-AIM framework. Column 3 lists factors that promoted successful implementation, and column 4 identifies challenges that hindered implementation by RE-AIM framework dimensions.

**Reach.** Reaching the target population required a redesign in scheduling for 3 reasons. First, identifying patients appropriate for SMAs (those who had previously been evaluated for appropriateness for cardiac ablation) was initially not automated and schedulers needed to work with nursing staff to review eligibility criteria to identify potentially appropriate patients. Second, in order for the clinic to be reimbursed for visits, the CMS requires patients who attend an SMA also have an appointment with a clinician on the same day. Thus, each participant needed 2 appointments scheduled, instead of 1, further complicating the clinic schedule and adding time to patient appointment schedules. Third, for SMAs to be both clinically and economically effective, 6 to 8 participants were needed. In addition to additional scheduling, therefore, schedulers needed to reduce the risk for no-shows by fully explaining the SMAs to patients. Scheduling templates were created and scripts for explaining the SMA to patients were developed to optimize the reach of the SMAs.

**Effectiveness.** Collecting data from SMA participants was straightforward because data collection was done in the group setting, but integrating routine data collection into standard care clinic visits required some additional clinic staff time, training, and reinforcement. Project staff checked and documented completion of surveys weekly and worked with clinical staff to improve data collection processes when forms were incomplete or missing. Preparing surveys in advance with intake forms and identifying a central pick up and drop off location for surveys helped maximize response rates.

**Adoption.** Training of SMA leaders was completed by the clinical team who developed the curriculum using a training guide

they developed that focused on principles of group learning. Training, observation, and fidelity checks by experienced leaders assured that the curriculum was followed and that group facilitation methods were used.

**Implementation.** The project team faced 2 major barriers for implementing SMAs into clinical practice. The first was a scarcity of space in which to hold the SMA, especially as the SMAs were starting up. A room was needed on a regular basis and had to support the size of the group (6-8 patients with family members) for at least 90 minutes, with proximity to the clinic desk. Scheduling appropriate rooms far in advance helped overcome this barrier.

The second barrier was ambiguity of how best to code and bill for SMAs. Most previous studies that have examined SMAs have included patients receiving care for diabetes or obstetrics, both of which have their own current procedural terminology and evaluation and management coding for SMAs. Billing codes to use SMAs for chronic disease management other than for diabetes and obstetrics, however, had not been reviewed or approved by the CMS. Our team and health care system administrators collaborated with National Government Services, the state contractor for CMS in Minnesota, to outline parameters for an appropriate and acceptable billing structure. The National Government Services determined that evaluation and management service levels for SMA visits cannot be determined on the basis of time (ie, counseling or coordination of care) and that all visits must include an individual provider who engages in face-to-face dialogue with patients, assesses medical history, conducts an examination, and helps to manage complex medical decision making.

**Maintenance.** Stakeholder commitment and engagement throughout the project set the foundation for sustainability of SMAs into routine clinical care. Implementation challenges identified during the quality improvement project were documented and studied by clinical, administrative, and research

stakeholders, allowing the clinic to tailor solutions to their practice and assess the success of those solutions over time.

## DISCUSSION

Planning and designing an evaluation of the effectiveness of SMAs on outcomes for people with AF who are considering cardiac ablation involves redesigning and implementing modified clinical processes. Our project provides insights into lessons learned and potential pitfalls to avoid.

As a direct result of this project, patients in the Heart Rhythm Clinic's SMAs now benefit from receiving more comprehensive and consistent education and learning from peers with AF. Participants learn about adopting healthier behaviors and lifestyle modifications, treatments and strategies for reducing stroke risks, and managing their symptoms associated with AF. On the basis of clarification of billing procedures for SMAs, the team developed a nursing template to document all SMA activities and outcomes, which also allows for a continuous assessment of quality of care.

Similar to others' experiences,<sup>27,38</sup> the team found that successful implementation of SMAs into routine clinical practice requires considerable planning and early engagement from committed key stakeholders, including patients, family members, schedulers, clinical staff, nurse educators, administrators, and billing specialists. Their contribution in the initial planning decisions for implementation provided the details necessary to adapt the intervention to the local context and their flexibility and patience throughout the project allowed us to modify processes to overcome factors that could hinder successful implementation.<sup>38</sup>

Sustainability will hinge on ongoing commitment by stakeholders, but also on continued data collection and review of evidence on AF management that will inform revisions to the AF curriculum and to persistent gaps in learning.

Clinical practices interested in implementing SMAs should also consider the limitations of our project. First, as a quality improvement project, patients were not randomized into SMA and standard care groups, but rather, assigned to groups depending on their

preferred appointment day. Second, the project included only patients being evaluated for cardiac catheter ablation at one site. With the possibility for selection bias, both limitations are potential threats to internal validity, but these threats should be weighed against the external validity of implementing SMAs in a "real-world" setting.<sup>23</sup>

## CONCLUSION

Broader implementation of SMAs will require collaborative and committed efforts with key stakeholders who are willing to plan, evaluate, and implement SMAs to fit into local clinic environments. Integration of new evidence supporting AF management should be regularly assessed and integrated into the SMA curriculum and ongoing data collection is encouraged for continuous quality improvement.

## ACKNOWLEDGMENTS

We thank Dr Francis C. Nichols, Dr Thomas M. Munger, Ms Amanda Attaway, Ms Shelley Rasmusson, Ms Teresa Johnson, Ms Ashley Baker, Ms Ashley V. Pitzer, and Ms Meghan French for their support, dedication, and assistance throughout this project. We are also extremely grateful to all the project's participants.

**Abbreviations and Acronyms:** AF = atrial fibrillation; CMS = Center for Medicare & Medicaid Services; KAF = knowledge of atrial fibrillation; RE-AIM = Reach, Effectiveness, Adoption, Implementation and Maintenance; SMA = shared medical appointment

**Grant Support:** This study was supported by funds from the Mayo Clinic Robert D. and Patricia E. Kem Center for the Science of Health Care Delivery.

**Potential Competing Interests:** The authors report no competing interests.

**Publication dates:** Received for publication April 11, 2018; revisions received June 8, 2018; accepted for publication June 15, 2018.

**Correspondence:** Address to Joan M. Griffin, PhD, Mayo Clinic Rochester, 200 First Street SW, Rochester, MN 55905 ([griffin.joan@mayo.edu](mailto:griffin.joan@mayo.edu)).

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