Reimagining Anticoagulation Clinics in the Era of Direct Oral Anticoagulants

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Abstract—Anticoagulation clinics were initially developed to provide safe and effective care for warfarin-treated patients with atrial fibrillation, venous thromboembolism, and mechanical valve replacement. Traditionally, these patients required ongoing laboratory monitoring and warfarin dose adjustment by expert providers. With the introduction of direct oral anticoagulants (dabigatran, rivaroxaban, apixaban, and edoxaban), many have questioned the need for anticoagulation clinic. However, we think that the growing number of oral anticoagulant choices creates an urgent need for expanding the traditional role of the anticoagulation clinic. We outline 3 key purposes that a reimagined anticoagulation clinic would serve: (1) to assist patients and clinicians with selecting the most appropriate drug and dose from a growing list of anticoagulant options (including warfarin), (2) to help patients minimize the risk of serious bleeding complications with careful long-term monitoring and peri-procedural management, and (3) to encourage ongoing adherence to these life-saving medications. We also describe how repurposing anticoagulation clinics as broader medication safety clinics would promote safe and effective care across a range of cardiovascular conditions for high-risk medications (eg, spironolactone, amiodarone). Finally, we highlight a few existing health systems that are overcoming key challenges to implementing a reimagined anticoagulation or medication safety clinic structure. (Circ Cardiovasc Qual Outcomes. 2016;9:182-185. DOI: 10.1161/CIRCOUTCOMES.115.002366.)

Key Words: anticoagulant ■ anticoagulation ■ nurse management ■ pharmacist management ■ warfarin

Millions of Americans take warfarin daily for atrial fibrillation or venous thromboembolism. Although highly effective for preventing thromboembolic complications, use of warfarin can also cause life-threatening bleeding. Individual variability around warfarin metabolism requires careful dose titration and patient education about diet–drug and drug–drug interactions to minimize such complications. To address these challenges, anticoagulation clinics were developed as a multidisciplinary means to mitigate the risk of bleeding while ensuring safe and effective care for patients taking warfarin. In the United States, over 3000 multidisciplinary anticoagulation clinics currently monitor INR laboratory tests for millions of Americans treated with warfarin, reducing emergency department visits, hospitalizations, and thromboembolic complications. Their primary function is to provide a safety net for patients taking anticoagulant drugs with critical safety profiles.

Since 2009, 4 new direct oral anticoagulants (DOACs) have been introduced as potential replacements for warfarin, and the use of these agents is growing quickly. Given that the metabolism of these medicines does not vary individually, and they therefore do not require INR laboratory testing or frequent dose adjustments, frequent monitoring is perceived to be unnecessary. Much of the marketing around these drugs has emphasized this advantage. This can be equated with diminished need for specialized anticoagulation clinics. However, rather than diminish the importance of anticoagulation clinics, we think the growing number of DOACs creates an urgent need for expanding the traditional role of the anticoagulation clinic. A reimagined anticoagulation clinic would serve 3 key purposes for every patient on anticoagulant medications: (1) to assist patients and clinicians with selecting the most appropriate drug and dose from a growing list of anticoagulant options (including warfarin), (2) to help patients minimize the risk of serious bleeding complications with careful long-term monitoring and peri-procedural management, and (3) to encourage ongoing adherence to these life-saving medications.

When anticoagulants are first initiated, anticoagulation clinics should serve as an informational resource and decision support service. Specifically, patients and providers need detailed information about each available anticoagulant to determine which is most appropriate. Patients and providers will benefit from the expertise of the specialized pharmacists and nurses who assist with appropriate drug selection and dosing given comorbid renal or liver impairment and concurrent complications.
To that end, instead of reimagining the anticoagulation clinic to serve a broader need for anticoagulated patients, a more logical approach may be for current anticoagulation clinics to evolve into medication safety clinics. These repurposed clinics would play a valuable role promoting safe and effective anticoagulant care across a broader range of cardiovascular conditions. Additionally, it may require a change in culture and habitual practice patterns, to encourage providers to consult the anticoagulation clinic early for assistance with drug selection and dosing, and throughout the patient’s care, to standardize peri-procedural anticoagulation, and to establish and oversee a relapse prevention plan in DOAC-treated patients. Finally, institutional policies may need to be updated to empower specialist nurses and pharmacists to manage these specific clinical scenarios. Expanding both the role and the availability of anticoagulation clinics, which may not be universally available for all patients, should be a top priority for patient-centered care.

A potentially significant driver for reimagining anticoagulant care is the changing healthcare payment landscape. New payment models encourage healthcare organizations to focus on holistic strategies that improve care and reduce expenses. For instance, accountable care organizations are responsible for total costs of care, not just fee-for-service costs. Therefore, embracing strategies to reduce adverse drug events are likely to be financially beneficial and act as a key facilitator for such system redesign.
satisfaction. They would also play a more central role in the management of perioperative anticoagulation management, determining when bridging anticoagulation is necessary and educating patients on safe bridging anticoagulant administration. Given that bridging anticoagulants are frequently overused, reductions in the use of outpatient low molecular weight heparin or inpatient unfractionated heparin should lead to significant savings.7,11

Beyond the care of patients taking anticoagulants, a medication safety clinic could also provide valuable support in many settings: for patients taking mineralocorticoid receptor antagonists (e.g. spironolactone) for hypertension or heart failure; for patients taking amiodarone for arrhythmia control; and for patients taking other cardiovascular medications that require long-term monitoring and dose adjustment. Recent studies have shown that only 7.2% of patients initiated on a mineralocorticoid receptor antagonist receive appropriate potassium and renal function monitoring in the initial 90 days.12 Widespread use of spironolactone after publication of the Randomized Aldactone Evaluation Study (RALES) trial was associated with marked increases in hospital admissions and in-hospital death from hyperkalemia.13 Similarly, only half of patients prescribed amiodarone receive the recommended liver and thyroid function screening that is advised.14 In at least one case, a pharmacist-led medication clinic was able to significantly improve the rate of liver, thyroid, and pulmonary function screening for amiodarone patients in a cost-saving manner.15 A medication safety clinic would leverage the existing anticoagulation clinic infrastructure of nurse and pharmacist experts designed for longitudinal medication monitoring to reduce complications from a variety of effective, yet potentially dangerous, cardiovascular medications. In this manner, the business justification supporting a medication safety clinic would be even greater than that of a more narrowly focused anticoagulation clinic.

Although these approaches make logical sense, robust data are lacking. In addition to the retrospective study reporting medication adherence from the Veterans Affairs system, prospective data (preferably randomized or cluster-randomized) assessing patient outcomes will be important.5 Similarly, rigorous assessment of medication safety clinic function and the costs associated with avoided complications will be needed to strengthen the business case. In the meantime, experimenting with different clinic designs will lead to innovative new approaches focused on improving patient safety. Similarly, clinicians may find themselves relying on medication safety clinics to routinely manage and monitor their patients at highest risk for complications. This approach will ensure high-quality, patient-centered care for DOACs, warfarin, and other common cardiovascular medications. Already, Blue Cross–Blue Shield of Michigan has invested in a multicenter collaboration (the Michigan Anticoagulation Quality Improvement Initiative) to measure anticoagulant care delivery and implement new approaches aimed at safe and efficient management of high-risk therapy.

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References


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