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Anticoagulation Across Care Transitions: Identifying Minimum Data to Maximize Drug Safety

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Adverse drug events (ADEs) are one of the most common and costly causes of iatrogenic patient harm, and anticoagulants are the leading cause of acute, serious ADEs among hospitalized patients, long term care residents, and older outpatients.^{1–5} In the United States, hospitalization costs associated with anticoagulant ADEs have been estimated at more than \$2.5 billion,⁶ and in 2016 more than \$5 billion was spent on anticoagulants in Medicare Part D claims.⁷ Accordingly, reducing patient harm associated with anticoagulation has been a Joint Commission National Patient Safety Goal (NPSG.03.05.01) since 2008,^{8,9} is one of three main focus areas of the 2014 Department of Health and Human Services National Action Plan for Adverse Drug Event Prevention,¹⁰ and is a key component of the ongoing Centers for Medicare & Medicaid Services Quality Innovation Network and Hospital Improvement Innovation Network efforts to improve patient safety.^{11,12} An article, “Defining Minimum Necessary Anticoagulation-Related Communication at Discharge: Consensus of the Care Transitions Task Force of the New York State Anticoagulation Coalition,” in this issue of *The Joint Commission Journal on Quality and Patient Safety*, Triller and colleagues take another important step on the long road to achieving safer and more effective anticoagulation by proposing the core information that needs to be communicated among providers as patients treated with anticoagulants make the transition between health care settings.¹³

For patients treated with anticoagulants, care transitions deserve special attention. Anticoagulation initiation and modification can be associated with frequent and serious adverse events, including hemorrhage, stroke, and venous thromboembolism.¹⁴ The field of anticoagulation is also undergoing rapid transformation. Since 2010 five new direct oral

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anticoagulants (DOACs)—dabigatran, rivaroxaban, apixaban, edoxaban, and betrixaban—have received US Food and Drug Administration approval for the prevention or treatment of thromboembolic disorders.¹⁵ Indications, dosing, drug interactions, and reversal strategies differ among these agents and from older—but still often used—anticoagulants, suggesting the need for clear communication of anticoagulation management for patients making the transition between health care settings.^{15,16}

Numerous general strategies and tools have been developed to improve care transitions.^{17–19} A core component of these strategies is medication reconciliation—the process of creating the most accurate list possible of all medications a patient is taking and comparing that list against the physician’s admission, transfer, or discharge orders, with the goal of providing correct medications to the patient at all care transition points.²⁰ Quality improvement and measurement strategies have helped integrate medication reconciliation into patient care processes in nearly all health care settings.^{8,9,21,22} Although medication reconciliation has been associated with reductions in medication errors and discrepancies, evidence is lacking that this practice alone affects patient outcomes (such as readmissions) or health care costs.^{23–26} Medication reconciliation’s weak link with patient outcomes could reflect variability in how it is performed across settings²⁴ or its adoption as an administrative task rather than a component of clinical care.²⁷ Medication reconciliation processes may also lack the key components required to manage medications that are high risk and the largest drivers of ADEs and postdischarge complications, such as anticoagulants.^{28–31}

Comprehensive anticoagulation management services (“anticoagulation clinics”) may be able to address aspects of care transitions specific to patients treated with anticoagulants, but these services are not available in all health care settings or to all clinicians, and the role they will play in management of DOACs is still evolving.³² Therefore, Triller et al. convened an expert panel to identify the minimum requisite data elements that should be available for use in care transitions to continue safe and successful anticoagulation management in any setting by any clinician. The final anticoagulation communication at discharge (the ACDC List) comprises 15 elements that go beyond traditional medication reconciliation to include duration of therapy, previous use of anticoagulants, most recent anticoagulant administration and laboratory results (renal function and International Normalized Ratio for warfarin), timing of next administration, performance of patient education and assessment of comprehension, and assignment of management responsibility.

The ACDC List is a well-thought-out and needed approach to addressing the care transition gap for patients treated with anticoagulants, but questions remain. First, the list was derived on the basis of consensus panel recommendations and, as Triller et al. acknowledge, the effect of the individual ACDC elements or their combination on patient outcomes has not been demonstrated.¹³ Second, it is unclear whether collection and transmission of these elements can be effectively integrated into existing care transitions systems in hospitals, long term care, and ambulatory settings. Third, how the elements would be received and appropriately acted on, particularly in settings with less developed information technology and systems for care transitions, remains to be seen. Specifying information requirements, as Triller et al. have done, for patients treated with anticoagulants who are undergoing care transitions represents an important first step. Evaluating the impact of these requirements on

patient outcomes and establishing the process by which they can be systematically implemented on a large scale should be the next.

To ensure complete and accurate consolidation of the complex and specific elements that make up the ACDC List into discharge documentation that can be transmitted to the next care providers, reliable and efficient systems will be required to assist clinicians in gathering these data elements. Fortunately, half or more of the elements represent coded fields that can be extracted from many of the most widely used electronic health records systems, potentially making possible at least partial automation of the process. Pilot projects to implement the ACDC List by using standard quality improvement and research methods can include development of operational definitions of the required elements and can demonstrate the feasibility and accuracy of populating, transmitting, and receiving these elements. If these pilot projects demonstrate that the elements can be efficiently and accurately collected, the ACDC List can potentially be incorporated into a nationally recognized, standardized, and implementation-ready assessment instrument, similar to what is currently being introduced to improve care coordination and care transitions across post-acute care settings.²² It will also be important to determine which clinicians are primarily responsible for the information transmission to ensure that it has been effectively communicated across health care settings.^{33,34} Comprehensive anticoagulation management services may not be available in most transition settings; however, less resource-intensive “anticoagulation stewardship” programs, modeled after antibiotic stewardship programs, are increasingly being explored to improve anticoagulation management in inpatient settings.^{35,36} Such programs could be leveraged to centralize responsibility of collection and communication of this information. There will also be a need to assess how ACDC elements can be incorporated into currently existing care transitions programs and requirements, such as those outlined by The Joint Commission,^{8,9} in a way that minimizes the burden of additional, separate requirements on providers. Finally, widespread uptake and implementation must be preceded by data on the effect of these care transitions elements on clinical outcomes of patients treated with anticoagulants.

Effective solutions to improve anticoagulation safety and effectiveness will be complex, but the ACDC List is an important contribution to improving anticoagulation management during one of the most vulnerable periods of patient care. Its implementation will have challenges, but they are likely to be greatly outweighed by the potentially devastating clinical consequences of poorly coordinated anticoagulation management.

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