

## TO THE EDITOR:

## What the 2018 ASH venous thromboembolism guidelines omitted: nonadministration of pharmacologic prophylaxis in hospitalized patients

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We read with interest the new clinical practice guidelines for venous thromboembolism (VTE) made available on 27 November 2018.<sup>1</sup> The evidence-based guidelines from the American Society of Hematology (ASH) highlight the risk of VTE in a variety of settings and provide recommendations for prophylaxis, diagnosis, and optimal management of anticoagulation therapy. Thank you for taking on this important work. However, we feel that the widespread problem of nonadministered doses of prescribed VTE prophylaxis to hospitalized patients is unappreciated in the current guidelines.

Despite recognition of the risk of VTE, it remains a significant health care problem. Although continuous efforts are being made to improve VTE prophylaxis prescription,<sup>2</sup> these efforts are based on the implied assumption that appropriate VTE prophylaxis prescription guarantees its administration. Nonadministration of VTE prophylaxis can lead to preventable harm,<sup>3,4</sup> and regrettably, it is endemic within hospitals. At our institution, we found that ~12% of prescribed doses of pharmacologic VTE prophylaxis were not administered to hospitalized patients. The most noteworthy finding of our investigation was that nearly 60% of nonadministered doses were due to patient or family member refusal.<sup>5</sup> Similarly, researchers at another major academic medical center reported that adherence to unfractionated heparin (UFH) and low-molecular-weight heparin for VTE prophylaxis in hospitalized patients was 87% and 95%, respectively; for both, patient refusal (44%) was the most common reason for missed doses.<sup>6</sup>

Several factors may have contributed to the observed differences in the nonadministration of UFH and low-molecular-weight heparin. Providers' perception of patients' risk might be driven by the patient population or the medication dose frequency, potentially influencing administration. For instance, it has been described that twice daily heparin was missed more frequently than thrice daily heparin. However, twice daily heparin is more frequently prescribed for more medically ill patients.<sup>5</sup> Recently, we found that nonadministration is common and perhaps more prevalent at community hospitals compared with academic medical centers.<sup>7</sup> These findings suggest that nonadministration of VTE prophylaxis is a ubiquitous deficit in patient care.<sup>8</sup>

Although some may suggest that these missed doses are inevitable, we would strongly disagree, as evidence suggests that missed doses may be the next salient target to improve care and VTE prevention.<sup>9-11</sup> In an attempt to reduce missed doses of VTE, the Johns Hopkins Medicine VTE Collaborative, with funding from the Patient Centered Outcomes Research Institute (PCORI), developed and implemented 2 complementary approaches. The first was a Web-based education module for bedside nurses that decreased missed doses significantly.<sup>12</sup> The second was a patient education bundle. The bundle was tested in a controlled pre-post clinical trial to assess the effectiveness of this patient education bundle on VTE prophylaxis and medication administration practices for hospitalized patients. Implementation of the bundle was associated with a 43% reduction in missed doses of VTE prophylaxis and a 47% reduction in patient refusal of prescribed VTE prophylaxis medication.<sup>13</sup> Successful strategies to reduce VTE prophylaxis nonadministration have been tested at several other institutions.<sup>9-11</sup> In addition, patient surveys and cohort studies suggest that the availability of an oral agent for VTE prophylaxis would significantly reduce

nonadministration.<sup>14-16</sup> Although patient preferences are important, published literature to help guideline committees is often lacking. However, in this case, data do exist. The majority of patients if presented with an option would choose an oral agent. However, there are a substantial amount of patients who would choose an injectable agent.<sup>14</sup>

We are in full agreement with ASH that it is important to assess risk and prescribe risk-appropriate VTE prophylaxis. However, we believe that it is critically important to focus on all phases of care for VTE prevention. Although we understand the limitations of time and energy available for a complete systematic review and meta-analysis review of this topic, perhaps a mention of the concept in the discussion would have been appropriate. Even the best evidence-based regimen prescribed would be ineffective if it is not actually administered. Future work to study oral agents for prevention may be warranted as subcutaneous injections for VTE prophylaxis seem to be missed more than other medications,<sup>16,17</sup> and many patients would prefer an oral option.<sup>15</sup> There are still instances though when UFH and LWMH would be more suitable for prophylaxis (eg, patients with a status of nothing by mouth or some critically ill patients).

We have advocated for outcome measures that link a process measure failure and a negative outcome, in particular, in VTE.<sup>18</sup> This approach has led to a publicly reported measure of potentially preventable VTE (VTE-6). Perhaps it is time to change this measure to include missed doses alongside prescription failures to define poor quality care.<sup>8</sup> We strongly feel that the evidence suggests monitoring missed doses of prescribed VTE prophylaxis within hospitals to further reduce potentially preventable harm from VTE.

**Acknowledgments:** This work was supported by the AHRQ grant 1R01HS024547 (B.D.L., M.B.S., and E.R.H.) entitled “Individualized Performance Feedback on Venous Thromboembolism Prevention Practice”; a contract from PCORI (B.D.L., M.B.S., and E.R.H.) entitled “Preventing Venous Thromboembolism (VTE): Engaging Patients to Reduce Preventable Harm from Missed/Refused Doses of VTE Prophylaxis”; the National Institutes of Health, National Heart, Lung, and Blood Institute grant R21HL129028 (B.D.L., M.B.S., and E.R.H.) entitled “Analysis of the Impact of Missed Doses of Venous Thromboembolism Prophylaxis”; and the Institute for Excellence in Education Berkheimer Faculty Education Scholar Grant and contract AD-1306-03980 (B.D.L.) from PCORI entitled “Patient Centered Approaches to Collect Sexual Orientation/Gender Identity Information in the Emergency Department.”

**Contribution:** O.P.O. drafted the manuscript; B.D.L., M.B.S., D.L.S., D.B.H., P.S.K., K.L.W.W., M.V.K., C.G.H., and E.R.H. made critical revisions for intellectual content; and all authors approved the final version.

**Conflict-of-interest disclosure:** D.B.H. has given expert witness testimony in various medical malpractice cases. M.B.S. has received research funding from Boehringer-Ingelheim, Janssen, Portola, and Roche, consulted for Janssen and Portola, and has given expert witness testimony in various medical malpractice cases. E.R.H. is a paid consultant and speaker for the “Preventing Avoidable Venous Thromboembolism—Every Patient, Every Time” VHA/Vizient IMPERATIV Advantage Performance Improvement Collaborative. E.R.H. receives royalties from Lippincott Williams & Wilkins

for a book, “Avoiding Common ICU Errors.” E.R.H. was the paid author of a paper commissioned by the National Academies of Medicine entitled “Military Trauma Care’s Learning Health System: The Importance of Data Driven Decision Making,” which was used to support the report entitled “A National Trauma Care System: Integrating Military and Civilian Trauma Systems to Achieve Zero Preventable Deaths After Injury.” The remaining authors declare no competing financial interests.

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DOI 10.1182/bloodadvances.2018030510

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