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Beneficial “halo effects” of surgical resident performance feedback



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ABSTRACT

Background: Venous thromboembolism (VTE) prevention is one of the most frequent measures of quality in hospital settings. In 2013, we began providing individualized feedback to general surgery residents about their VTE prophylaxis prescribing habits for general surgical patients. The purpose of this study was to investigate the indirect, or “halo effects” of providing individualized performance feedback to residents regarding prescription of appropriate VTE prophylaxis.

Materials and methods: This retrospective cohort study compared appropriate VTE prophylaxis prescription for all patients admitted to the adult trauma service from July 1, 2012 to May 31, 2015 at The Johns Hopkins Hospital, an academic hospital and Level 1 trauma center in Baltimore, Maryland. On October 1, 2013, we began providing monthly performance feedback to general surgery residents regarding their VTE prophylaxis prescribing habits for general surgery patients. Data were not provided about their prescription practice for trauma patients, or to any other prescribers within the hospital.

Results: During the study period, 931 adult trauma patients were admitted to the adult trauma service. After providing individualized feedback about general surgery patients,

This study was completed as a multidisciplinary collaboration. The team includes surgical faculty, pharmacy, hematology, quality improvement/patient safety, nursing, and clinical informatics.

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general surgery residents' prescribing practice for writing appropriate VTE prophylaxis orders for adult trauma patients significantly improved (93.9% versus 78.1%, $P < 0.001$). Prescription practice significantly improved among all other prescribers although they did not receive any specific individualized feedback, (84.9% versus 75.1%, $P = 0.025$); however, practice was significantly better among general surgery residents versus other providers (93.9% versus 84.9%, $P = 0.003$).

Conclusions: There is a beneficial "halo effect" for patients treated by residents receiving individualized feedback about practice habits. Individualized feedback regarding practice habits for one patient type has both a direct and indirect effect on the quality of care patients receive and should be implemented for all providers.

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Introduction

Venous thromboembolism (VTE), comprised of deep vein thrombosis and/or pulmonary embolism, is a leading cause of harm for surgical patients. Between 350,000 and 600,000 patients develop VTE, and as many as 100,000 die from pulmonary embolism each year.¹ Although some VTE events are unavoidable,² most can be prevented with appropriate prophylaxis.^{3–6} Unfortunately, many patients still are not prescribed recommended prophylaxis.^{5,7–9} For these reasons, prescription of VTE prophylaxis and VTE outcomes are frequent quality measures for surgical care. The American College of Surgeons' National Surgical Quality Improvement Program measures VTE outcomes among surgical patients at participating hospitals,¹⁰ and the Surgical Care Improvement Program measures both VTE prophylaxis prescription and VTE outcomes for surgical patients.^{11,12}

Numerous strategies have been developed to overcome the ongoing challenge of suboptimal VTE prophylaxis prescription.^{13–16} In December 2007, we implemented a service-specific clinical decision support (CDS)-enabled VTE risk stratification and prophylaxis recommendation tool into the computerized provider order entry (CPOE) system for adult patients hospital wide.¹⁷ This tool has led to significant improvement in prescription of VTE prophylaxis and a reduction in potentially preventable harm from VTE^{18–20} and has been suggested by AHRQ as a premier example of effective implementation and CDS.²¹

Although we have improved the prescribing of prophylaxis against VTE at our hospital with a CDS order set, we discovered that this is not enough to prompt and sustain change.^{10,17–19} In 2013, to further improve prescribing habits among residents,²² we began providing individualized feedback to general surgery residents about their VTE prophylaxis prescribing habits for general surgery patients. Risk-appropriate VTE prophylaxis prescription increased from 89.4% at baseline to 96.4% for general surgery patients after providing residents with individualized data about practice habits.²³ In addition, this feedback was associated with a dramatic improvement in the annual resident survey administered by the Accreditation Council on Graduate Medical Education for the survey item "Provided data about practice habits."²³ We hypothesized that this feedback would improve VTE prophylaxis prescribing habits during off-service rotations, this beneficial unintended consequence has been previously described in the surgical and medical literature as a

"halo effect."^{24,25} The purpose of this study was to investigate the indirect effect of providing individualized performance feedback to residents regarding prescription of appropriate VTE prophylaxis.

Materials and methods

This retrospective cohort study compared appropriate VTE prophylaxis prescription for all patients admitted to the adult trauma service from July 1, 2012 to May 31, 2015 at The Johns Hopkins Hospital, an academic hospital and Level 1 trauma center in Baltimore, Maryland. The prefeedback period was defined as VTE prophylaxis orders written from July 1, 2012 through September 30, 2013, and the postfeedback period was defined as VTE prophylaxis orders written from October 1, 2013 through May 31, 2015.

Intervention

On October 1, 2013, we began providing monthly performance feedback to general surgery residents regarding their VTE prophylaxis prescribing habits for general surgery patients for whom they wrote admission orders. All categorical general surgery residents and nondesignated preliminary surgery residents were assigned a unique study identifier at the start of the academic year to maintain anonymity among the residents and blind the research team (except B.D.L.). One unblinded investigator (B.D.L.) contacted each general surgery resident by email to provide him or her with a unique identifier. The same unblinded investigator sent a monthly performance scorecard to all general surgery residents via email with a short explanation of the importance of VTE prophylaxis. The scorecard contained performance for the cohort and for individual residents, identified by unique study number.²³ Data were not provided about practice on trauma surgery patients, nor was direct feedback provided to any other prescribers (i.e., other residents, nurse practitioners, physician assistants) within the hospital. We compared prescription of risk-appropriate VTE prophylaxis for all trauma patients before and after providing individualized feedback to general surgery residents about VTE prophylaxis prescribing practices. Furthermore, we compared risk-appropriate VTE prophylaxis prescribing practice between general surgery residents (who had received individualized feedback) and all other prescribers (who had not

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