Department of Veterans Affairs
Office of Inspector General

Office of Healthcare Inspections

Report No. 14-01073-139

Combined Assessment Program Summary Report

Preventable Pulmonary Embolism at Veterans Health Administration Facilities

May 12, 2014

Washington, DC 20420

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Executive Summary

Introduction

The VA Office of Inspector General Office of Healthcare Inspections completed an evaluation of preventable pulmonary embolism (PE) at Veterans Health Administration (VHA) medical facilities. The purpose of the review was to evaluate the care provided to patients treated at VHA facilities who developed potentially preventable PE. This evaluation was also a follow-up on the Office of Inspector General's report *Healthcare Inspection – Prevention of Venous Thromboembolism in VA Hospitals* (Report No. 06-02459-209, September 26, 2008).

We conducted this review at 29 VHA medical facilities during Combined Assessment Program (CAP) reviews performed across the country from October 1, 2012, through March 31, 2013.

Results

Of the 507 patients we identified with confirmed PE, 259 (51 percent) had at least 1 PE risk factor. Of these 259 patients, 57 (22 percent) presented to a VHA emergency department with PE symptoms prior to their PE diagnosis on a subsequent encounter, and emergency department providers may not have considered the possibility of PE. Prudent initial evaluation of patients who present to emergency departments with symptoms compatible with PE may improve care.

Of the 259 patients with at least 1 PE risk factor, we identified 38 (15 percent) with potentially preventable PE—34 patients with missed or delayed PE diagnoses and 8 patients with inadequate prophylaxis prior to their PE. Four of these patients had both inadequate prophylaxis and a delayed or missed diagnosis. Expanding peer review to incorporate potentially preventable cases, including cases with inadequate prophylaxis for patients with risk factors without contraindication to anticoagulants and delayed or missed diagnoses, may result in improved PE prevention.

We encouraged facility management to expand peer review and to monitor the rate of preventable PE at their facilities. While we made several recommendations during facility CAP reviews, we made no recommendations in this report.

Comments

The Under Secretary for Health concurred with the report. (See Appendix A, page 6, for the comments.) No further action is required.

JOHN D. DAIGH, JR., M.D.
Assistant Inspector General for
Healthcare Inspections

Introduction

Summary

The VA Office of Inspector General (OIG) Office of Healthcare Inspections (OHI) completed an evaluation of preventable pulmonary embolism (PE) at Veterans Health Administration (VHA) medical facilities. The purpose of the review was to evaluate the care provided to patients treated at VHA facilities who developed potentially preventable PE. This evaluation was also a follow-up to the Office of Inspector General's report *Healthcare Inspection – Prevention of Venous Thromboembolism in VA Hospitals* (Report No. 06-02459-209, September 26, 2008).

From October 1, 2012, to March 31, 2013, we evaluated 29 facilities during Combined Assessment Program (CAP) reviews performed across the country. We encouraged facility management to expand peer review to incorporate potentially preventable cases, including cases with inadequate prophylaxis for patients with risk factors without contraindication to anticoagulants and delayed or missed PE events. We also encouraged management to monitor the rate of preventable PE at their facilities.

Background

In venous thromboembolism (VTE), blood clots form in deep veins of individuals who have been immobile for long periods or have certain medical conditions. Pieces of these clots can break off and travel to the lungs, a serious condition called PE. PE is the most common potentially preventable cause of death in hospitals.[1] Clinicians prescribe blood thinners for VTE prophylaxis for patients with VTE risk factors; however, these medications can cause bleeding that ranges from mild to severe. Another way to prevent VTE is to apply mechanical devices that squeeze the legs to prevent clots from forming. These devices are uncomfortable, can cause skin breakdown, and may result in increased immobility. In 2011, the American College of Physicians recommended that clinicians assess the risk for VTE and bleeding in medical patients before initiating prophylaxis.[2] The recommendations discourage the use of blood thinners unless the risk for VTE is greater than the risk for bleeding and discourage the use of mechanical devices for VTE prophylaxis.

In 2007, OHI conducted a review to evaluate the extent to which VHA clinicians implemented evidence-based recommendations to prevent VTE in hospitalized patients. We found that 63 percent of patients at risk for VTE received recommended interventions. Among patients who had PE while hospitalized, 17 percent received no prophylaxis before the event, and an additional 28 percent received suboptimal treatment in the absence of contraindications to anticoagulation. We recommended that

[1] Goldhaber SZ. Rationale supporting an "opt-out" policy for pharmacological venous thromboembolism prophylaxis in hospitalized medical patients. J Thromb Thrombolysis 2013;35:371–4.
[2] FA Lederle, et al., "Venous Thromboembolism Prophylaxis in Hospitalized Medical Patients and Those with Stroke: a Background Review for and American College of Physicians Clinical Practice Guideline," *Annals of Internal Medicine,* Vol. 155, No. 9, November 1, 2011, pp. 602–630.

VHA develop and implement a plan to monitor rates of preventable VTE outcomes and ensure that hospitalized patients at risk for VTE receive accepted preventive therapies.

In May 2009, the Joint Commission added 6 VTE measures to its performance measurement program known as ORYX®. In fiscal year 2012, VHA management had the option to voluntarily participate in the VTE measures.

Scope and Methodology

We performed this review in conjunction with 29 CAP reviews of VHA medical facilities conducted from October 1, 2012, through March 31, 2013. The facilities we visited were a stratified random sample of all VHA facilities and represented a mix of facility size, affiliation, geographic location, and Veterans Integrated Service Networks. OIG generated an individual CAP report for each facility. For this report, we summarized the data collected from the individual facility CAP reviews to identify system-wide trends. For each of the 29 facilities, we reviewed a sample of patient electronic health records (EHRs). The patient sample within each facility was not a probability sample and was not representative of the entire patient population for that facility. Therefore, the summary results presented in this report are not generalizable to the entire VHA.

We reviewed performance measure data and facility policies/protocols related to VTE prophylaxis. We reviewed the EHRs of 575 unique patients, including inpatients who had a principal discharge diagnosis of PE and outpatients who had new prescriptions[3] for anticoagulant medications during the timeframe January 1 to June 30, 2012, and an outpatient encounter with a diagnosis of PE. Inspectors completed initial EHR reviews and identified patients, based on defined criteria, for further OHI physician review. OHI physicians reviewed patients' care and noted those who may have had a potentially preventable PE or who had care issues that warranted further discussions with facility chiefs of staff and other managers and providers. While onsite, inspectors determined whether management had previously initiated reviews of these patients' care.

Inspectors reviewed EHRs to identify imaging reports from VHA or private sector facilities confirming PE. These included reports of computerized topography (CT) scans of the chest with or without angiography (test using dye and special x-rays to show clots inside pulmonary arteries) and/or nuclear medicine ventilation-perfusion scans (tests to measure breathing and circulation in all areas of the lungs). Inspectors noted the confirmed diagnosis date, or in the absence of an imaging report, documentation supporting the approximate diagnosis date.

Additionally, inspectors reviewed EHR documentation from 30 days prior to the confirmed or estimated PE diagnosis date to identify potential PE risk factors, including:

- Any surgery
- Active cancer (not cancer in remission or non-melanoma skin cancer)
- Prolonged immobilization (such as lengthy air or car travel or bed rest greater than 72 hours prior to the confirmed or estimated PE date)

[3] Defined as prescribed during the review timeframe and not previously prescribed in the prior 6 months.

- Past history of VTE, PE, or deep vein thrombosis
- Hormonal contraceptive use

Inspectors also assessed whether the patient had an emergency department visit for PE symptoms, such as shortness of breath, chest pain, or leg swelling, within the 30 days prior to the confirmed or estimated PE date.

For patients with documentation of at least 1 risk factor, inspectors determined whether providers prescribed anticoagulant medication in the 72 hours prior to the confirmed or estimated PE date. The anticoagulant medications considered included warfarin, heparin, enoxaparin, dalteparin, and fondaparinux.

OHI physicians then reviewed the EHRs of selected patients. These included patients with at least one risk factor who were not taking an anticoagulant medication prior to the PE diagnosis and patients whose EHRs lacked evidence of PE by imaging report, had ambiguous or missing imaging reports, or contained ambiguous documentation of PE risk factors or evidence of other care concerns.

Inspectors and physicians conducted the reviews in accordance with *Quality Standards for Inspection and Evaluation* published by the Council of the Inspectors General on Integrity and Efficiency.

Inspection Results

Issue 1: Potentially Preventable PE

PE Events Identified

We identified 507 patients with confirmed PE. Of these patients, the events for 334 (66 percent) were confirmed at VHA facilities—284 (85 percent) by CT scan of the chest or thorax, 35 (10 percent) by nuclear medicine ventilation-perfusion scan, 9 (3 percent) by both CT scan and nuclear medicine imaging, and 6 (2 percent) by other diagnostic methods. The remaining 173 patients (34 percent) had PE confirmed at private sector facilities—120 (69 percent) by CT scan and 14 (8 percent) by nuclear medicine ventilation-perfusion scan. The EHRs for 39 patients (23 percent) contained inadequate documentation of imaging type.

Missed Opportunity for Prevention

Of the 507 patients with confirmed PE, inspectors identified 1 or more PE risk factors present in the 30 days preceding the PE diagnoses for 259 patients (51 percent). Of these patients, 57 (22 percent) had a VHA emergency department visit for PE symptoms within 30 days prior to the confirmed or estimated PE diagnosis date. PE risk factors identified included 85 active cancers, 69 prior histories of VTE, 67 prolonged immobilizations, 58 surgeries, and 3 hormonal contraceptive use.

OHI physicians reviewed the EHRs of 259 patients with at least 1 PE risk factor for preventable PE events and identified 39 cases (15 percent) for discussion with VHA facility senior managers—38 with potentially preventable PE. These cases included 8 patients with inadequate prophylaxis in the 72 hours prior to the confirmed PE without documented contraindications to anticoagulation and 34 patients who had at least 1 encounter with a VHA provider for PE symptoms in the 30 days preceding the PE diagnosis. These patients' PEs were either diagnosed at subsequent VA encounters or at private sector facilities after the VHA encounters. Four of these patients had both inadequate prophylaxis and delayed or missed diagnoses. In one additional case, the patient did not have PE, but we identified other care concerns.

Issue 2: Facility Care Reviews

Management-Initiated Reviews

When conducted systematically and credibly, protected peer review can result in both immediate and long-term improvements in patient care by revealing areas for improvement in the practice of one or multiple providers.[4] We determined that 5 (13 percent) of the 38 patients with potentially preventable PE had previous management-initiated care reviews.

[4] VHA Directive 2010-025, *Peer Review for Quality Management*, June 3, 2010.

OIG Recommended Reviews

OHI recommended that VHA conduct peer review for 28 patients with potentially preventable PE. Facility management completed reviews of 27 patients. One manager declined peer review as the patient received only non-VA care.

We encouraged facility management to expand protected peer review processes to incorporate potentially preventable PE events. We also encouraged management to monitor and track the rate of preventable PE at their facilities.

Conclusions

We found opportunities for improvement in the care of patients with at least one PE risk factor. For those patients who presented to a VHA emergency department with PE symptoms prior to their PE diagnosis on a subsequent encounter, VHA emergency department providers may not have considered the possibility of PE for these at-risk patients. Prudent evaluation of patients with PE risks who present to the emergency department with PE symptoms may improve PE care. For patients with potentially preventable PE, providers either missed or delayed diagnosing the PE and/or did not prescribe adequate prophylaxis prior to the PE. We encouraged facility management to expand protected peer review to incorporate potentially preventable cases, including cases with inadequate prophylaxis for patients with risk factors without contraindication to anticoagulants and delayed or missed PE events. We also encouraged management to monitor the rate of preventable PE at their facilities. While we made several recommendations during facility CAP reviews, we made no recommendations in this report.

Under Secretary for Health Comments

Department of Veterans Affairs **Memorandum**

Date: April 22, 2014

From: Under Secretary for Health (10)

Subject: **OIG Draft Combined Assessment Program (CAP) Summary Report – Preventable Pulmonary Embolism at Veterans Health Administration Facilities (2014-01073-HI-0409) (7466141)**

To: Assistant Inspector General for Healthcare Inspections (54)

1. Thank you for the opportunity to review the draft CAP Summary Report, Preventable Pulmonary Embolism at Veterans Health Administration (VHA) Facilities. I have reviewed the draft report and agree with it as written.

2. VHA appreciates the opportunity to focus on the topic of preventable pulmonary embolism, which can be a difficult disease to diagnose and manage. The Deputy Under Secretary for Health for Policy and Services will establish a workgroup of subject matter experts to review this topic in-depth and to consider options for preventing future inpatient pulmonary embolism.

3. If you have any questions, please contact Karen M. Rasmussen, M.D., Director, Management Review Service (10AR), at (202) 461-6643 or e-mail VHA10ARMRS2@va.gov.

Robert A. Petzel, M.D.

Attachment

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