Long-term Effectiveness of an Automated Guideline Adherence Monitor for Secondary Prevention of Acute Myocardial Infarction

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An automated guideline monitor for secondary prevention of acute myocardial infarction (AMI) has been favorably tested at an academic medical center using a randomized controlled trial. Subsequently, the monitor was implemented in a production mode and has been in production use for five years. Statistical process control analysis shows a generally sustainable effect of the intervention.

Introduction

We previously reported that an automated guideline monitor improved physician adherence to AMI secondary prevention guidelines for prescribing aspirin, β-blockers, ACE-inhibitors and lipid lowering therapy at an academic medical center. The intervention and control group adherence for all four classes of medications combined was 84% and 70% (p < 0.001) respectively. This monitor, now in production use, notifies a clinical pharmacist when all four secondary prevention medications have not been prescribed and legitimate exceptions cannot be determined electronically. The pharmacist assesses the information in the alert and contacts the physician to discuss treatment after evaluating possible contraindications. Information associated with each alert is recorded via a WEB-based response form, which is used to track the performance of the intervention. The long-term sustainability of this intervention, which is analyzed and discussed here, is important to patient care and is a focus of the Joint Commission on Accreditation of Healthcare Organizations (JCAHO) ORYX® Core Measures.

Methods

Existence of a secondary prevention medication order at discharge and pharmacists’ responses for all inpatients identified by the monitor between January 2002 and December 2006 was collected electronically to calculate the proportion of patients on adequate treatment at discharge. Figure 1 represents this data in a statistical process control (SPC) chart generated from a statistical software package (SAS for Windows v9.1, Cary, NC) using 6 Western Electric Company (WECO) rules. The control limits were determined using 2002 data.

Results

Figure 1 demonstrates this intervention consistently performed at or above the study intervention threshold of 84% for 4 of the 5 years analyzed. Pharmacy staffing changes, reduction of the troponin-I threshold and reduction in low-density lipoprotein cholesterol (LDL) threshold (70 versus 100 mg/dL) occurred during a period between October 2004 and October 2005 coinciding with several positive tests for variation (WECO 1, 5 & 6). Although it is difficult to attribute any of these changes directly with the variation, it is likely they contributed. In August 2005, the capability to generate a chart sticker prompting physicians to prescribe ACE-inhibitors or document contraindications was trialed followed by an implementation of a chart document for all four medications in April 2006. It is believed that these modifications brought needed attention to this intervention and may explain the steady improvements since December 2005.

Conclusion

SPC analysis demonstrates that an automated guideline monitor performing at an academic medical center maintained a statistical improvement in adherence to secondary prevention medications for AMI over most of a five-year period. This demonstrates the need for continuous monitoring of interventions to maintain a high level of performance.

References


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