

## Beyond Health Information Technology: Critical Factors Necessary for Effective Diabetes Disease Management

Elizabeth L. Ciemins, Ph.D.,<sup>1</sup> Patricia J. Coon, M.D.,<sup>1</sup> Jinnet Briggs Fowles, Ph.D.,<sup>2</sup>  
and Sung-joon Min, Ph.D.<sup>3</sup>

### Abstract

#### **Background:**

Electronic health records (EHRs) have been implemented throughout the United States with varying degrees of success. Past EHR implementation experiences can inform health systems planning to initiate new or expand existing EHR systems. Key “critical success factors,” e.g., use of disease registries, workflow integration, and real-time clinical guideline support, have been identified but not fully tested in practice.

#### **Methods:**

A pre/postintervention cohort analysis was conducted on 495 adult patients selected randomly from a diabetes registry and followed for 6 years. Two intervention phases were evaluated: a “low-dose” period targeting primary care provider (PCP) and patient education followed by a “high-dose” EHR diabetes management implementation period, including a diabetes disease registry and office workflow changes, e.g., diabetes patient preidentification to facilitate real-time diabetes preventive care, disease management, and patient education.

#### **Results:**

Across baseline, “low-dose,” and “high-dose” postintervention periods, a significantly greater proportion of patients (a) achieved American Diabetes Association (ADA) guidelines for control of blood pressure (26.9 to 33.1 to 43.9%), glycosylated hemoglobin (48.5 to 57.5 to 66.8%), and low-density lipoprotein cholesterol (33.1 to 44.4 to 56.6%) and (b) received recommended preventive eye (26.2 to 36.4 to 58%), foot (23.4 to 40.3 to 66.9%), and renal (38.5 to 53.9 to 71%) examinations or screens.

#### **Conclusions:**

Implementation of a fully functional, specialized EHR combined with tailored office workflow process changes was associated with increased adherence to ADA guidelines, including risk factor control, by PCPs and their patients with diabetes. Incorporation of previously identified “critical success factors” potentially contributed to the success of the program, as did use of a two-phase approach.

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**Author Affiliations:** <sup>1</sup>Center for Clinical Translational Research, Billings Clinic, Billings, Montana; <sup>2</sup>Park Nicollet Institute, Health Research Center, Minneapolis, Minnesota; and <sup>3</sup>Division of Health Care Policy and Research, University of Colorado Denver, Aurora, Colorado

**Abbreviations:** (ADA) American Diabetes Association, (BC) Billings Clinic, (CI) confidence interval, (EHR) electronic health record, (HbA1c) glycosylated hemoglobin, (LDL) low-density lipoprotein, (NCQA) National Committee for Quality Assurance, (OR) odds ratio

**Keywords:** chronic disease management, diabetes, EHR, health information technology

**Corresponding Author:** Elizabeth L. Ciemins, Ph.D., Center for Clinical Translational Research, Billings Clinic, 2800 Tenth Avenue North, P.O. Box 37000, Billings, MT 59107-7000; email address [eciemins@billingsclinic.org](mailto:eciemins@billingsclinic.org)