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## Harnessing Information Technologies to Improve the Delivery of Diabetes Care to Veterans: The Future Is Today

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### Abstract

#### *Background:*

Although momentum is now building nationally for improved informatics, progress has been incremental in most cases. One notable exception is the Veterans Health Administration, which utilizes one of the most widely used electronic medical record systems in the world.

#### *Objectives:*

The articles in this symposium demonstrate the implementation of technology to move beyond the electronic medical record at the time of the medical encounter to improve timeliness and outcomes of care delivery for veterans with diabetes.

#### *Results:*

We report on the use of electronic registries and nurse practitioner-based programs across multiple sites to improve glycemic control; the implementation of a digital retinal imaging system in primary care clinics; the use of health information technology to improve patient self-care; and the development of a research database to move beyond performance measurement to evaluate longitudinal outcomes.

#### *Conclusions:*

While these articles demonstrate the ability of a single national system of care to harness the power of technology to novel strategies for the delivery of care and its evaluation, the technology is scalable from small group practices to regional health care systems.

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**Abbreviations:** (EHRs) electronic health records, (IVR) interactive voice response, (VHA) Veterans Health Administration, (VistA) Veterans Health Information Systems and Technology Architecture

**Keywords:** diabetes, electronic health record, veterans

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## Introduction

The landscape of American medicine has been changing from solo practice and small group practices to large practices, hospital-based practices, and health care systems. This has occurred hand in hand with increasing fragmentation of care such that in a study of Medicare, fee for service beneficiaries saw a median of two primary care physicians and five specialists working in four different practices.<sup>1</sup> In addition, there has been an increase in the prevalence of individuals with multiple chronic diseases who present their own unique challenges in the provision of evidence-based care.<sup>2</sup> Clinical information systems combined with decision support constitute part of most, if not all, of the conceptual models for chronic disease management. For example, the chronic care model of Wagner and colleagues includes six elements, which work in concert to foster productive interactions between a proactive health care team and a proactive patient. These elements include clinical information systems, decision support, system design, community resources, self-management support, and health care system.<sup>3</sup> Clinical information systems permit the identification of patients in need of interventions, as well as monitoring the quality of those interventions. Decision support addresses the problem of individual physicians keeping up with the literature, as well as keeping in memory everything that needs to be done for each individual patient. However, such systems are not widely employed.<sup>4</sup> Consequently, the American Health Information Community has been chartered to support the President's goal of electronic health records (EHRs) for most Americans within 10 years.<sup>5</sup> There are still clearly many challenges to implementing EHRs, including payment, policies, and privacy. Although momentum is now building nationally for improved informatics, in most cases, progress has and will likely continue to be incremental. One notable exception is the Veterans Health Administration (VHA). The Veterans Health Information Systems and Technology Architecture (VistA) is one of the most widely used electronic medical record systems in the world. For its development of VistA, the Department of Veterans Affairs/VHA was named the recipient of the prestigious Innovations in American Government Award presented by the Ash Institute of the John F. Kennedy School of Government at Harvard University in July 2006.

The success of the VHA in implementing evidence-based practices for over 1.3 million veterans with diabetes (nearly 25% of individuals cared for within a year) has

been well known and well documented.<sup>6</sup> In this issue of *Journal of Diabetes Science and Technology*, four articles demonstrate the power of technology to move beyond the electronic medical record at the time of the medical encounter in order to improve timeliness and outcomes of care for veterans with diabetes. Targeting therapy to those who need it most is a key aspect of population medicine. Kern and colleagues<sup>7</sup> describe the development and use of a clinical registry. Systematic query of the electronic diabetes registry enables nurses to contact patients with poor glycemic outcomes. By applying special programs to intensify management, glycemic control was improved for targeted patients. In addition, the electronic diabetes registry enables assessment of the impact of quality improvement programs upon the entire patient population.

Access to retinal screening has been a barrier for many individuals and health care systems, especially in rural areas and small clinics. Cavallerano and Conlin<sup>8</sup> report on the implementation of a digital retinal imaging system with remote image implementation (e.g., teleretinal imaging) in primary care clinics in order to address an unmet need of access, especially in rural areas and small clinics. They describe the clinical pathways that have been implemented and address the feasibility issues.

Self-management is an essential component of chronic illness care, especially in diabetes. Piette *et al.*<sup>9</sup> describe projects using health information technology to develop services that can address the needs of patients with multiple challenges to disease self-care, including multimorbidity, health literacy deficits, and limited treatment access. These services include patient-to-patient interactive voice response (IVR) calling systems, IVR assessments with feedback to informal caregivers, novel information supports for clinical pharmacists based on medication refill data, and enhanced pedometers.

Although the federal government has set objectives (Healthy People 2010<sup>10</sup>) for increased provision of care to persons with diabetes, as well as decreased rates of hospitalizations and complications, the use of cross-sectional samples limits the ability to evaluate trends even in weighted, national population-based surveys such as the National Health and Nutrition Examination Survey and Behavioral Risk Factor Surveillance System.<sup>11</sup> Miller and Pogach<sup>12</sup> describe the development of a research database (the Diabetes Epidemiological Cohort) derived

from available secondary data sources of administrative, laboratory, and pharmacy data for veterans with diabetes. This permits evaluation of longitudinal intermediate outcomes (such as hemoglobin A1c) and adverse outcomes (such as amputations) that could provide more actionable data to both clinical managers and policy makers.

## Conclusion

While these articles demonstrate the ability of a single national system of care to harness the power of technology to move beyond immediate access to records, reminders, and documentation to the delivery of care and its evaluation, the technology is scalable from small group practices to regional health care systems. It is hoped that the care of veterans with diabetes in the VHA provides an example of what is possible today to improve outcomes for all persons with diabetes in the United States tomorrow.

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### Disclaimer:

The opinions expressed are those of the authors and do not represent the opinion of the Department of Veterans Affairs.

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