

Electronic Health Record—Generated Interventions to Reduce Asthma Risk: Seeing the Glass Half Full

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The goal of evidence-based care for patients with asthma is to achieve optimal symptom control and to prevent exacerbations and worsening of the disease. However, asthma care is frequently reactive, delivered when poorly controlled symptoms drive patients to see their physician or, more urgently, to an emergency care facility. In many cases, patients with poorly controlled asthma do not seek medical care and instead endure their symptoms with consequent reduced quality of life.¹ The intervention tested by Zeiger et al² identified 12- to 56-year-old patients with deteriorating control and attempted to improve disease control before exacerbations occurred. In this population asthma care management study, 2000 patients with persistent asthma and a 1-year history of excessive use of short-acting β -agonist (SABA) (defined as 7 or more SABA canisters dispensed) were randomized to usual care or intervention, which consisted of a letter to the patient and an electronic health record (EHR) alert sent to the physician. Both communications noted the excessive SABA use and made suggestions for management, including encouraging patients who had not previously seen an asthma specialist to do so.

Changes were significant but small. SABA overfilling occurred less frequently in the intervention group than in the control group, but, still, more than half of patients who had received the intervention continued to fill 7 or more canisters a year (which averages a very high 4 SABA puffs every day), 30% required oral steroid bursts, and 40% remained poorly adherent to their controller medication in the year after initiation of the intervention. Of interest, patients without specialty care demonstrated a reduction in SABA refilling along with an increase in inhaled corticosteroid/long-acting β -agonist (ICS/LABA) filling and step-up care but not so for those with specialty care. Analysis of these findings suggests that prompting primary care physicians to intensify controller treatment may be an effective approach to reducing asthma risks.

The small margins of improvement in this study need to be understood within a public health framework. This study demonstrated a relatively simple, low-cost, EHR-generated intervention that could be implemented in virtually any commercially available EHR system, including EpicCare (Verona, Wisc), eClinicalWorks (Westborough, Mass), McKesson (San Francisco,

Calif), Cerner (Kansas City, Mo), Allscripts (Chicago, Ill), or GE Healthcare (Waukesha, Wisc). Further, such EHR-generated interventions are designed to prevent dangerous asthma exacerbations, not just respond to them, by identifying at-risk patients and reaching out to them before an event occurs. This type of intervention can be implemented in large managed care or accountable care organizations that have the capability to track pharmacy data and hence can monitor and respond to thousands of patients. Even small gains may produce sizable benefits relative to costs.

A remarkably large number of patients in this study remained poorly controlled even after receiving the intervention. However, rather than viewing the glass as half empty, it is important to see this study as a first step toward more effective use of EHRs to identify and help reduce risk for patients with any chronic health conditions. Early EHR proponents predicted dramatic improvements in health care quality. Yet data on 17 quality indicators from the National Ambulatory Medical Care Survey showed little difference between care from physicians with and those without EHRs.³ Typically, information in EHRs is similar to paper records: large amounts of unprioritized text with few clinical insights or connection or saliency to users.⁴ EHRs record the patient's medical history, clinical encounters, medications, and test results, but this does not necessarily translate to better care. Providers have limited time during office visits to collate relevant data from a patient's record. Exploiting the EHR's capacity to track data and identify risks can save the clinician considerable time and create opportunities to intervene before disease exacerbations occur. The researchers identify some further strategies to use EHR technology to reduce asthma risk, such as sending more frequent notices to physicians or generating interactive voice recognition calls to patients. However, interventions that simply identify problems and alert physicians may then lead to "alert fatigue" without improving asthma outcomes.⁵ If patients receive a communication from their clinic that indicates that they are overusing SABA but never hear from their provider team, then the possibility exists that some patients would resist using their SABA without receiving further evaluation or increasing controller medication use, not the desired outcome of the intervention.

To most effectively leverage the EHR, we must ask health information technology to do more. Sending messages to patients and providers was a logical step in that direction, but creating more sophisticated EHR-generated decision support tools for providers⁶ or using communication technology to activate greater patient adherence⁷ may result in further change, including increasing a patient's use of controller medication use while decreasing the need for rescue medication. For example, a history of emergent care use, smoking status, body mass index, pulmonary function test results, and atopic comorbidities are additional variables often recorded in the patient's EHR record that could be used in a risk calculation, which, in turn, triggers provider decision support recommendations or tailors messages to patients. As new programs take full advantage of the capabilities

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of EHRs, reductions in big ticket items, including emergency department visits and hospitalizations, become more likely. Further, such programs can be scaled up, applied to other health conditions, and adopted in a variety of large health care systems with impressive public health benefits.

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