Using Electronic Medical Records to Measure Guideline Adherence in Low-Resource Settings

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Objectives

The objectives of this study are to a) to evaluate the feasibility-of-use of structured outpatient EMR data to measure guideline adherence for treatment of AIDS in a low-resource setting, and b) to describe the characteristics of available EMR data that could be used to generate performance feedback for healthcare workers in a low-resource setting.

Keywords:

Electronic medical records, Audit and feedback, Clinical practice guidelines, Developing countries

Introduction

Healthcare worker performance in low-resource settings is frequently below the standards of care put forth in clinical practice guidelines, leading to millions of unnecessary deaths each year. Audit and feedback, defined as providing healthcare workers with "any summary of clinical performance of health care over a specified period of time", can improve adherence to recommended practice. In low-resource settings, audit and feedback is one of few interventions shown to improve clinical practice. However, critical shortages of healthcare workers in developing countries make audit and feedback interventions difficult to sustain.

In contrast to manual data collection for audit and feedback, data collected in Electronic Medical Record (EMR) systems can be repurposed to automate the practitioner's data collection responsibilities for audit and feedback. Structured data stored in an EMR such as diagnoses, prescriptions, and test results contain indicators of clinical performance that can be compared with recommendations in a clinical practice guideline to generate performance summaries. In low-resource settings where EMRs are deployed, automation of audit and feedback has the potential to improve clinical practice and patient outcomes without impacting clinical workload.

This study will assess the feasibility of using data collected in an EMR for managing HIV/AIDS patients in Malawi to determine if healthcare practitioners are following Malawi's national guidelines for the treatment of AIDS. The proposed study will yield insight into an unexplored opportunity to generate low-cost, actionable feedback that is timely, non-punitive, individualized and customizable using existing EMR data and clinical practice guidelines in a low-resource setting. This approach, if successful, will be broadly applicable to clinical care settings in developing countries where healthcare workers who are mandated to follow national clinical practice guidelines use EMR systems that collect structured patient data.

Methods

We will identify recommendations that address adult Anti-Retroviral Therapy (ART) in Malawi's national guidelines for the treatment of AIDS, a 114 page document. We will mark-up the natural language of the guideline using GEM Cutter II, an XML editor, to determine the conditions and actions contained within an estimated 300 adult ART recommendations. We will use criteria from the GuideLine Implementability Appraisal (GLIA) instrument to identify recommendations that are measurable and computable. Recommendations that are measurable will be assessed for computability by comparing their components with data elements collected in the Baobab Anti-Retroviral Therapy (BART) system, an EMR used in six sites in Malawi to manage records for more than 23,000 patients. Recommendations that are computable will be assessed for auditability using ratio-based performance measures. We will create performance measures using the conditions and actions in each recommendation. A performance summary will be generated using two queries of de-identified medical record data from BART, one for the numerator and one for the denominator of each recommendation's performance measure. Computable recommendations that are associated with existing de-identified EMR data will be designated as auditable.

Expected Results

We will tabulate the resulting measurability, computability, and auditability status of each recommendation. We will analyze the available performance data retrieved from the EMR to determine the frequency and distribution with which routine audit and feedback could be provided for each recommendation.