Drug-Age Alerting for Outpatient Geriatric Prescriptions: A Joint Study using Interoperable Drug Standards

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ABSTRACT
For more than a decade, the Beers criteria\(^1\) have identified specific medications that should generally be avoided in the geriatric population. Studies that have shown high prevalence rates of these potentially inappropriate medications have used disparate methodologies to identify these medications and hence are difficult to replicate and generalize. In an effort to improve prescribing behavior, we are building a drug-age alerting system utilizing standard drug coding systems for use in our Electronic Health Record (EHR) systems.

BACKGROUND
In 1991, a consensus panel lead by Mark Beers\(^1\) compiled a list of potentially inappropriate medications (PIMs) that should generally be avoided in the nursing home population. These criteria have been used in various studies \(^2,3\) and have been updated in 1997 and 2003 to apply to the entire community-dwelling population, 65 years and older.\(^4\) Many of these studies utilized prescription drug benefit databases and claims records to identify the potentially inappropriate medications. This limits their direct generalizability to the clinical data residing in EHR databases. Furthermore, the 2003 Beers criteria update\(^4\) suggested integrating recommendations into the clinical information systems as the best method for improving prescribing behavior of these medications. Researchers at Cleveland Clinic Foundation and Intermountain Health Care (IHC) are designing and evaluating decision support applications to accomplish this goal.

SETTING
Cleveland Clinic Health System is a leading health care delivery network in Northeast Ohio. Its flagship hospital, Cleveland Clinic Foundation has been using a vendor-based EHR with built-in prescription management and decision support capability for its ambulatory practices since 2000. IHC is a not-for-profit integrated health care delivery system providing services in Utah and in southeastern Idaho. IHC accomplished one of the earliest successful implementations of an internally developed EHR. The IHC EHR provides decision-support for a wide range of clinical functions, including medication prescribing.

RESEARCH OBJECTIVES
Our research study has three main objectives: (1) Determine the baseline prevalence of potentially inappropriate prescriptions as defined by the modified Beers Criteria\(^4\). (2) Develop drug-age decision support alerts based on this baseline information and incorporate them into our EHR systems. (3) Evaluate the decision support system’s effect on prescribing behavior in a prospective cluster-controlled study at each institution.

In the initial phase, we are developing a reference model for harmonizing prescribing data on Beers medications across different health care institutions by linking each institution’s individual drug indexing mechanism to the National Drug Code database.\(^5\)

RESULTS
We have identified over 60,000 patients meeting the inclusion criteria with an estimated 15% prevalence of potentially inappropriate medications in the outpatient setting. The results of the initial phase along with the Reference Model would be presented in detail at the poster session. The next phase involves building drug-age decision support and conducting a prospective cluster-controlled study to evaluate the impact of computerized decision support on potentially inappropriate prescribing. By this collaboration between the two institutions with different methods of EHR adoption (internally developed vs. vendor based), we plan to develop and evaluate a generalizable decision support model for potentially inappropriate medications in the geriatric population.

REFERENCES