

Contents lists available at [ScienceDirect](#)

Journal of the American Pharmacists Association

journal homepage: www.japha.org

EXPERIENCE

Implementation of a health information exchange into community pharmacy workflow

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ARTICLE INFO

Article history:

Received 9 September 2016

Accepted 24 May 2017

ABSTRACT

Objectives: To explore the feasibility and report preliminary outcomes of the integration of a health information exchange (HIE) into community pharmacy workflow clinical service delivery.

Setting: Independent pharmacy in eastern Tennessee.

Practice description: The pharmacy offers medication reconciliation services via HIE access, as well as other clinical pharmacy services. The average number of prescriptions filled weekly is 1900, and staffing included 3.5 full-time-equivalent (FTE) pharmacists, and 7 FTE technicians.

Practice innovation: HIE integration within the workflow of the pharmacy was used to enhance existing patient care services, such as medication distribution, drug use review, medication therapy management, and immunizations, as well as to implement a novel transitional care service.

Evaluation: A mixed-methods design was used to explore HIE workflow. Data collection included a pharmacist and pharmacy technician perceptions survey, mapping steps involved in HIE use in workflow via a think-aloud protocol, and quantitatively reporting the number and type of discordant medications found on medication reconciliation.

Results: In total, 25 patients qualified for the medication reconciliation intervention and data collection. All 25 patients (100%) had at least 1 discordant medication. HIE access was used for 60% of patients. Community pharmacists were confident in their abilities to perform medication reconciliation and were able to perform the medication reconciliation with the use of the HIE within their workflow, albeit with some reported barriers. The average time spent per patient for HIE-facilitated transitional care was 21 minutes.

Conclusion: Integration and utilization of an HIE within the workflow for the purposes of patient care service delivery in the community pharmacy is feasible, but not without limitations. Such HIE utilization and extended access to the patient's clinical picture may represent a scalable method to enhance currently delivered pharmacist services.

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The development of health information exchanges (HIEs) to access patient data across all care settings represents a monumental leap forward in our ability to improve health outcomes. Sharing this patient data electronically in real time across various health care settings (hospital, medical office, urgent care, pharmacy, etc.) and personnel is now a reality in many regions of the country. HIEs facilitate the transfer and proliferation of patient information electronically between health care providers. They also serve to aggregate patient information and

then to make such information available to participating health care providers. Furthermore, HIEs serve as a translator among the various electronic health record (EHR) software languages. It is for these reasons that the implementation and use of HIEs are of increasing interest in health care.^{1,2}

Despite the implicit benefits of HIEs, their expansion has been met with numerous barriers, such as inadequate technologic compatibility and poor implementation.³ In an attempt to overcome these barriers, HIEs have received federal support from the Health Information Technology for Economic and Clinical Health Act (HITECH). The HITECH Act initially awarded more than \$547 million in federal grants to states and state-designated entities to fund the development, implementation, and maintenance of HIE networks. Directly related to these federal efforts has been the recent development and growth of

Disclosure: The authors have no conflicts of interest to disclose.

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Key Points**Background:**

- Health information exchanges (HIEs) create a bridge to share medical and prescription data across settings.
- Despite the growth of HIEs over the last decade, community pharmacies usually excluded.
- Use of HIE in community pharmacy allows pharmacists access to patient medical data.

Findings:

- HIE use in community pharmacy workflow was feasible, but not without barriers.
- HIE provided community pharmacists with medical information to confidently provide clinical care.

regional HIEs across the country, allowing for new collaborations and opportunities between both providers and health care facilities. More specifically, these HIEs provide health care professionals with access to medical and surgical histories, medication records, and hospital discharge notes.

Concurrently, several barriers to direct patient care services in the community pharmacy have been greatly reduced. Recent changes in state pharmacy practice laws, such as collaborative practice agreements (CPAs) and state-wide protocols, now allow pharmacists to add, remove, or adjust therapies to provide prescriber-delegated patient care services.⁴⁻⁶ In addition, reimbursement for clinical pharmacy services in the community is expanding.^{7,8} This is important because community pharmacists are one of the most accessible health care professionals, with a community pharmacy located within 5 miles of 95% of U.S. patients, and they provide a plethora of clinical or cognitive pharmaceutical services (CPS), such as medication therapy management (MTM), point-of-care testing (POCT), and immunizations.⁹⁻¹¹ Although there are growing opportunities for new patient care services in the community pharmacy because of new legal authority (CPAs, statewide protocols) and reimbursement, a major barrier that remains to providing care is limited access to a patient's health care record.

One specific area where community pharmacists have historically been unable to participate owing to a lack of medical record access is in transitional care services. Research has found that community pharmacists can have a positive effect in these services by detecting and resolving medication discrepancies on reconciliation when provided access to an EHR.¹² However, such EHR access is not feasible on a large scale, because each EHR is unique and they vary across medical offices and hospitals even within the same region. Furthermore, even with such access, questions may inevitably arise as to whether medical record access in general is feasible in the community pharmacy setting, given its unique workflow and workload demands.

Objective

The objective of this pilot study was to explore the feasibility and to report preliminary outcomes of the integration of

an HIE into a community pharmacy workflow for the purposes of clinical service delivery.

Practice description

This pilot study was a mixed-methods design set in an independent community pharmacy. The practice setting was a single-site, family-owned, independent pharmacy in eastern Tennessee. In addition to access to medication reconciliation services via an HIE, the site also offered MTM, immunizations, diabetes self-management education (DSME), pharmacogenetic testing, POCT, and nonsterile compounding. During the data collection period, the average number of prescriptions filled weekly was 1900. Staffing included 3.5 full-time-equivalent (FTE) pharmacists and 7 FTE technicians. The pharmacy also served as the training site of a postgraduate year 1 (PGY1) community pharmacy resident and fourth-year student pharmacists.

The East Tennessee Health Information Network (eHIN) is a nonprofit 20-county HIE surrounding Knoxville, TN. Established in 2005, its mission is to create a health care information network that supports improved patient outcomes. Access to eHIN is limited to "authorized" users who are subject to an access fee depending on their size, setting, and profession. Before the present study, the only participants in the HIE were physicians, clinics, diagnostic centers, hospitals, and other point-of-care facilities in eastern Tennessee.

Practice innovation

In the fall of 2015, a PGY1 community-based pharmacy resident at the study pharmacy contacted eHIN to explore community pharmacy integration within the HIE. Several meetings occurred throughout the fall to determine pharmacy user fees, user access, and software integration. Although total integration (bidirectional communication) into the pharmacy software system was possible via Health Level 7 software standards, the pharmacy opted for a nonintegrated secure Web-based platform for eHIN access. The Web-based platform was accessible via Web browser, and could be accessed only via password-protected user login.

HIE integration within the workflow of the pharmacy was used to enhance existing patient care services such as medication distribution, drug use review (DUR), MTM, and immunizations as well as to implement a novel transitional care service.

Evaluation

A mixed-methods design was chosen for this feasibility study because it allows for objective data analysis while at the same time providing context to further explain quantitative results. The addition of qualitative research methods is especially important to the present topic because there is little published research on community pharmacists' use of an HIE, and therefore the quality of data interpretation is theoretically improved. To further improve the study's validity and reliability, an across-method triangulation approach was used to draw data from multiple sources concerning HIE use at the study pharmacy. The use of triangulation is a well established and widely used research technique in mixed-methods study design.¹³

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