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BRIEF REPORT

Determining essential elements and functionalities for a patient record system in community pharmacy

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ABSTRACT

Background: As community-based pharmacy continues to evolve from a focus on product distribution to a practice focused on patient care, a key requirement is for pharmacists to document their patient care activities. Some community-based pharmacies are working to routinely use the Pharmacist eCare Plan standard in documenting their new care activities.
Objectives: With the need for a robust patient record in community-based pharmacies, the purpose of this study was to identify key elements and functionalities for a community-based pharmacy patient record.
Methods: An expert panel of 26 individuals participated in 3 rounds of surveys using an online Delphi method to develop consensus about the key data elements and functionalities for a pharmacy patient record system.
Results: A total of 46 items reached consensus: 16 as essential elements for a longitudinal pharmacy patient record, 7 as essential elements for a patient encounter, and 23 functionalities for a pharmacy patient record system. A rubric was developed to assess community-based pharmacy patient record systems.
Conclusion: The functionalities can support pharmacists in fully adopting a standard care process and providing and documenting patient care, while coordinating and improving communication with patients, providers, and payers. Pharmacists are encouraged to use the rubric in evaluating software for their practices.

Background

As community-based pharmacy continues to evolve from a focus on product distribution to a practice focused on patient care, a key requirement is for pharmacists to document their patient care activities.[1-5] Documenting patient care activities serves multiple purposes within a community-based pharmacy including patient care, billing for clinical services, and creating a legal record of care.[6-8] Before technological advances to document within an electronic patient record, community-based pharmacists used paper-based methods to document their patient care activities.[6] Sharing of patient information between community-based pharmacists and providers was primarily through fax or mail. To improve consistency of documentation between pharmacists and increase acceptance from providers, the format or structure of the note (e.g., SOAP notes) and essential elements of pharmacists' documentation were promoted.[7,9]

In the past 20 years, electronic documentation platforms, health information technology (HIT) standards, and the Pharmacist eCare Plan standard ("Pharmacist eCare Plan") are affecting how clinical documentation is being performed in community-based pharmacies.[1,10-14] The Pharmacist eCare Plan standard has been developed over the past decade.[15] It was modeled after the HL7 care planning standard with modifications specific to pharmacists' workups and medication-related care planning pertaining to their patient care activities. Much like any patient clinical record, the Pharmacist eCare Plan is a longitudinal record of care that

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pharmacists and pharmacy staff contribute to its content. The eCare plan contains the patient's goals of therapy, medication concerns or medication-related problems identified, pharmacists' interventions to resolve medication-related problems, and the pharmacists' ongoing follow-up and monitoring depending on patients' specific needs.[16] Ultimately the Pharmacist eCare Plan is to be integrated or shared with other team members into the overall comprehensive patient care plan.[17]

Initially technology vendors focused their efforts on creating platforms that meet the basic functionality of the Pharmacist eCare Plan so they had a viable product that could be promoted to pharmacists—perhaps with not as much attention to the more advanced functionalities emerging in clinical practice. The challenge is that the current documentation platforms developed by technology vendors are not easily incorporated into workflow, require multiple steps to input the necessary clinical information, and are currently difficult to use as functional clinical records.[2,12,18] This situation has led to a lower acceptance from pharmacists using eCare plans regularly within their practices. Multiple strategies have been used to improve pharmacists and pharmacy staff consistent and effective use of eCare plans. The Community Pharmacy Enhanced Services Network USA (CPESN USA) worked with a number of technology vendors (Technology Solutions Partners [TSPs]) to develop educational tools, webinars (specific to the pharmacy's TSP), and best practices that provided guidance and instructions on incorporating eCare plans into workflow.[19] In addition, pharmacies that participated in the Flip the Pharmacy (FtP) practice transformation program focused on improving practice and workflow efficiencies implementing the 6 domains of FtP.[3] The net result of practice transformation is to create the practice infrastructure to support patient care activities and enhanced services.[20] The foundational domain (the first domain of FtP) is implementing a robust medication synchronization program that incorporates the appointment-based model (ABM). By using ABM, community-based pharmacists can proactively schedule patients to review their medications and resolve any medication-related problems minimizing practice-related interruptions. Medication synchronization along with ABM not only allows more time for patient care, but also the required clinical documentation associated with these clinical activities.[20]

Pharmacies that have transformed their practices are optimizing practice resources (technicians, technology, workflow solutions, etc.) so that pharmacists and staff have more time to provide patient care and enhance services. This care includes identifying and resolving medication-related problems during dispensing process[21,22] and providing enhanced services directly to the patient. Goode et al.[23] categorized these services, beyond dispensing, into the following categories: medication optimization, wellness and prevention, chronic case management, acute care management, patient education, and other patient care services. Community-based pharmacies that are part of clinically integrated networks (e.g., CPESN USA) are contracting with payers to provide patient care services that include reimbursement and, with some contracts, bonus incentives. Some community-based pharmacies are partnering with providers to provide patient services such as chronic care management, transitions of care, or annual wellness visits. Where allowed, community-based pharmacies are now expanding their reimbursement opportunities by credentialing as providers with payers and billing on the medical side.[24] In each of these new opportunities, having a functional electronic pharmacy patient care record becomes essential to the success of their practices.

It is important that technologies that support the Pharmacist eCare Plan evolve to become more functional and less burdensome for practicing community-based pharmacists. The objectives of this research were to:

1. Convene an expert panel to identify key elements and functionalities for a community pharmacy patient record
2. Develop a rubric to assess c community-based pharmacy patient record systems

Methods

An online Delphi method was used to develop consensus about the key data elements and functionalities for a community-based pharmacy patient record system. An expert panel of 26 individuals was recruited to participate. These panelists included pharmacy practitioners, Pharmacist eCare Plan vendors, pharmacy payers, government employees, and HIT subject matter experts. The Human Subjects Office at the University of Iowa determined this study was not a human subjects research.

The Delphi method included 3 online surveys of the expert panel. For each survey round, multiple e-mail contacts containing a link to the survey were sent to the expert panelists. Three types of components of a pharmacy patient record system were addressed in the surveys: (1) essential elements of a longitudinal pharmacy patient record, (2) elements in a single patient encounter, and (3) functionalities of a pharmacy patient record system. Initial items were developed from the literature and the experience of the research team, using an iterative approach.

For round 1, 47 items were evaluated: 17 for patient record elements, 8 for patient encounter elements, and 22 for functionalities. A 4-point scale was used for rating the importance of each element. The labels were not important, slightly important, important, and essential. Items were considered to reach consensus if no more than 2 respondents rated it slightly important or not important. Items that reached consensus were not included in later rounds of the Delphi process.

The survey in round 2 contained 24 items. For 15 of the items, the panelists were asked only to rate them again on the 4-point importance scale. For the other items, they rated with the 4-point scale and in a textbox briefly explained why they rated each item as they did. The intent of the free-text responses was to try to understand the respondents' reasonings for their ratings. The 9 items with the textboxes in round 2 were those with the least consensus in round 1. Six items were rated in round 3, using the 4-point importance scale. For each of these items, a brief description of the use of the element or functionality by pharmacists was included.

Upon completion of the Delphi method, a rubric was developed to assess pharmacy patient record systems. The items that reached consensus from the expert panel were

Table 1
Scoring based on a total of 46 items

Essential element for a longitudinal patient record	Yes	No
Patient demographics (*names, ethnicity, sex, date of birth*)		
Patient contact information (*current address, e-mail address, phone number*)		
Health insurance (*coverage type, identifiers and numbers*)		
Allergies and intolerances (*substance and reaction*)		
Immunizations		
Vital signs (*blood pressure, body height and weight*)		
Laboratory (*tests, values/results*)		
Goals of therapy		
Assessments (*screenings and questionnaires*)		
Plan of treatment		
Outcomes of therapy (*reported, assessed*)		
Past medical history		
Prescription/OTC/supplement/alternative medication history (**complete** medication record)		
Social history (*substance use, social determinants of health*)		
Special needs of patient (*patient note, e.g., delivery, caregiver, language*)		
Pharmacist intervention history		
Essential elements for a patient encounter	**Yes**	**No**
Encounter information (*Encounter time, type and reason*)		
Pharmacist identifier (*author*)		
Patient identifier (*first name, middle name/initial, last name, date of birth*)		
History of present illness (*problems, social determinants of health problems/health concerns*)		
Relevant prescription/OTC/alternative medication history/adherence (medications that are **relevant** to the acute patient care episode)		
Assessment (*Identification of medication-related problems*)		
Plan of action to address problems (*interventions, procedures*)		
Essential functionalities for a pharmacy patient record system	**Yes**	**No**
Formatted for intuitive navigation of patient record		
Searchable patient clinical notes shown chronologically by date of encounter		
Multiple filters for sorting content (*e.g., date of encounter, type of medication-related problems, medications, health conditions/indications, interventions made, results of interventions*)		
Dashboard for viewing and analyzing patient information		
Calendar/scheduling		
Date and time stamp for care plans		
Author and location of patient information including care plans		
Quick and efficient documentation (*e.g., templates to guide actions*)		
Patient identification by selected criteria, affiliations, or payer programs (*tag, flag, color code, sort/filter*)		
Running reports based on selected criteria, affiliations, or payer programs		
Work queue for navigating care plan progress		
Longitudinal observations and notes (*e.g., laboratory test results/vital signs or notes over time*)		
Dashboard for viewing and analyzing pharmacy performance metrics (*e.g., adherence rate, appropriate statin use, vital signs/laboratory test results at goal*)		
Capture of information from ePrescriptions (*e.g., laboratory test results, vital sings*)		
User initiated import and export of selected patient files or documents		
Transmission of secure information to other providers (*i.e., interoperability*)		
Bidirectional sharing of selected patient information with providers		
Seamless transition across various platforms (*e.g., from clinical documentation to pharmacy management system; using a single sign-on*)		
Integration with pharmacy management system (*i.e., no dual entry*)		
Risk stratification of patients		
Automated medical billing		
Automated background mapping of terminology to codes (e.g., SNOMED, CPT)		
Standardization of care plan for use by other providers and settings of care		

Abbreviations used: CPT, Current Procedural Terminology; OTC, over-the-counter.

included in the rubric. Each item in the rubric can be rated yes or no as it relates to containing the essential item.

Results

A total of 46 items reached consensus: 16 as essential elements for a longitudinal pharmacy patient record, 7 as essential elements for a patient encounter, and 23 functionalities for a pharmacy patient record system (Table 1). Most of the items (n = 25) reached consensus in round 1, with 16 in round 2 and 5 in round 3. The order of the items is based on the consensus of the experts. Family history was the only item not to reach consensus. The rubric developed from these results is presented in Figure 1.

Discussion

The results from this research are comparable with the work of Currie et al.[9] Additional elements of a pharmacy patient record that were added from this current research include goals of therapy, outcomes of therapy, plan of treatment, and intervention history, which are components

Scoring based on a total of 46 items:

Essential Element for a Longitudinal Patient Record	Yes	No
Patient demographics (*Names, Ethnicity, Sex, Date of birth*)		
Patient contact information (*Current address, Email address, Phone number*)		
Health insurance (*Coverage type, Identifiers & numbers*)		
Allergies and intolerances (*Substance and reaction*)		
Immunizations		
Vital signs (*Blood pressure, Body height & weight*)		
Laboratory (*Tests, Values/Results)*		
Goals of therapy		
Assessments (*Screenings and questionnaires*)		
Plan of treatment		
Outcomes of therapy (*Reported, Assessed*)		
Past medical history		
Prescription/OTC/supplement/alternative medication history **Complete** Medication Record)		
Social history (*Substance use, Social determinants of health*)		
Special needs of patient (*Patient note, e.g., delivery, caregiver, language*)		
Pharmacist intervention history		
Essential Elements for a Patient Encounter	**Yes**	**No**
Encounter information (*Encounter time, type & reason*)		
Pharmacist identifier (*Author*)		
Patient identifier (*First name, Middle name/initial, Last name, Date of birth*)		
History of present illness (*Problems, Social determinants of health problems/Health concerns*)		
Relevant Prescription/OTC/Alternative medication history/adherence (Medications that are **Relevant** to the acute patient care episode)		
Assessment (*Identification of medication-related problems*)		
Plan of action to address problems (*Interventions, Procedures*)		
Essential Functionalities for a Pharmacy Patient Record System	**Yes**	**No**
Formatted for intuitive navigation of patient record		
Searchable patient clinical notes shown chronologically by date of encounter		
Multiple filters for sorting content (*e.g. date of encounter, type of medication-related problems,*		

Figure 1. Community-based pharmacy patient record clinical record rubric. Overview: This rubric tool was developed using the expert opinion of several key stakeholders including community pharmacists, technology vendors, and health information technology specialists through a Delphi method. The items are organized into 3 types: (1) essential elements for a longitudinal pharmacy patient record, (2) essential elements for a patient encounter, and (3) functionalities for a pharmacy patient records system. The purpose of these rubrics is for pharmacists, vendors, and other stakeholders to assess a platform to ascertain whether it contains the

medications, health conditions/indications, interventions made, results of interventions)		
Dashboard for viewing and analyzing patient information		
Calendar/Scheduling		
Date & time stamp for care plans		
Author and location of patient information including care plans		
Quick and efficient documentation (*e.g., templates to guide actions*)		
Patient identification by selected criteria, affiliations or payer programs (*tag, flag, color code, sort/filter*)		
Running reports based on selected criteria, affiliations or payer programs		
Work queue for navigating care plan progress		
Longitudinal observations & notes (*e.g., labs/vitals or notes over time*)		
Dashboard for viewing and analyzing pharmacy performance metrics (*e.g., adherence rate, appropriate statin use, vitals/labs at goal*)		
Capture of information from ePrescriptions (*e.g., labs, vitals*)		
User initiated import & export of selected patient files or documents		
Transmission of secure information to other providers (*i.e. interoperability*)		
Bidirectional sharing of selected patient information with providers		
Seamless transition across various platforms (*e.g., from clinical documentation to pharmacy management system; using a single sign-on*)		
Integration with pharmacy management system (*i.e., no dual entry*)		
Risk stratification of patients		
Automated medical billing		
Automated background mapping of terminology to codes (e.g., SNOMED, CPT)		
Standardization of care plan for use by other providers & settings of care		

Figure 1. (*continued*).

of the basic functionalities of an eCare plan, whereas assessments (screenings and questionnaires collected from patients) are considered an advanced functionality.[25] However, what is unique with this research is the capability of the eCare plan in practice to serve as a patient care tool.

The 23 functionalities support pharmacists in fully adopting a standard care process and providing and documenting patient care, while coordinating and improving communication with patients, providers, and payers. These functionalities include some features that support the overall pharmacist patient care process.[26] For example, a calendar function has become a key

elements and functionalities needed for an ideal patient record based on expert opinion. Instructions for use: During the assessment of an electronic patient clinical record platform, check the "Yes" or "No" columns if it contains an essential element or functionality. The more elements and functionalities the record contains, the more robust and functional the platform. Pharmacists can use the rubric as a way to assess multiple platforms before making costly financial decisions. Vendors can use the rubric to evaluate their own platform to determine how their platform compares to an expert panel's opinions on an ideal robust clinical patient record system. Payers can use this rubric to assess different platforms to determine which ones may meet their needs in terms of data transmission. Other stakeholders may have an interest in community-based pharmacists' abilities to document their patient care activities and safely and securely share that information with prescribers and other providers. Regardless of the end user of this rubric, it is the hope of the developers that this rubric will be used to improve platforms, reduce pharmacists' burden in documenting patient care, improve documentation within workflow, and improve the pharmacists' abilities to truly transform their practice. Clinical documentation and eCare planning are essential components of a transformed community-based pharmacy practice; let this rubric be used to help improve that process.

part of coordinating care, given that many community-based pharmacies use an ABM to provide patient care services such as immunizations. In addition, integration of the patient record with the pharmacy management system allows proper documentation and eases sharing of patient information across platforms although pharmacy users see room for improvement. In addition, service billing (as opposed to prescription product billing) is emerging as community-based pharmacists seek payment and reimbursement for nondispensing-related care, making automated billing of such services desirable.[27,28]

Pharmacists often implement a patient care plan after communication with providers.[7,29] Several functions identified in this study relate to a pharmacist being able to send and receive patient information before and after patient care delivery. Such health information exchange is one reason the Pharmacist eCare Plan standard was developed.[30] Although this capacity has not yet been widely adopted, it is likely to become more common as the technical issues and provider concerns regarding health information exchange are resolved. For example, CPESN USA data showed an increase in the number of pharmacies submitting eCare plans from October 2020 to October 2022 of 23.3% (1239-1528) and an increase of eCare plans submitted per month during the same period of 71.5% (134,230-188,604; C.L. Clifton, personal communication, 2023). Availability of a fully functioning patient record for community-based pharmacies would support health information exchange with other providers.

Follow-up and monitoring (longitudinal observations and notes) are key activities in pharmacists providing patient care, especially for patients with chronic conditions. Such monitoring can involve ongoing collection and checking of laboratory test results and vital signs. In addition to some of the functionalities already mentioned, having a capability to document and review longitudinal observations and notes is important to consistent robust monitoring of patients. Longitudinal notes allow pharmacists to check for recorded monitoring indicators, such as blood pressure, and to evaluate the effectiveness of medication therapy. Being able to perform effective follow-up and monitoring is an important component of the pharmacist patient care process.

Finally, a few functionalities identified in this study relate to pharmacist involvement in population health management.[31-33] For example, having filters to allow sorting of patients would support the use of patient registries, which is a key feature of population health management.[34-36] Pharmacists could use such a registry for targeting a particular care program, focusing communications, and evaluating the feasibility of various opportunities (e.g., a new contract for patients with diabetes). Similarly, running reports for groups of patients can help pharmacists evaluate how they are performing with a particular contract or group of patients. The functionalities identified in this study can help support community-based pharmacists in delivering a more comprehensive patient care process.

A rubric (in Figure 1) was developed from the items that reached consensus within the 3 rounds. The items are organized into 3 types: (1) essential elements for a longitudinal pharmacy patient record, (2) essential elements for a patient encounter, and (3) functionalities for a pharmacy patient records system. The rubric was designed to be used by multiple stakeholders including pharmacists, managers, and vendors to assess an eCare plan platform to ascertain whether it contains the elements and functionalities needed for an ideal patient record based on expert opinion. The more elements and functionalities an eCare plan platform contains, the more robust the platform. Further research is needed to determine the usefulness and challenges using the rubric in practice. For example, field testing the rubric across a set of eCare plan vendors could provide useful information about the vendors' eCare plan capabilities and learning about best use of the rubric.

Like every study, this work has limitations. One is that although responses were received from 24 of 26 members of the panel in rounds 1 and 2, only 19 panelists responded in round 3. The overall impact of this is lessened because only 6 items were rated in that last round. A second limitation is the choice of consensus criterion. The cutoff was no more than 2 ratings of slightly important or not important. This allowed some level of disagreement about the importance of each item. However, the possible lack of consensus was small and most items did achieve full consensus.

Conclusions

As community-based pharmacy practice continues to transform, having an effective and robust pharmacy patient record is vital. Current eCare plan platforms in the marketplace have been challenging to implement by pharmacy staff in practice owing to a variety of factors including functionality and difficulty to integrate into workflow. The rubric developed in this study contains essential elements and key functionalities that match the evolving components of pharmacist care. Pharmacists, organizations, and vendors are encouraged to use the rubric in evaluating their documentation software to ensure that it meets the needs of pharmacy practitioners who are providing patient care services.

Disclosure

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