Pre-Visit Planning Calls Conducted by Student Pharmacists at a Student-Run Free Clinic

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Abstract

Background: Student pharmacist participation in Student-Run Free Clinics (SRFCs) has not been well studied. Similarly, there is not much data for the use of pre-visit planning calls in the SRFC setting. Our SRFC is open two days a week and staffed by a multidisciplinary team of medical, nursing, pharmacy, and social work students that are supervised by physicians, nurse practitioners, pharmacists, and clinical social worker preceptors. The objective of our project is to determine the impact of pre-visit telephone calls on the accuracy of existing medication lists in the electronic health record (EHR) and the identification of medication therapy-related problems.

Methods: We developed a pre-visit planning call protocol to perform medication reconciliation and identify medication therapy problems (MTPs). Trained student pharmacists called patients prior to their scheduled medical appointment to update their medication list in the EHR and conduct a preliminary assessment of MTPs. We recorded patient demographics, including age, gender, race, co-morbid conditions, medication changes documented in the EHR, and potential MTPs. Descriptive statistics were used to describe the patient population and medication changes.

Results: A total of 111 patients participated in 135 patient encounters. Among prescription medications, there were 36 additions, 34 removals, and 97 adjustments to directions. There were 147 nonprescription products added, 34 removed, and 56 adjustments to directions. There were 16 situations in which a patient may have needed additional medication therapy, 14 drug-drug interactions, 12 adverse medication events, and five problems requiring additional monitoring. The median call was 5 minutes in duration.

Conclusion: Student pharmacists were able to conduct pre-visit planning telephone calls to improve the accuracy of medication lists and conduct a preliminary assessment of MTPs prior to patient visits at the SRFC.

Background

Student-Run Free Clinics (SRFC) have a long history of providing primary care services to the medically underserved dating back to the 1960s.[1] Since those inauspicious beginnings, SRFCs have spread throughout the medical education system and more recently have extended to include a variety of health professions education disciplines.[2] SRFCs primarily serve patients who are uninsured and generally do not accept any payment from patients.[2]

Approximately three-fourths of Association of American Medical Colleges accredited medical schools reported an affiliation with a SRFC in 2014.[3] The core services provided by these 85 clinics included primary care, health care maintenance, chronic disease management, and mental health services.[3] While most SRFCs included interprofessional partners (n=62, 73%), fewer than

one-half (n=36, 42%) reported including student pharmacists in their operations.[3]

In October through November 2015, an online survey was distributed to all pharmacy programs in the United States to assess involvement with SRFCs, pharmacy student roles, and services offered.[4] Out of the 45 programs that responded, approximately one-third (n=16, 36%) were associated with at least one SRFC.[4] Among these programs, the most common roles for student pharmacists were providing medication education (n=13, 81%), serving on the leadership or administration team (n=12, 75%), dispensing medications (n=9, 56%), and medication therapy management (n=7, 44%).[4] More recently, a small study demonstrated that comprehensive medication reviews by student pharmacists may help to optimize medications for patients at a SRFC as well as decrease medication costs.[5] While the services that are provided by SRFCs can increase access to critical health care services, the simultaneous goal of providing health professions education students with learning opportunities can result in lengthy visits when patients come to the clinic.

One potential strategy to decrease the time a patient is at the clinic while ensuring that the health care team has the necessary information is the adoption of pre-visit planning services.[6] Pre-visit planning can take the form of appointment reminders, laboratory testing, visit preparations, and pre-visit telephone calls that include medication reconciliation, health screening, and agenda-setting.[6,7] A quality improvement project found that patients (n=120) at an outpatient rheumatology clinic felt more prepared for their appointment and that the average appointment duration was reduced by 7 minutes after the implementation of pre-visit planning services.[8] Elsewhere, cystic fibrosis clinics within one health system reported an increase in patient and family response to communications while improving the clinic's organization and teamwork.[9]

Pharmacists have also participated in pre-visit planning services, by conducting pre-appointment chart reviews for patients to identify potential drug therapy problems.[10] However, it is unclear whether it is feasible for student pharmacists associated with a SRFC to engage in pre-visit planning telephone calls with patients in order to improve the accuracy of medication lists in the electronic health record (EHR) and conduct a preliminary assessment of medication therapy problems (MTPs). As a result, we conducted a quality improvement project to measure the effect of pre-visit planning calls that focused on medication reconciliation on the accuracy of a patient's medication list at a SRFC.

Objectives

The primary objective of this study was to determine the impact of pre-visit telephone calls on the accuracy of existing medication lists in the EHR. The secondary objective was to identify and categorize potential MTPs for patients who received the pre-visit planning service.

Practice Description

The SRFC is located in Pinckney, Michigan, and is one of two safety-net clinics in Livingston County. Twice weekly, the clinic provides free medical care to uninsured adult patients in the county. This clinic was originally developed by medical students and faculty but has transitioned to an interprofessional model that also includes disciplines such as pharmacy, nursing, social work, and public health. The clinic provides a combination of acute care and chronic disease management services, including a limited number of diagnostic and laboratory tests on site. Patients who need more extensive services may be referred to the affiliated academic medical center for additional diagnostic tests and treatment. The clinic uses Practice Fusion (2021, Practice Fusion, San Francisco, CA, USA), a free cloud-based EHR, to document medical care, including student pharmacists who were trained to conduct the pre-visit planning calls.

Innovation

Two third-year student pharmacists and two pharmacist faculty with experience serving as preceptors at the SRFC developed a pre-visit planning protocol. This protocol allowed the student pharmacists to work under intermittent supervision, including monthly check-in meetings and preceptors being available via email if questions arose between meetings. Following this protocol, between 08/14/2020 and 04/28/2021, the student pharmacists individually called each patient on the afternoon prior to in-person

appointments to complete the pre-visit planning service. Doximity (2021, Doximity, San Francisco, CA, USA) and Cisco Jabber (2021, Cisco Systems, San Jose, CA, USA) were used to allow the telephone number to appear as if it were coming from the SRFC. In-person appointments were held at the SRFC twice monthly. If the EHR noted that the patient needed an interpreter, the student pharmacist initiated a three-way call between the patient and a trained medical interpreter from the affiliated health system. Student pharmacists attempted to call patients twice at 10-minute intervals. If the patient was not reached, they left a short voice message asking patients to call back if they are unable to make their appointment or had experienced any symptoms or exposure to the SARS-CoV-2 virus.

During the telephone call, the student pharmacist conducted a medication reconciliation and screened the patient for symptoms or exposure to the SARS-CoV-2 virus. Medication regimens were assessed for potential MTPs on the basis of indication for use, the effectiveness of the medication for that indication, the safety of their medication regimen, and patient adherence.[11] The student pharmacists also sought to identify patient concerns about medications, barriers to care, drug-drug interactions and subsequently suggest clinical interventions to the medical team. The student pharmacist then updated the medication list in the EHR, which included adding, removing, or changing medications. In addition, a short note was left in the EHR for all patients documenting the student pharmacists' attempt(s) to contact.

Evaluation Methods

A data collection form was created in Microsoft Excel (Version 16.41, Microsoft Corporation, Redmond, WA, USA) to capture information about each completed telephone call. Patient information including race, age, and co-morbid conditions was collected. The initial number of prescription and nonprescription products and the number of each type of medication that were added, removed, or changed was documented. The duration of each call was recorded to identify the average call length.

Data from the pre-visit planning calls was summarized via descriptive statistics within

Table 1. Demographic characteristics of patients (n=111)

| Characteristic	Number of patients (%)
Gender	
Male	47 (42)
Female	64 (58)
Race or ethnicity	
White	33 (29)
Hispanic	12 (11)
Black	3 (3)
Asian	1 (1)
Indian	1 (1)
Not documented	61 (55)

Microsoft Excel (Version 16.41, Microsoft Corporation, Redmond, WA, USA). This included patient demographics, comorbidities, the total and average number of changes made to each patient's medication list, the number and type of MTPs. This quality improvement project received approval from the University of Michigan Medical School Institutional Review Board.

Results

A total of 111 SRFC patients were contacted in 135 pre-visit planning calls in preparation for 33 in-person clinic days. The majority of patients were female (n=64, 58%), and the average patient age was 49±13 years. Table 1 displays the demographic characteristics of the patients. Regarding comorbid disease states, hypertension and depression were the most common comorbidities in our patient population (Figure 1). The median call length was 5 minutes (range 2 – 20 minutes).

Across the 135 visits, there were a total of 327 prescription medications and 185 nonprescription products documented in the EHR prior to the pre-visit planning call. On average, there were 2.4 and 1.4 prescription and nonprescription medications documented in the EHR, respectively, prior to each pre-visit planning call. Across all patient encounters, there were 36 additions, 34 removals, and 97 changes in directions among the prescription medications. In addition, there were 147 additions, 34 removals, and 56 changes in directions among the nonprescription products (Figure 2). On average, each encounter

Figure 1. Co-morbid conditions documented in the electronic health record for each patient by frequency
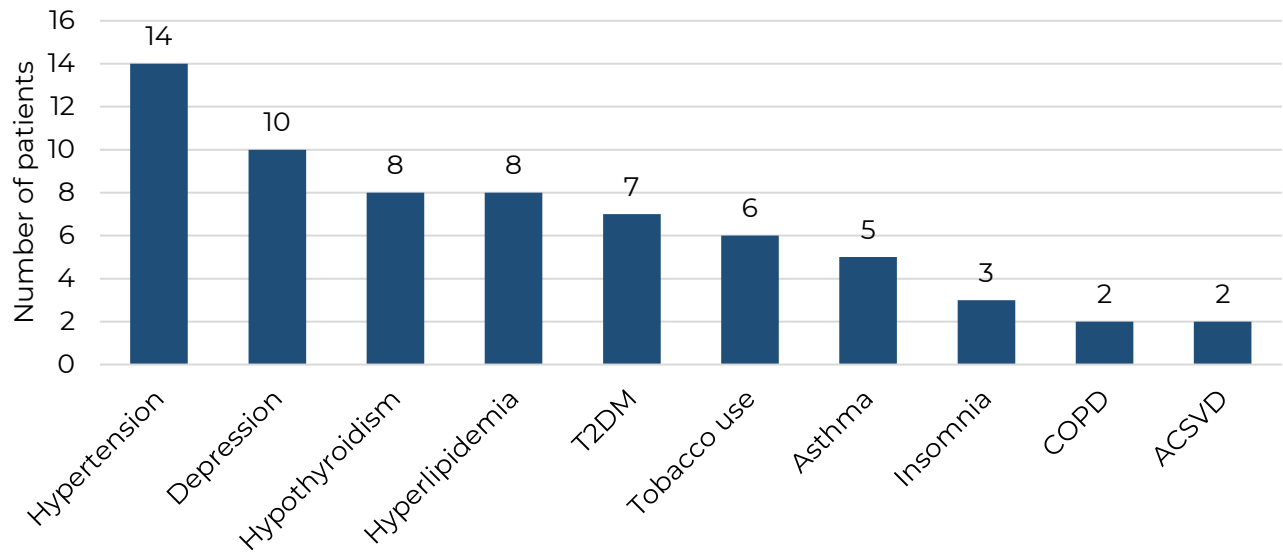
T2DM: type 2 diabetes mellitus; COPD: chronic obstructive pulmonary disease; ASCVD: atherosclerotic cardiovascular disease

Figure 2. Changes made to medication lists based on pre-visit planning calls
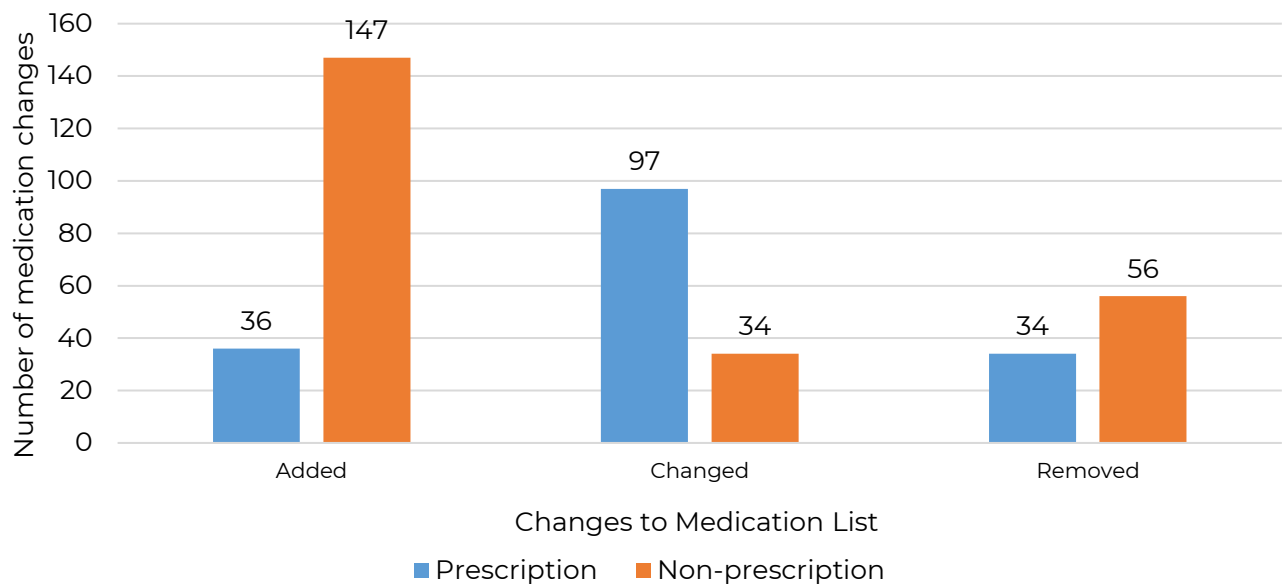
resulted in 2.8 changes to the current medication list.

Over one-third of patients (n=42, 38%) experienced at least one potential MTP (Table 2). The most common MTP was classified as being related to the indication for a medication, such as a patient with diabetes not being prescribed statin therapy. Examples of other MTPs that were

identified included having an untreated condition, significant drug-drug interactions, and duplicate therapy. There were three instances of non-adherence identified, specifically due to financial barriers (n=2, 3%) or lack of awareness of the indication for their medication (n=1, 2%).

Finally, while we did not systematically track outcomes from the SARS-CoV-2 virus screening,

Table 2. Medication therapy problems identified during pre-visit planning (n=59)

Type	Number of problems identified (%)
Indication	28 (47)
Safety	19 (32)
Effectiveness	9 (15)
Adherence	3 (5)

several patients did not pass the assessment, and therefore their appointments were changed to a virtual format.

Discussion

Pre-visit planning calls are a known mechanism to help the clinical team and patient prepare for an upcoming visit.[6] Having a pharmacist, pharmacy technician, or student pharmacist perform these calls also allows for an opportunity to have a thorough review of the patient's medication profile.[6] Our project illustrated how these calls can help improve the medication list within a SRFC. Through these calls, the student pharmacists noted barriers that patients face with obtaining medications. The first barrier is often cost; through our project, the students identified numerous cases of conditions being left untreated or undertreated due to the cost of the medications indicated. Insulin pens and non-rescue inhalers can cost hundreds of dollars. Our SRFC has implemented services to help patients apply for Medicaid and manufacturer assistance programs. However, the necessary documents may still be an obstacle for patients who are unable to provide tax statements, who may be undocumented, and/or may have limited medical literacy. Determining how to overcome these obstacles to treatment could be a future direction for research.

For the patients where drug monitoring was needed, the diagnostic test may not have been available at the clinic. This presents an obstacle for patients that may have trouble with laboratory paperwork or transportation required to get to a facility that can perform the diagnostic test. Another barrier to patient medication safety are unidentified issues with health literacy and inadequate counseling at the time a medication was prescribed. In the case of drug-drug interactions where patients were taking two non-steroidal anti-inflammatory drug (NSAIDs), one patient was taking meloxicam and ibuprofen. Given that meloxicam is a prescription, there was likely a care gap where the patient was not counseled to avoid other NSAIDs, or if they were counseled, the patient's level of comprehension went unrecognized. Another example where a gap in care was identified was a patient's non-adherence to lisinopril because they misunderstood why it was prescribed. That patient had type II diabetes mellitus but did not have hypertension. A gap in their health literacy and lack of appropriate counseling may also have been involved. Proper counseling may have ensured that they understood that the indication was to prevent renal complications from their diabetes and not hypertension management.

While the problems the student pharmacists identified weren't as comprehensive as a formal pharmacy assessment and development of a care plan, this service enhanced the level of medication reconciliation performed and allowed for student pharmacist input in this interprofessional setting. The short average call length means this would not be a burdensome intervention to a clinic's practice. This quality improvement project shows the value of integrating student pharmacists into the workflow of a SRFC. The updated medication lists aligned with how patients reported currently taking their medications which meant that the health care team could make recommendations using up-to-date data. This filled a gap in care; these issues could have been missed during the appointment and were identified through pre-visit planning. This intervention can make appointments more productive by allowing providers more time to address the patient's chief complaint and other comorbidities. Future changes to the role of student pharmacists in SRFCs may broaden the interventions identified during pre-visit planning telephone calls. This could include assessing medication-related needs that should be handled by an SRFC's social services team rather than by medical, nursing, or pharmacy students.

The primary limitation of this study was that we did not include a control group in order to compare outcomes associated with this

intervention. Data were not collected about the patients who were not able to be contacted, therefore we were not able to report participant uptake to the service or whether the patients we reached via telephone were representative of all patients who received services at the SRFC. The interviews were conducted by third-year student pharmacists under indirect supervision from clinical pharmacists. As a result, the protocol intentionally limited the scope of services to collecting an up-to-date list of medications and conducting a preliminary drug therapy assessment.

Student pharmacists were able to conduct brief pre-visit planning telephone calls to improve the accuracy of medication lists and conduct a preliminary assessment of MTPs prior to patient visits at SRFCs. Additional research is needed to explore the utility and uptake of recommendations by the in-person medical team and how to integrate this service into other SRFCs with diverse practice models. Finally, we did not require patients to provide written documentation of prescription medications that were added to the medication list. While this theoretically could lead to concerns about inappropriate access to medications, the risk was mitigated by the SRFC's policy to not dispense controlled substances.

Disclosures

The authors have no conflicts of interest to disclose.

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