Assessing Medication Pick-Up Rates at a Student-Run Free Health Clinic

Felix Lam, PharmD[1]; Marcus Kaplan, PharmD[1]; Nicholas Gazda, PharmD[1]; Megan Shah, PharmD[1]; John Toler, PharmD[1]; Kelly Scolaro, PharmD[1]

[1]University of North Carolina at Chapel Hill Eshelman School of Pharmacy, Chapel Hill, North Carolina, USA

Corresponding Author: Felix Lam, PharmD; email: felix_lam@unc.edu

Abstract

Background: Prescription pick up serves as the first barrier to medication adherence, in that patients must travel to a pharmacy to obtain their medications. The Student Health Action Coalition (SHAC) is a student-led, interdisciplinary, free clinic in North Carolina that serves indigent populations, who tend to have lower medication adherence. The study objectives were to compare the medication pick-up rate and time to pick up for prescriptions dispensed from SHAC Clinic with those dispensed from an external pharmacy.
Methods: All "SHAC Pays" or "SHAC Dispensed" prescriptions written between June 17, 2014 and March 30, 2015 were included for analysis. SHAC Pays prescriptions must be picked up by the patient at an external pharmacy, while SHAC Dispensed prescriptions are dispensed directly from the clinic. Pick-up rate was measured as the percentage of written prescriptions picked up by patients and was verified using pharmacy billing records.
Results: During the study period, 158 SHAC Pays prescriptions were written for 62 unique patients and 111 SHAC Dispensed prescriptions were written for 61 unique patients. The SHAC Pays pick-up rate was 58.2%, compared to 100% for SHAC Dispensed (p<0.0001). The median time to SHAC Pays and SHAC Dispensed prescription pick up was 3 days and 0 days, respectively (p < 0.0001).
Conclusions: Among patients seen at a student-run free clinic, prescription pick-up rate was significantly reduced and time to pick up was delayed when medications were not dispensed to patients from clinic. On-site dispensing guarantees that patients obtain their medications and can immediately begin treatment.

Introduction

Underserved populations are more likely to face barriers to medication adherence, which contributes to their greater risk of hospitalization and mortality.[1-3] High levels of medication adherence (>80%) are associated with lower disease-related medical costs and a reduced risk of hospitalization in patients with chronic conditions such as diabetes and hypercholesterolemia.[2] One study performed at a free clinic found that 55% of all medication-related problems identified within the patient population were of medication nonadherence.[4] Reducing barriers to optimal medication adherence can lead to overall healthcare savings that offset medication costs and improve patient outcomes.[2,5-7]

The first barrier to medication adherence is the need for prescription pick up. In typical outpatient practice, a provider writes a prescription that the patient must fill at an external pharmacy. However, this model is not always effective, as up to 25% of prescriptions provided by acute care practices are not filled.[8-9] Underserved patients may not have the transportation or financial resources required to successfully obtain medications from an external pharmacy. Student-run free clinics can alleviate these burdens and increase the rate of medication pick up by establishing an on-site pharmacy.

The aim of this study is to compare the prescription pick-up rate in patients served by a student-run free clinic for prescriptions filled at an external pharmacy and those dispensed at the point of service from an on-site pharmacy. To our knowledge,

this is the first published study assessing rates of prescription pick up among patients seen at a student-run free clinic.

Methods

Setting

The Student Health Action Coalition (SHAC) Clinic was established in 1967 by the University of North Carolina at Chapel Hill as a free healthcare clinic to serve the needs of the surrounding community. The clinic is open every Wednesday evening year-round, and is open to both appointments and patient walk-ins. The clinic is divided into two sections: Acute Care and Bridge to Care. Acute Care sees patients with immediate needs, such as infections or routine physical exams. Bridge to Care provides management for patients with diabetes or hypertension and connects them to a primary care physician within six months.

The in-house pharmacy at SHAC Clinic is structured to minimize barriers that patients may face in obtaining their medications. SHAC Pharmacy is registered as a limited-service pharmacy with the North Carolina Board of Pharmacy and may dispense medications under the direct supervision of a licensed pharmacist ("SHAC Dispensed"). Patients can immediately obtain medications, at no cost, from a formulary of 44 commonly used medications. For non-formulary or out-of-stock medications, patients receive a paper prescription that can be filled at no cost at our community pharmacy partner, Carrboro Family Pharmacy ("SHAC Pays") that is located 2.3 miles from the clinic. These paper prescriptions may also be filled at other pharmacies, but at the patient's expense.

Study Sample

This study was a retrospective patient chart review that was exempted from review by the Institutional Review Board at the University of North Carolina - Chapel Hill. All prescriptions documented as SHAC Pays or SHAC Dispensed on the clinic pharmacy log and written between June 17, 2014 and March 30, 2015 were included for analysis. The clinic pharmacy log is a document updated separately from the electronic medical record (EMR) by clinic pharmacy managers to consolidate tracking of prescriptions written and medications dispensed. All prescriptions identified on the clinic pharmacy log were verified in the EMR to ensure accuracy of the information. Prescriptions written for patients under the age of 18 were excluded from analysis.

Measures

The information collected for each prescription consisted of patient name, medical record number, Acute Care or Bridge to Care status, medication name, date prescription was written, number of refills provided, and, if applicable, date of each medication pick up as documented on invoices from Carrboro Family Pharmacy (CFP). Prescription pick up was validated by reviewing invoices from CFP on the SHAC Pays account and matching each purchase at CFP with its corresponding prescription on the clinic pharmacy log. Any prescription or refill entered on the log that could not be matched to a corresponding purchase at CFP was recorded as "Not Picked Up."

The primary outcome of this study was the rate of prescription pick up, defined as the percentage of written SHAC Pays or SHAC Dispensed prescriptions and refills that were picked up by the patient. Secondary outcomes were median time from date of prescription issuance to date of medication pick up, and adherence rates for the Acute Care and Bridge to Care subgroups. Per SHAC Pharmacy policy, each prescription may only be written for a 30-day supply. Therefore, for the purposes of this study, the date of issuance for refilled prescriptions was considered to be 30 days after each preceding pick up date. For SHAC Dispensed prescriptions, the date of pick up was the same as the date of issuance.

Statistical Analyses

Fisher's exact test was used to compare the primary outcome, and an odds ratio was calculated to compare the secondary outcome of prescription pick-up rate between subgroups. Mann-Whitney U test was utilized for a comparison of median time to prescription pick up between the two groups. At a 95% confidence interval, a 2-tailed p-value less than 0.05 was considered statistically significant. Analyses were performed using Microsoft Excel 2016 (Microsoft Corporation, Redmond, Washington).

Results

A total of 64 unique patients received SHAC Pays prescriptions during the studied time period. Two patients were under the age of 18 and were excluded from analysis. For the 62 included patients, 158 SHAC Pays prescriptions were provided. A total of 61 unique patients received SHAC Dispensed prescriptions during the studied time pe-

Figure 1. Time to fill or refill for "SHAC Pays" prescriptions (n=92 prescription fills)
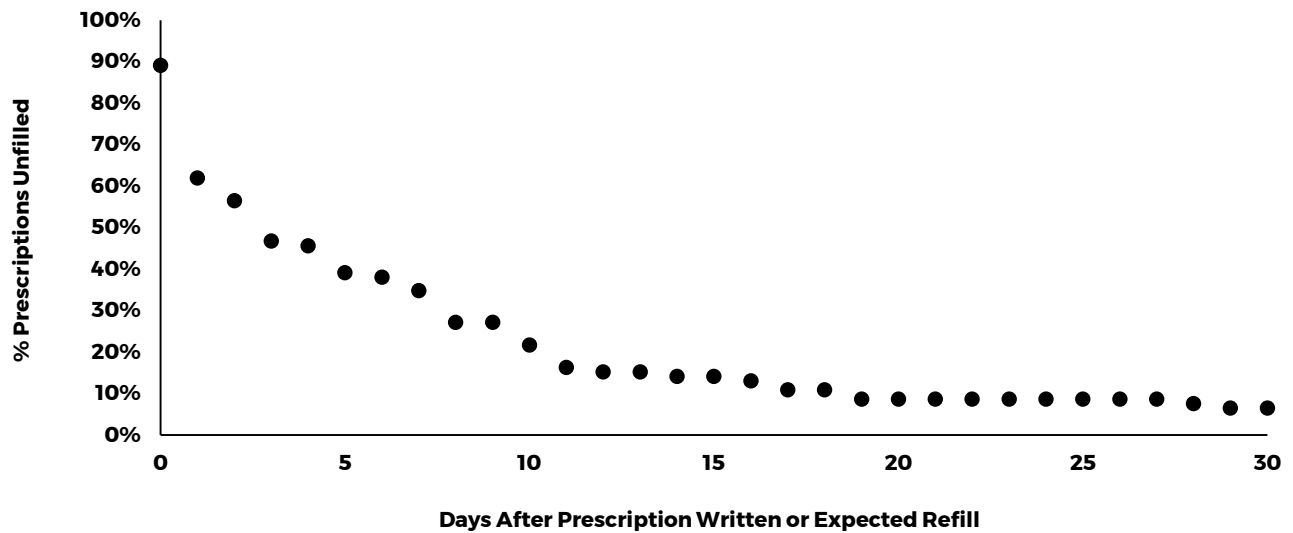

riod. For these patients, 111 SHAC Dispensed prescriptions were provided.

For the primary outcome, prescriptions dispensed from clinic had a significantly higher pick-up rate than SHAC Pays prescriptions (100% vs. 58.2%; p< 0.0001). There were 111 SHAC Dispensed prescriptions picked up from the SHAC clinic pharmacy (100%) and 92 SHAC Pays prescriptions picked up from the community pharmacy partner (58.2%).

Among patients who picked up their SHAC Pays prescriptions and/or refills, the median time to prescription pick up was 3 days, with a range of 0 to 86 days (Figure 1). Zero days indicates a refill that was picked up on time or earlier than 30 days following the previous fill. For SHAC Dispensed prescriptions, pick up date was always on the date of issuance, or 0 days. The difference between median times to pick up was statistically significant between the SHAC Pays and SHAC Dispensed populations (p < 0.0001). Seventy-three percent of prescriptions were picked up within 10 days of issuance or expected refill.

Within the SHAC Pays group, Bridge to Care patients picked up 59 out of 98 prescriptions (60.2%), while Acute Care patients picked up 33 out of 60 prescriptions (55.0%) (Figure 2). There was not a significant difference between the two groups (odds ratio for Bridge to Care pick up, 1.24; 95% CI, 0.65 to 2.37; p=0.52). The median pick up time was 2 days for Acute Care patients and 4 days for

Figure 2. Medication pick-up rates by patient population
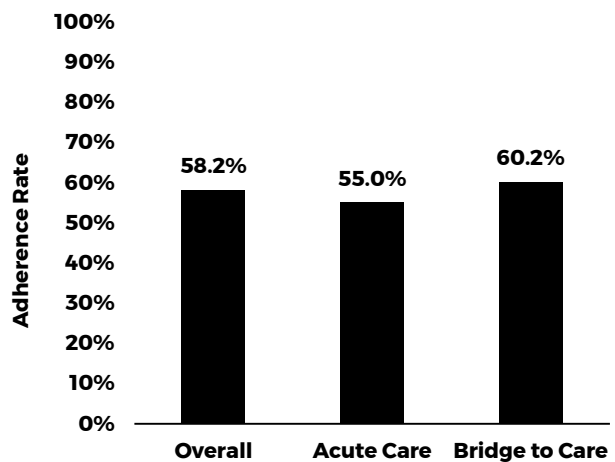
Bridge to Care patients (p=0.16). Ninety percent of Acute Care prescriptions and 83% of Bridge to Care prescriptions were picked up within 10 days of issuance.

Discussion

The primary objective was to compare the rates at which patients picked up SHAC Dispensed and SHAC Pays prescriptions. The results of this study indicate that point-of-care dispensing through the SHAC Dispensed system significantly improved

patients' rates of obtaining their medications successfully, compared to the SHAC Pays system. Our results align with a similar study, conducted in an hospital emergency department, that found significant improvements in prescription pick up when dispensing on-site instead of sending patients to an external pharmacy.[8] The median time to prescription pick up for SHAC Pays prescriptions was just 3 days after the written date or expected refill date, suggesting that the majority of patients who did pick up from the external pharmacy were generally timely in doing so. However, when compared to patients who instantly acquired their medications while being seen at SHAC Clinic, the SHAC Pays system clearly caused a significant delay in patients receiving their medication. This delay is also partly a consequence of having only a single community pharmacy partner, which creates a barrier to adherence for patients with limited transportation or for those who cannot visit the pharmacy during business hours.

Though patients in the Bridge to Care population were 24% more likely than Acute Care patients to pick up their prescriptions, this difference was not statistically significant. The trend toward improved pick-up rate may be explained by the structure of Bridge to Care, in which patients are seen by the same student medical team for all return visits. In contrast, Acute Care patients will see a different medical team with each visit to SHAC. The development of a long-term and positive provider-patient relationship has been shown to increase medication adherence.[10]

The results of this study engender significant opportunities for improved practices at SHAC Clinic and other free healthcare clinics like it. The clinic is actively engaging with local community pharmacies to establish a network in which patients can readily obtain SHAC Pays medications. In addition, strategic expansion of the clinic's medication formulary will be considered, as an increase in the proportion of SHAC Dispensed prescriptions could improve overall medication adherence within our patient population.

Limitations

The authors of this study acknowledge several limitations. First, the data collected in this study could only be used to determine whether patients were in possession of their prescribed medications. However, successful prescription pick up does not guarantee medication adherence. Second, some SHAC Pays prescriptions could have been filled at a pharmacy other than CFP, at the

patient's expense. These prescriptions could not be captured for the purposes of the primary outcome of this study and were therefore considered as "Not Picked Up." Third, data collection for this study was dependent on thorough documentation of all prescriptions in both the clinic pharmacy log and the SHAC Clinic EMR system. In analyzing our data, we encountered documentation errors that compromised our ability to fully capture all data points. For example, some medical teams failed to enter prescribed medications into patient EMR charts. Per this study's methodology, prescriptions that were not adequately recorded could not be included in the primary outcome assessment. These omitted prescriptions have an unknown effect on this study's reported outcomes.

Conclusion

In conclusion, pick-up rates for SHAC Pays prescriptions was negatively impacted by the additional hurdle of a visit to an external pharmacy for medication pick up.. Prescription pick up is the first step to medication adherence, a crucial component of optimizing patient outcomes. Therefore, student-run free clinics have an ethical and societal obligation to help improve their patients' medication pick-up rates and subsequent adherence Also, clinics like SHAC are supported by private financial donations and endowments. To be good financial stewards, clinic leadership must ensure that resources and volunteer efforts are being utilized most effectively for the care of each patient, which should then translate to sustainable benefits beyond the clinic walls. This study should motivate the leadership of other student-run clinics to evaluate the outcomes of their medication distribution services. Through these analyses, increased discussion within and among student-run clinics regarding best practices can unlock new methods to improve patient care.

Disclosures

The authors have no conflicts of interest to disclose.

References

1. Ho PM, Rumsfeld JS, Masoudi FA, McClure DL, Plomondon ME, Steiner JF, Magid DJ. Effect of medication non-adherence on hospitalization and mortality among patients with diabetes mellitus. Arch Intern Med. 2006 Sep 25;166(17):1836-41. LINK
2. Sokol MC, McGuigan KA, Verbrugge RR, Epstein RS. Impact of medication adherence on hospitalization risk and healthcare cost. Med Care. 2005 Jun;43(6):521-30. LINK

3. Osborn CY, Mayberry LS, Wagner JA, Welch GW. Stressors may compromise medication adherence among adults with diabetes and low socioeconomic status. West J Nurs Res. 2014 Oct;36(9):1091-110. LINK

4. Connor SE, Snyder ME, Snyder ZJ, Pater Steinmetz K. Provision of clinical pharmacy services in two safety net provider settings. Pharm Pract (Granada). 2009 Apr;7(2):94-9. LINK

5. Roebuck MC, Liberman JN, Gemmill-Toyama M, Brennan TA. Medication adherence leads to lower health care use and costs despite increased drug spending. Health Aff (Millwood). 2011 Jan;30(1):91-9. LINK

6. Esposito D, Bagchi AD, Verdier JM, Bencio DS, Kim MS. Medicaid beneficiaries with congestive heart failure: association of medication adherence with healthcare use and costs. Am J Manag Care. 2009 Jul;15(7):437-45. LINK

7. Jha AK, Aubert RE, Yao J, Teagarden JR, Epstein RS. Greater adherence to diabetes drugs is linked to less hospital use and could save nearly $5 billion annually. Health Aff (Millwood). 2012 Aug;31(8):1836-46. LINK

8. Ginde AA, Von Harz BC, Turnbow D, Lewis LM. The effect of ED prescription dispensing on patient compliance. Am J Emerg Med. 2003 Jul;21(4):313-5. LINK

9. Fischer MA, Stedman MR, Lii J, Vogeli C, Shrank WH, Brookhart MA, Weissman JS. Primary medication non-adherence: analysis of 195,930 electronic prescriptions. J Gen Intern Med. 2010 Apr;25(4):284-90. LINK

10. Kerse N, Buetow S, Mainous AG 3rd, Young G, Coster G, Arroll B. Physician-patient relationship and medication compliance: a primary care investigation. Ann Fam Med. 2004 Sep-Oct;2(5):455-61. LINK