



ORIGINAL ARTICLE

Clinical Pharmacist interventions in Refill Clinic at Tertiary Care Eye Specialist Hospital



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KEYWORDS

Clinical Pharmacist;
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Abstract *Objective:* To describe the role of Clinical Pharmacists in the Medication Refill Clinic area as a part of a multidisciplinary team in which he/she can provide education to patients and caregivers on the safe and appropriate use of medications, counsel on medication compliance, monitor and manage medication side effects, as well as screen for dangerous drug interactions. *Methods:* The data of this prospective, single-centered, chart review based study have been collected since the clinic launched in June 2011 till December 2013 in King Khalid Eye Specialist Hospital which is a Tertiary Hospital in KSA. Types of interventions documented during the patient–pharmacist visit are categorized as medication review and patient compliance. *Key findings:* Out of the total 16,417 patients, 3641 (22.2%) are noncompliant. The Clinical Pharmacist identified 18 intervention types. The most frequent interventions are as follows: Eye screening (24.8%), Counseling (13%), Physician/ER referral (12.4%), Therapeutic substitution/switch (10.8%), and Frequency changed (7%). *Summary:* This prospective analysis is a document evidence showing Clinical Pharmacist positive outcomes in the management of ophthalmic patients. Dissemination of this information would be valuable because it could raise the awareness of other Healthcare Professionals regarding Pharmacist as effective clinicians in care of ophthalmic patients.

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1. Introduction

Hospital Ambulatory Care Services – Outpatient Pharmacy has a set of services provided to all Healthcare Providers in the hospital and patients with appointment for the clinics

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including emergency visits at King Khalid Eye Specialist Hospital. Pharmacy Department's vision and mission has been established to be a reliably standard setting in its provision of direct patient care and to continuously develop methods that improve this practice. Scope of practice for Pharmacists has expanded to pharmacist-managed health care clinics and collaborative practice arrangements with Physicians. The Pharmacists have been safety consultants for patients with minor illnesses and have assisted in important decisions regarding medication refills. Based on all these factors, the idea of Medication Refill Clinic was initiated.

The role of Medication Refill Clinic is to identify patients that were not properly dosed and had high or low laboratory

values; this is of paramount for patient care. The clinic is run by Clinical Pharmacist who has very essential role in the safety, quality and effective use of medications toward improving patient's health in the hospital. Clinical Pharmacists in the Refill Clinic is a part of a multidisciplinary team in which he/she provides education to patients and caregivers on the safe and appropriate use of medications, counsel on medication compliance, monitor and manage medication side effects, as well as screen for dangerous drug interactions. A Clinical Pharmacist is authorized to provide the following services: (1) Write prescription renewal, (2) Prescribe certain new medications (restricted to lubricants and over-the-counter medications only), (3) Adjust therapy, (4) Order laboratories, (5) Monitor patients (assess Intra Ocular Pressure (IOP)/Visual Acuity (VA)), and (6) Request urgent follow-up appointments.

There were a lot of studies that demonstrated the experience and the benefit of Clinical Pharmacist to manage the refill program in different areas such as cardiac disease, diabetes mellitus, and HIV. Unfortunately, the literature evidence of Clinical Pharmacist's role in ophthalmic field was very limited.

So, we extrapolate the principles for this clinic from the most relevant fields such as HIV and VA Medication Refill Clinics.

Due to the novelty of this clinic, there was a need to determine the utility of this practice model. The main outcomes of this study are to evaluate the validity of Medication Refill Clinic in Ophthalmic Tertiary hospital setting and the role of Clinical Pharmacist to determine the type of interventions that can be made and whether this practice will improve the patient compliance.

2. Methodology

In this prospective study, the data had been collected since the clinic launched in June 2011 till December 2013. The working hours for the clinic were from 7:30 till 16:30 in the weekdays only. The data had been collected during the study based on patient's charts review. The in-charge Clinical Pharmacist in this clinic conducted all charts review throughout study duration and was a certified eye screener (IOP, VA) at the hospital.

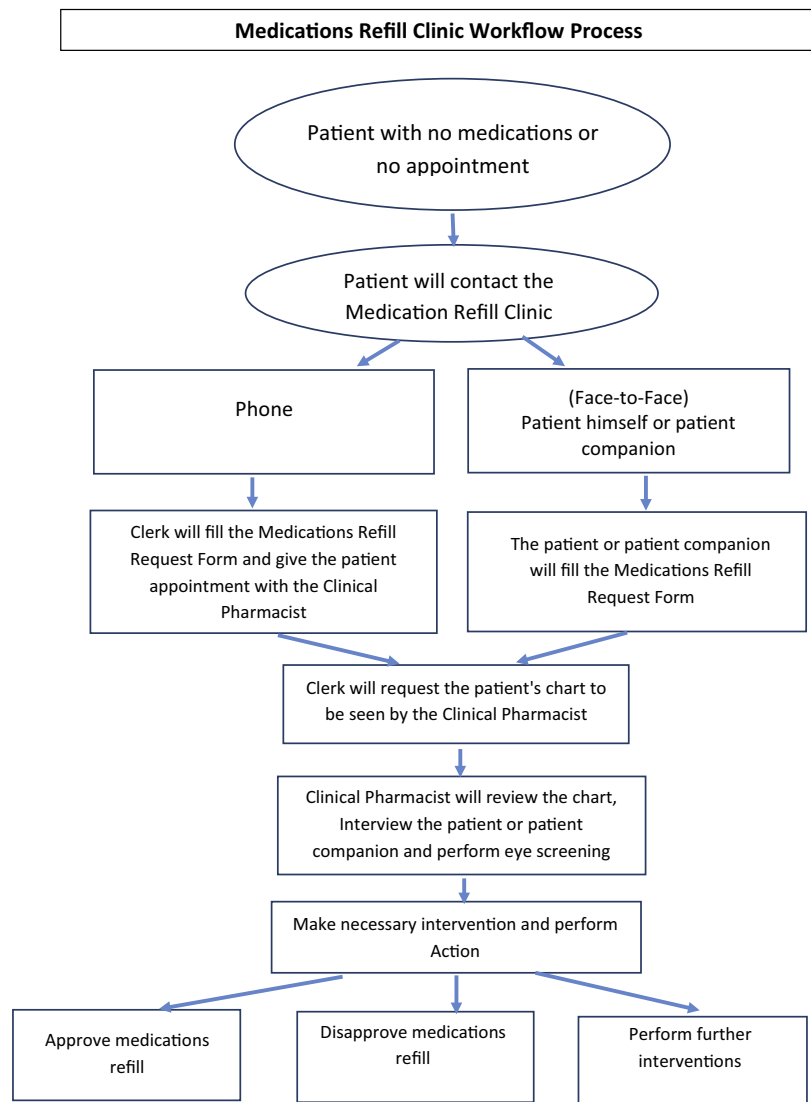


Figure 1 Enrollment and follow up.

Table 1 Inclusion and Exclusion Criteria.

Inclusion criteria	Exclusion criteria
<ul style="list-style-type: none"> • Patient's prescription written by a KKESH healthcare provider • Patient must have been evaluated by a KKESH provider within the past 12 months or who had not been evaluated for more than 12 months but have a fix appointment for the next 3 months • Prescribed medications must have originally been dispensed by KKESH outpatient pharmacy and a KKESH formulary medications • The prescribed medications must be only intended for disease of the eye 	<ul style="list-style-type: none"> • Patient's prescriptions written by a non-KKESH healthcare provider • Patients who have not been evaluated by a KKESH provider for more than 12 months and/or has no fix appointment within next 3 months, or who have missed 2 consecutive appointments, or who have closed files due to service discharge or missed appointments • Prescribed medications have been dispensed from outside KKESH hospital or it is not a KKESH formulary medications • The prescribed medication not intended for disease of the eye

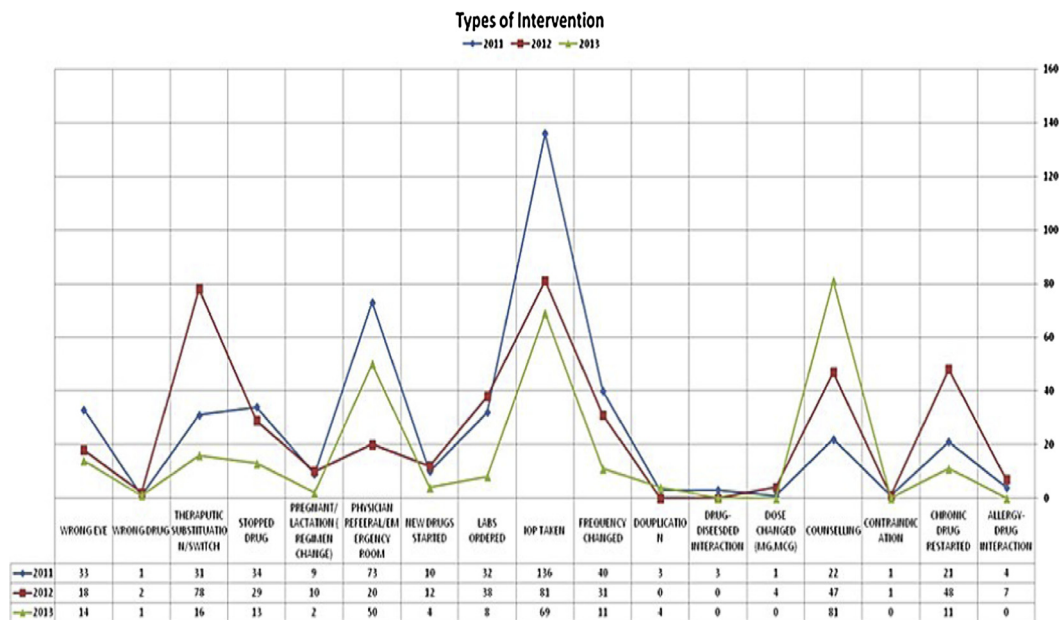


Figure 2 Type of interventions reported during the study for 3 years (2011, 2012, and 2013) and comparison of the rate between them which show improve in patient compliance ex.: increase the number of patient counseling and decrease in patient eye screening from 2011 till 2013.

2.1. Request procedure

In order to get a medication refill prescription, the patient has to fill a special request form called (Medication Refill Request Form) that provides the Clinical Pharmacist with concise information about the patient while reviewing his chart. Then, the patient will be called to the clinic for screening (IOP check, laboratory requested) by the Clinical Pharmacist before getting the medication refill prescription (Fig. 1). Medications that may not be refilled include the following: Decongestant unless Glaucoma, Narcotics, Non-Ophthalmic Medications, and Non-Steroidal Anti-inflammatory Drugs (NSAIDS) due to corneal breakdown.

All prescriptions written by a Clinical Pharmacist are valid for two (2) weeks from the original date of issue, including antibiotics for chronic prophylactic use only. All prescriptions older than 2 weeks will not be considered.

2.2. Measurement tools

We measured the patient noncompliance in order to estimate the patient compliance after initiating this service. The

Noncompliance has been defined as follows: any patient with more than 1 year since the last appointment or has 2 missed consecutive appointments. The inclusion and exclusion criteria were developed based on type of patients who had been seen in the clinic Table 1.

The collected data were recorded in data collection sheets on daily basis and at the end of each month; the data have been extracted into Excel intervention sheets in order to be calculated using MS 2010 Excel sheets and SPSS. The medical record number is the only way to identify the patient in daily log sheet to preserve patient confidentiality.

3. Results

3.1. Medication review interventions

There were 16,417 total patients seen in medication Refill Clinic from June 2011 to December 2013. Out of the total, 3641 (22.2%) were noncompliant. The Clinical Pharmacist identified 17 intervention types with a total 1164 intervention during the study. The most frequent interventions are as follows: Eye

Table 2 Types of interventions and number of episode of each event through the 3 years.

Interventions	2011	2012	2013	Sum
Allergy-drug interactions	4	7		11
Chronic drug restarted	21	48	11	80
Contraindication	1	1		2
Counseling	22	47	81	150
Dose-change (mg, mcg)	1	4		5
Drug-disease interaction	3			3
Duplication	3		4	7
Frequency changed	40	31	11	82
IOP taken	136	81	69	286
Laboratories order	32	38	8	78
New drug started	10	12	4	26
Physician referral/emergency room	73	20	50	143
Pregnant/Lactation (regimen changed)	9	10	2	21
Stopped drug	34	29	13	76
Therapeutic substitution/switch	31	78	16	125
Wrong drug	1	2	1	4
Wrong eye	33	18	14	65

Table 3 CI is improving by time.

	Summary of the most important statistical data		
	2011	2012	2013
Mean	34.72	54.00	53.00
Standard error	11.24	26.35	31.90
Standard deviation	47.68	105.40	119.36
Confidence level (95.0%)	23.71	56.16	68.92

screening (24.8%), Patient counseling (13%), Physician/ER referral (12.4%), Therapeutic substitution/switch (10.8%), and Frequency changed (7%) (Fig. 2); (Tables 2 and 3).

3.2. Patient's compliance

The number of noncompliant patients who did not claim their prescription in the validity period was 1153, and noncompliant

patients who did not been seen for more than 1 year were 2483. There was a decrease in number of patient who were not seen for more than 1 year from 2011 to 45.9% compared to 2013. The averages of noncompliance percentage due to unclaimed prescription were (8.95%, 5.85%, and 8.50%) for the years 2011, 2012, and 2013 respectively Fig. 2. The averages of non-compliance of patients whom not been seen for more than 1 year were 24.38%, 15.49%, and 8.57% for the same duration respectively Fig. 3.

4. Discussion

With the introduction of pharmacy ambulatory care services to the pharmacy field several decades ago, it has been proven by time the positive effect of this service on patients by improving the quality of services and patient compliance through direct patient care and medication management (Helling and Johnson, 2014).

Pharmacists can be a valuable part of the patient care team by providing medication review and patient education for different kind of diseases within clinics. Previous studies showed that Clinical Pharmacist can promote optimal medication therapy by addressing medication non-adherence, suboptimal medication choices and cost ineffective therapies in ambulatory care services by working with different specialized health care providers such as primary care physician, HIV and oncology management clinics.

A shifting of paradigm in the practice and workflow in ophthalmology has been occurring in correspondence with the advancement in the treatments and managements of eye diseases. The role of Clinical Pharmacist in this area according to the literature is still limited. Most of studies that had been done regarding the Clinical Pharmacist role in ophthalmic field are focusing in patient compliance, medications errors or patient counseling, but no study determines the role of Clinical Pharmacist as interventionist within patient treatment plan or discusses the type of interventions that can be made for these type of patients. This kind of new clinical practice model in ophthalmology field can guide others on how to address challenges or to assist in the development of similar models.

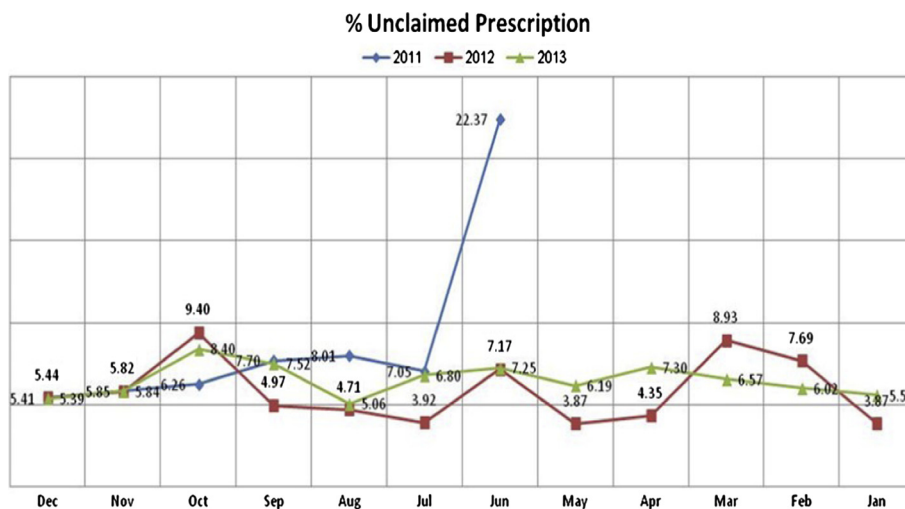


Figure 3 Number of unclaimed prescriptions in 2011 is starting from June at the time the study been lunched. The fluctuation in graph got more steady by 2013.

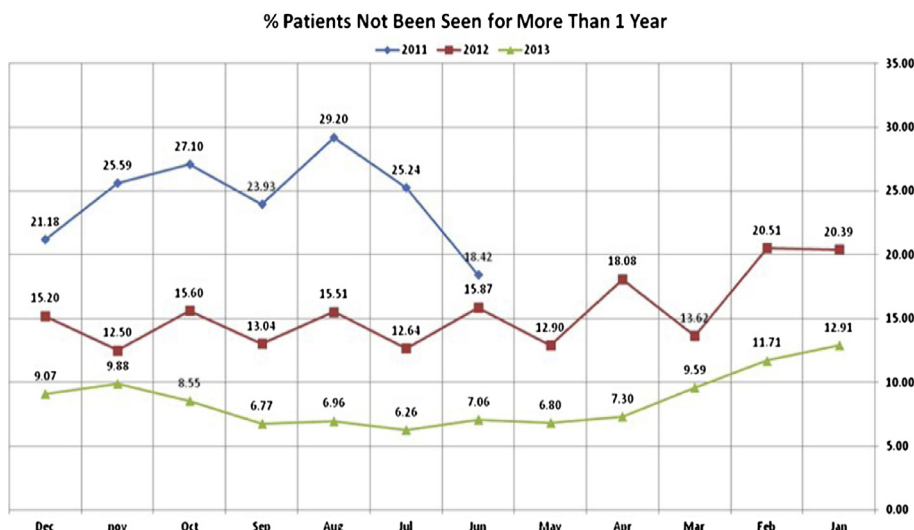


Figure 4 The percentage of patient whom not been seen for more than 1 year is decrease by time as pharmacist get more involved in patient care.

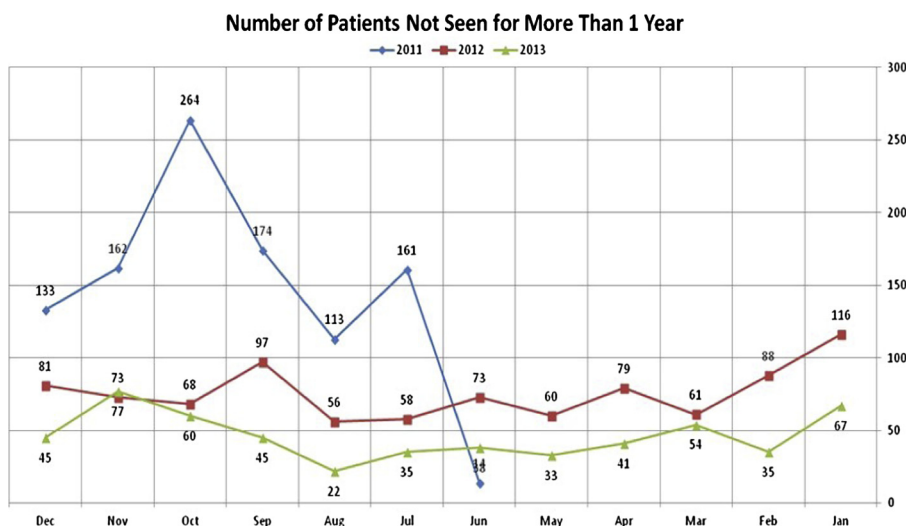


Figure 5 Number of patient not been seen for more than 1 year reached the lowest by end of 2013.

The privilege of Clinical Pharmacist to prescribe prescription and perform eye screening was debatable. This privilege was granted by the hospital authorities for the Clinical Pharmacist based on the evidence that proved the success of this practice especially in Canada and UK. In UK, making full use of pharmacist independent prescribing has improved the care of patient (Sassi-Jones, 2010). In Canada, pharmacist writing a prescription is being practiced since a decade ago (Law et al., 2012). As for eye screening performance, the hospital authorities believe on the capabilities of Clinical Pharmacists to be a member of multidisciplinary team involved in patient's care at different areas effectively such as vaccination, diabetic clinic, anticoagulation clinic, and others. These type of privileges enable pharmacists to independently handle all or part of a patient visit, freeing up physicians to

treat more patients and attend to cases that fall outside of collaborative practice protocols.

There are many studies considering the different aspects of Clinical Pharmacist interventions in ambulatory care clinics have been published during the last few years. In our study Eye Screening was the most common intervention that was recorded during the study period. The Clinical Pharmacist was able to maintain the patient or do intervention depending on the patient situation as per eye screening result.

Patient Counseling was one of the most frequent intervention that has been recorded in this clinic due to the lack of patient physician follow-up visits especially for patients with post-surgeries appointments (e.g. Penetrating Keratoplasty, Cataract, Laminar Keratoplasty, etc), patients with big time gap between the last visit and the next follow-up appointment,

and the patients who are living outside capital city and cannot offer expenses of transportation. In addition, Physician/ER referral, Therapeutic substitution/switch, and frequency change interventions were implemented based on eye screening results with or without laboratory values. Wrong eye error was observed in the finding with a total of 65 (5.6%) which is considered reasonable for a tertiary care institute.

Many clinics that specialize in the assessment and treatment of ophthalmic patients have been suggested to have more frequent follow-up visit through the year to improve patient care. Yet, such clinics are often having long waiting times (e.g. 6–12 months for specialized clinic in tertiary care hospital) which is the main cause for patient non-compliance. In Hoevenaars et al. study, the definition of non-compliance (one missed dose in the past 4 weeks) (Hoevenaars et al., 2008) which some considered is very unusual and very strict but in Ngan et al.'s study, they defined the non-adherence as less than 1 year of follow-up, fewer than 2 completed visual field test, or both (Ngan et al., 2007) the authors extrapolate from this definitions to create the definition of non-compliance for this study. The medication refill clinic adjusts the compliance based on the number of patients who had not been seen for more than 1 year which is decreased from 1021 patients in 2011 to 552 patients in 2013 (45.9%) Figs. 4 and 5.

5. Study limitation

The clinic was not specified to special area. It was covering all ophthalmic divisions (Glaucoma, Anterior Segment, Uveitis, Retina, and Oculoplastics) with no prospect data concern each specialty per se. Also, due to using patient medical records number solely in our records for confidentiality purposes, it was so hard to collect clinical patient characteristics such as age or gender.

6. Conclusion

This prospective analysis is document evidence showing positive outcomes of Clinical Pharmacist interventions in the management of ophthalmic patients. Due to the novelty of medication Refill Clinic in ophthalmology setting, there was a need to determine the utility of this practice model. Dissemination of this information would be valuable because it could raise the awareness of other Healthcare Professionals regarding Clinical Pharmacist as a member in health care team for ophthalmic patients. This increased awareness could evaluate the profile of Clinical Pharmacists engaged in such activities. With recent patient-centered care concept involving multidisciplinary teams, Clinical Pharmacist participation in ophthalmic Medications Refill Clinics represents an expanded scope of practice of patient care that will give a new direction to the involvement of pharmacist in ophthalmic patient care.

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