

## CASE REPORT

# Audit of Ophthalmological Case Management: A Case Series Review at a Local Health Clinic.

Mohd Shaiful Ehsan Shalihin<sup>1</sup>, Nur Azrin Farhana Mohd Asri<sup>2</sup>.

<sup>1</sup>*Department of Family Medicine, Kulliyah of Medicine, International Islamic University of Malaysia, Jalan Sultan Ahmad Shah, 25200, Kuantan, Pahang.*

<sup>2</sup>*Kulliyah of Medicine, International Islamic University of Malaysia, Jalan Sultan Ahmad Shah, 25200, Kuantan, Pahang.*

### Corresponding Author

Mohd Shaiful Ehsan Bin Shalihin,

Department of Family Medicine, Kulliyah of Medicine, International Islamic University of Malaysia, Jalan Sultan Ahmad Shah, 25200, Kuantan, Pahang

Email: [shaifulehsan@iium.edu.my](mailto:shaifulehsan@iium.edu.my)

Submitted: 11/06/2024. Revised edition: 06/08/2024. Accepted: 16/09/2024. Published online: 01/11/2024.

### Abstract

Eye diseases are among the common cases encountered in health clinics. They range from stable to unstable cases. Nevertheless, there are still unclear approaches taken by health care providers in treating them, especially in relation to urgent referrals or outpatient care requirements. We conducted an audit at a local health clinic involving eye cases encountered in the treatment room, which had been assigned as an emergency during the afternoon session for one week. Of the 68 cases recorded, seven involved eyes. The majority were foreign body cases, which were not referred to ophthalmological care and were not preceded by eye irrigation. Therefore, in-house training on the approach to eye diseases should be conducted from time to time.

**Keywords:** *Eye emergency, eye redness, foreign bodies.*

## Introduction

Symptoms related to eyes encountered in primary care range from red eyes, discharges, and reduced vision to even painful eyes secondary to trauma [1,2]. Given the nature of vision as an important organ function, most patients seek attention as soon as possible at the nearest clinic [3]. Therefore, it is an important role for primary care providers to conduct proper triage in terms of the severity of the injury or complaints. This includes identification of the need for tertiary care or follow-up post-assessment. Eye diseases can present as acute emergencies that require direct attention in the treatment room or emergency room at a health clinic [4]. Nevertheless, even if there is a need for urgent referral from primary care to tertiary care, proper preparation and stabilization of the patient are still needed [5]. This includes the adequate eye examination and necessity of eye irrigation in selected cases as well as monitoring of vital signs [6]. In cases of doubt, even if the patient looks stable, a second opinion should be sought for proper management. Indeed, common rules of the correct approach at the first visit should be maintained.

## Methodology

An audit was conducted in a local health clinic involving cases that required emergency attention in the treatment room and emergency room during the afternoon sessions over a five-day period. Afternoon sessions were selected due to the smaller number of patients during this time, and typically the treatment room focuses more on non-communicable disease follow-up, such as electrocardiography (ECG) procedures and diabetic complications, which could affect the efficiency of managing other emergency cases. This audit aims to identify any mismanagement in treating common eye diseases in primary care. The patient's age, gender, system involvement, diagnosis and management given were recorded. Other diseases not covering eyes were excluded. Those cases that were seen in usual outpatient room were also excluded. This audit has been approved by the Family Medicine Specialist in

charge of the clinic and Kulliyah of Medicine elective posting committee (IIUM305/13/26/1). Seven cases that fulfill the criteria have been selected for the case series discussion.

### Case series seen at the treatment room or emergency unit.

#### Case 1:

A 25-year-old woman presented with unilateral left eye redness, discomfort, and discharge for two days. This case was sent directly to the treatment room to be assessed by a medical officer due to the unilaterality and associated pain, as noted by a medical assistant at triage. Upon assessment, the pain was noted to be mild and more like discomfort. It is not common for conjunctivitis to be unilateral, but it is still possible, as in this case. There was no history of trauma, itchiness, or insect bite. She was not wearing any contact lenses. The need for the treatment room was not indicated and was not an emergency. The patient was discharged with chloramphenicol eye drops without any follow-up.

#### Case 2:

A 29-year-old man presented with right eye discomfort after glue splashed into it one hour prior while working. He had difficulty opening his right eyelid. Upon arrival, he was rushed to the treatment room but promptly referred to a tertiary center due to difficulty in examining the affected eye. His left eye was noted to be normal. His vital signs were stable. No additional treatment was given at the health clinic.

#### Case 3

An 8-year-old girl presented with right eye redness and pain after alleged exposure to soil dust in her right eye two hours prior the clinic visit. The incident happened while she was performing activities on the school field. Her vital signs were stable. Visual acuity could not be performed as the patient was in pain. External eye examination revealed a watery right eye with conjunctival redness. There was no periorbital or eyelid swelling. The pupils' sizes were equal and responsive to light. No relative afferent pupillary defect was detected. Eye irrigation with normal

saline was performed. She was later discharged with Hypromellose 0.3% eye drops.

#### **Case 4**

A 15-year-old girl presented with left eye discomfort after allegedly having grass thrown into her left eye by a grass-cutting machine. The incident happened while she was walking back home from school. She also complained of reduced vision. Visual acuity could not be performed because the patient was not comfortable. External eye examination revealed a watery left eye with conjunctival redness. There was mild left eyelid swelling. The pupils' sizes were equal and responsive to light. No relative afferent pupillary defect was detected. Eye irrigation was performed vigorously. Her symptoms improved, and she was discharged with Hypromellose 0.3% eye drops.

#### **Case 5**

A 12-year-old boy presented with right eye pain and redness after his right eye was accidentally hit by a bat. He had no other complaints. His vital signs were stable. External eye examination revealed conjunctival redness in the right eye with a swollen and inflamed periorbital area. The pupils' sizes were equal and responsive to light. No relative afferent pupillary defect was detected. The ocular movement was intact. He was discharged with chloramphenicol eye drops for one week, with no further follow-up.

#### **Case 6**

A 72-year-old female presented with a sudden onset of isolated redness in her left eye, that had lasted for two days. She had no history of orbital or periorbital swelling, itchiness, discharge, or pain. There was no prior history of trauma or insect bites. She was hypertensive but not diabetic. She was not on anticoagulants and has had no similar episodes before. On examination, her vital signs were stable. External eye examination revealed an isolated subconjunctival hemorrhage at the inferolateral site of the left eye. The pupils were equal in size and responsive to light. No relative afferent pupillary defect was detected. Ocular movement was intact. She was discharged

with oral antihistamine (loratadine) and Hypromellose 0.3% eye drops.

#### **Case 7**

A 39-year-old man presented with bilateral eye pain and redness for three hours following accidental exposure of the eyes to car wash detergent. The incident happened when he was trying to reach the uncapped detergent container on a shelf, and the fluid accidentally fell onto his face. He also complained of reduced vision following the injury. External eye examination revealed bilateral eye redness with clear discharges. The pupils were equal in size and responsive to light. No relative afferent pupillary defect was detected. Ocular movement was intact. He was discharged with chloramphenicol eye drops for one week without further follow-up.

#### **Discussion**

The emergency room at the health clinic is intended to treat life-threatening conditions or any condition that requires urgent treatment, assessment, or stabilization [7]. The decision to triage patients depends on the screening team at the clinic. However, the emergency unit can be burdened by non-indicated cases or incorrect assessments by front-line staff [7,8]. This can lead to inefficiencies, as waiting times may increase due to the high number of non-indicated cases [7,8]. This scenario is reflected in this audit, where unnecessary eye cases, such as conjunctivitis, were treated in the emergency setting. These cases ranged from isolated subconjunctival hemorrhages to trauma and chemical injuries, allowing us to analyze whether the management provided was appropriate or not. This audit also reveals that basic and fundamental eye examinations, which should be initiated at the primary care level, were not conducted appropriately. Visual acuity assessments were absent in all cases highlighted in this report. The possible reasons for this issue include the discomfort patients experience when in eye pain, or that the assessments were performed but not documented by the doctors. A simple handheld

Snellen chart can be used if it is difficult for the patient to undergo a formal assessment at the clinic [4,5]. Bedside ophthalmoscopic eye examinations were also absent in all cases, despite being a simple procedure that can be performed by junior doctors or support staff. It is important to at least check for the presence of a red reflex and the absence of papilloedema [4,5]. These assessments are feasible even when the pupils are not adequately dilated, as most government health clinics do not have pupil-dilating eye drops. Nevertheless, the experience and confidence level of the treating doctors play an important role in the execution of the procedure. This is evident in this case series, as most of the treating doctors are young medical officers with less than two years of experience. The inadequacies of each case are summarized in Table 1.

According to universal guidelines, any case of a foreign body in the eye should be preceded by adequate eye irrigation and an assessment for eye laceration or abrasion [9]. This means the case should be referred for a proper eye examination, including a slit lamp examination [10]. However, in this audit, all cases involving a foreign body (cases no. 3 and 4) were not referred for further assessment or given a follow-up. Some were not even managed with optimal normal saline eye irrigation. This is quite common, as healthcare providers often mistakenly consider these cases low-risk if the foreign body can be removed. However, a laceration can result from a foreign body, and the severity can only be fully assessed by a slit lamp examination, even if the patient does not complain of red eyes or pain [9,10].

Although subconjunctival hemorrhage can be caused by orbital trauma, it is not necessarily an emergency case [11]. History should be explored before sending all cases with presumed subconjunctival hemorrhage directly to the emergency room. Subconjunctival hemorrhage can be idiopathic in the elderly (as in case no. 6), stable, and self-limiting, and it should resolve on its own [12]. Therefore, the use of the emergency room in this case is indeed not justifiable. The

antihistamine prescribed for this patient was also inappropriate. It is usually indicated for those with allergic conjunctivitis or an acute viral upper respiratory infection, presenting with a runny nose or cough. Antihistamine usage is totally unacceptable for isolated subconjunctival hemorrhage.

The utilization of the emergency room for ophthalmology cases at health clinics should be reviewed. Most of the time, stable eye conditions can be evaluated in a consultation room instead of the emergency unit [13]. According to this audit, the four cases that are indeed indicated to be managed in the emergency room are glue splashed in the right eye, an alleged eye organic foreign body (soil and grass), trauma by a bat, and chemical conjunctivitis [13]. Surprisingly, the majority of these cases (cases no. 3-5 and 7) were not referred to the eye team. Chemical conjunctivitis can result in blindness. Even if topical antibiotics have been applied, daily eye examinations are required for close monitoring [14].

Therefore, it is clear that a common safe approach should be applied by primary care providers in dealing with eye diseases. This includes complete and thorough history-taking and systematic eye and other relevant examinations. The eye assessments conducted among all these cases were not comprehensive. The assessment should include: visual acuity using a Snellen chart or similar tool; performing external inspection of the eyes, eyelids, and surrounding structures; performing a pupil examination to check for size, shape, reactivity to light, and accommodation; assessing ocular motility; inspecting the conjunctiva and sclera to look for redness, discharge, jaundice, or other abnormalities; assessing the cornea using a penlight or ophthalmoscope to check for clarity, depth, and any signs of inflammation; and, last but not least, examining the retina, optic disc, and vessels using an ophthalmoscope [15]. The role of the fluorescein eye test should be made compulsory in all eye cases involving an alleged foreign body or trauma in order to identify any possible corneal

abrasion or laceration that would require further ophthalmological intervention [15,16]. We summarize the recommended eye examination and assessment flow in primary care in Figure 1 below [15, 16].

Indications for eye referral should always be observed and include sudden vision loss or significant visual changes, severe eye pain or trauma, suspected retinal detachment, high intraocular pressure or other signs of acute glaucoma, persistent or severe eye infections, or any condition not responding to initial treatment or requiring specialized care [16]. At the point of discharge from primary care, patients should be educated on the importance of seeking early treatment if any new symptoms occur and on scheduling follow-up visits to monitor treatment response and adjust management as necessary. If primary care providers are unsure of the diagnosis or depth of injury in any situation of a stable eye condition, a proper ophthalmological follow-up should be arranged.

### **Conclusion**

Eye triage should be conducted properly, beginning at the primary care level. Even though some stable cases are seen in an emergency setting, management should not be limited to topical antibiotics only. Each eye case should be

considered severe until proven otherwise. Indications for follow-up and referral should be observed in all ophthalmological cases. Safety netting advice should be emphasized to all patients to seek early medical attention if their condition worsens.

### **Acknowledgement**

We would like to express our gratitude to the Family Medicine Specialist in charge of the Primary Health Care clinic and the staff working there.

### **Ethics**

Permission to conduct the audit was obtained from the Family Medicine Specialist in charge of the clinic and Kulliyyah of Medicine elective posting committee (IIUM305/13/26/1).

### **Conflict of interest**

None

### **Authors contribution**

MSE: Idea, manuscript writings and formatting

NAF: Data collection

Table 1. Descriptive Analysis of Case series

No	Age	Gender	Chief complaint	Associated symptoms	Visual Acuity	RAPD	Other eye examinations	Diagnosis	Referral	Management at clinic	Follow up	Experience treating doctor (medical officer)
1	25	Female	Left eye redness	Eye discomfort	X	X	X	Acute conjunctivitis	X	Chloramphenicol eye drop	X	2 years
2	29	Male	Right eye discomfort	Inability to open eyelids	X	X	X	Chemical injury (glue)	/	X	X	3 years
3	8	Female	Right eye pain	Eye redness	X	/	Pupils' size and reflex	Alleged foreign body	X	Eye irrigation with Normal Saline	X	2 years
4	15	Female	Left eye discomfort	Reduced vision	X	/	Pupils' size and reflex	Alleged foreign body	X	Eye irrigation with Normal Saline	X	1 year
5	12	Male	Right eye pain	Eye redness	X	/	Pupils' size and reflex Ocular motility	Trauma	X	Chloramphenicol eye drop	X	1.5 years
6	72	Female	Left eye redness	-	X	/	Pupils' size and reflex Ocular motility	Subconjunctival Hemorrhage	X	Oral antihistamine Hypromellose 0.3% eye drops	X	1.5 years
7	39	Male	Bilateral eye pain	Eye redness, Reduce vision	X	/	Pupils' size and reflex Ocular motility	Chemical injury	X	Chloramphenicol eye drop	X	1.5 years
Overall percentage of eye examination been conducted					Visual acuity	RAPD	Other examination	Referral percentage	Referral	Follow up percentage	Follow up	
					0%	71%	71%		14%		0%	

X – not done; / - done

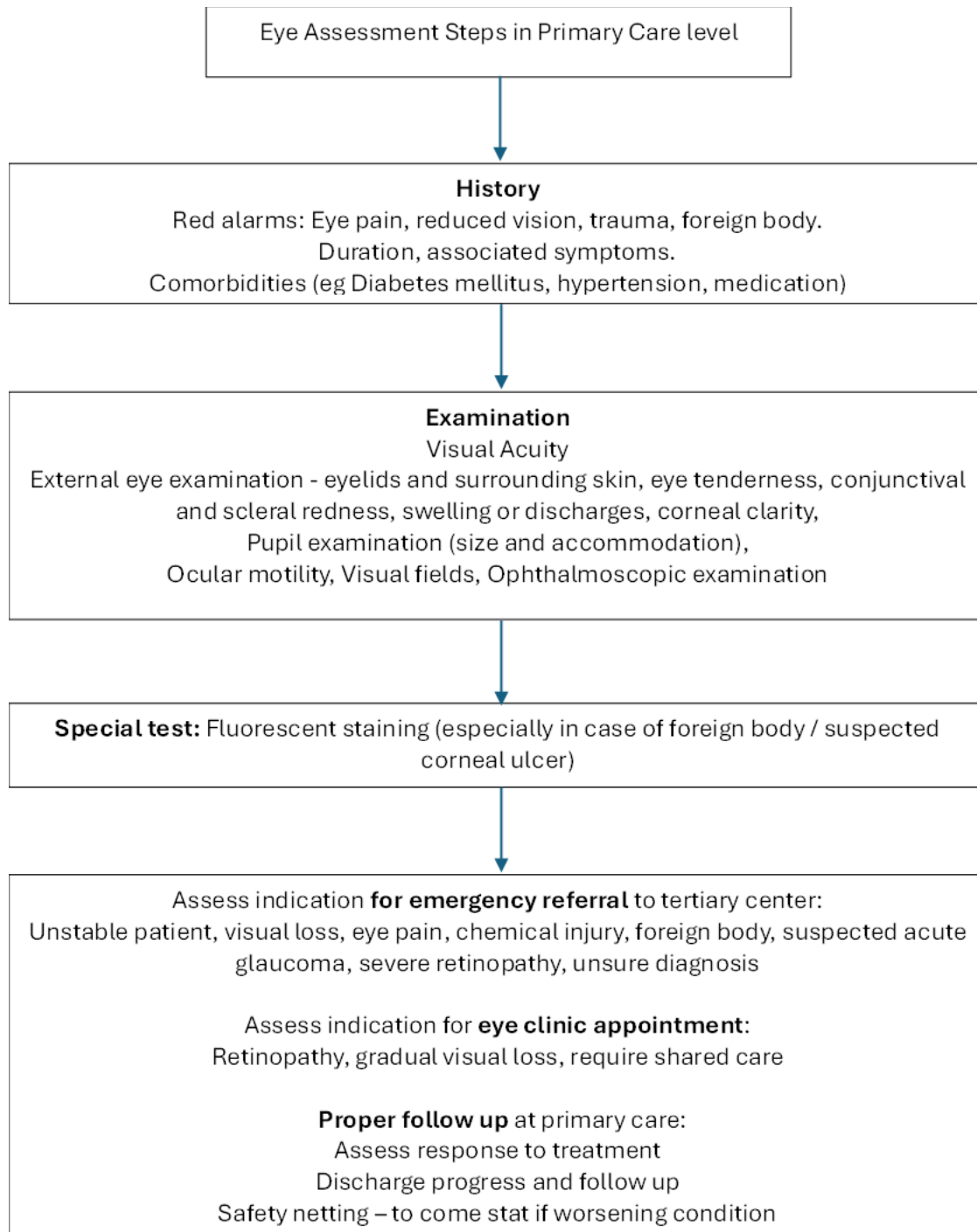


Figure 1. Algorithm for Eye Assessment in Primary Care.

## References

- [1]. Cronau H, Kankanala RR, Mauger T. Diagnosis and management of red eye in primary care. *Am Fam Physician*. 2010 Jan 15;81(2):137-44. PMID: 20082509.
- [2]. Erlenwein J, Feltgen N. Chronic pain in ophthalmology. *Ophthalmologie*. 2023 Dec;120(12):1202-1203. German. doi: 10.1007/s00347-023-01950-1
- [3]. Parikh D, Armstrong G, Liou V, Husain D. Advances in Telemedicine in Ophthalmology. *Semin Ophthalmol*. 2020 May 18;35(4):210-215. doi:
- [4]. Muth CC. Eye Emergencies. *JAMA*. 2017 Aug 15;318(7):676. doi: 10.1001/jama.2017.9899.
- [5]. Langan RC. Adult Eye Conditions: Ophthalmic Emergencies. *FP Essent*. 2022 Aug;519:29-32. PMID: 35947134.
- [6]. Marsden J. How to perform irrigation of the eye. *Nurs Stand*. 2016 Feb 3;30(23):36-9. doi: 10.7748/ns.30.23.36.s45.
- [7]. Reynolds TA, Guisset AL, Dalil S, Relan P, Barkley S, Kelley E. Emergency, critical and operative care services for effective primary care. *Bull World Health Organ*. 2020 Nov 1;98(11):728-728A. doi: 10.2471/BLT.20.280016.
- [8]. Atzema CL, Maclagan LC. The Transition of Care Between Emergency Department and Primary Care: A Scoping Study. *Acad Emerg Med*. 2017 Feb;24(2):201-215. doi: 10.1111/acem.13125
- [9]. Yeo DC. An unusual foreign body in the eye. *BMJ Case Rep*. 2013 Jul 17;2013:bcr2013200144. doi: 10.1136/bcr-2013-200144.
- [10]. Ambikkumar A, Arthurs B, El-Hadad C. Corneal foreign bodies. *CMAJ*. 2022 Mar 21;194(11):E419. doi: 10.1503/cmaj.211624
- [11]. Doshi R, Noohani T. Subconjunctival Hemorrhage. 2023 Feb 20. In: *StatPearls [Internet]*. Treasure Island (FL): StatPearls Publishing; 2024 Jan-. PMID: 31869130.
- [12]. McGinley TC Jr. Adult Eye Conditions: Common Eye Conditions. *FP Essent*. 2022 Aug;519:11-18. PMID: 35947131.
- [13]. Dua HS, Ting DSJ, Al Saadi A, Said DG. Chemical eye injury: pathophysiology, assessment and management. *Eye (Lond)*. 2020 Nov;34(11):2001-2019. doi: 10.1038/s41433-020-1026-6.
- [14]. Domingo E, Moshirfar M, Zeppieri M, Zabbo CP. Corneal Abrasion. 2024 Jan 8. In: *StatPearls [Internet]*. Treasure Island (FL): StatPearls Publishing; 2024 Jan-. PMID: 30422555.
- [15]. Robinett DA, Kahn JH. The physical examination of the eye. *Emerg Med Clin North Am*. 2008 Feb;26(1):1-16, v. doi: 10.1016/j.emc.2007.11.007.
- [16]. Nari J, Allen LH, Bursztyn LLC. Accuracy of referral diagnosis to an emergency eye clinic. *Can J Ophthalmol*. 2017 Jun;52(3):283-286. doi: 10.1016/j.jcjo.2016.12.011.