Is it Important to Check Intraocular Pressure in the Emergency Department?

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Introduction

About Intraocular Pressure

- **Intraocular pressure (IOP) is the pressure within the eye**. It is determined by the amount of fluid (aqueous humour) that is produced by the eye and the rate at which it drains out.
- Normal IOP ranges from **10 to 21 mmHg** (millimetres of mercury), and it helps maintain the shape and health of the eye.
- Raised IOP is an ophthalmological emergency which is proven to cause irreversible damage to the optic nerve leading to visual field loss.

About Angle Closure Glaucoma

- **Acute angle closure glaucoma is a medical emergency** that occurs when the drainage system of the eye is suddenly blocked, causing a rapid increase in IOP.
- This condition can cause severe eye pain, headache, blurred vision, halos around lights, nausea, and vomiting. Without prompt treatment, it can cause **permanent vision loss**.
- In acute angle closure glaucoma, the IOP can rise to extremely high levels (above 50 mmHg in some cases) in a matter of hours.
- This sudden increase in pressure **can damage the optic nerve and cause vision loss** if not promptly treated.
- Treatment may involve medications to reduce the IOP and laser or surgical procedures to unblock the drainage system.

The Issue at Hand

There is currently no device available in the Emergency Department (ED) to check IOP. This causes the following issues:

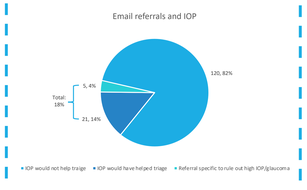
1. **Delayed identification and treatment of patients** with angle closure glaucoma. Inability to check for raised intraocular pressure can mean patients with angle closure glaucoma presenting with a headache or vomiting may end up having unnecessary CT head scans.
2. **Mistreating patients** in ED as acute angle closure glaucoma. Inability to check for raised intraocular pressure can mean patients that have normal IOP are treated unnecessarily with medications such as IV Acetazolamide.
3. **Unnecessary referrals** to eye casualty and opticians for a simple IOP check taking up clinic capacity.

Aim

1. **To understand the scale of the issue by looking at our current referrals.**
2. **To understand the extent to which clinicians working in ED are familiar with IOP and whether they feel it is important to check IOP in ED.**

1 Methods & Results: Email Referrals

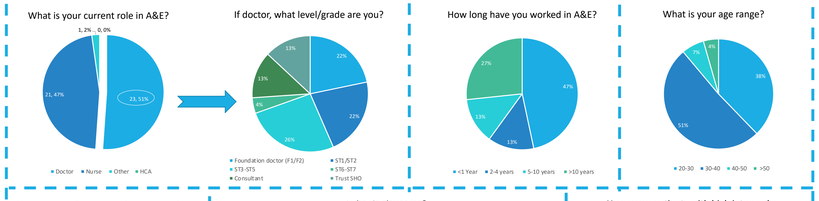
- Two months of email referrals sent from ED to Moorfield's at Croydon were analyzed. The emails were identified by searching for all emails sent from a Croydon health service user.
- Emails were sorted into three categories: 'IOP would not help triage', 'IOP would have helped triage', and 'referral specific to rule out high IOP/ glaucoma'.
- A total of 146 emails were checked. 18% of them could have benefitted from an IOP measurement.
- Specific cases were identified, for example, a query glaucoma was a viral conjunctivitis and a patient who later had uveitis was treated for angle closure glaucoma with IV Diamox.

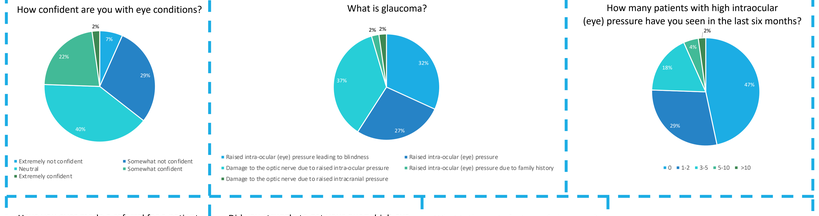


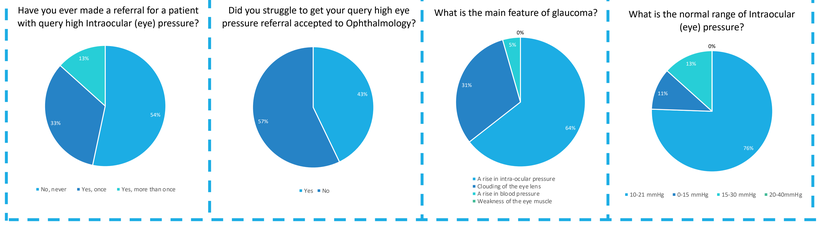
2 Methods & Results: Emergency Department Survey

A survey created on Microsoft Forms was sent via email to doctors and nurses working in the ED at Croydon University Hospital

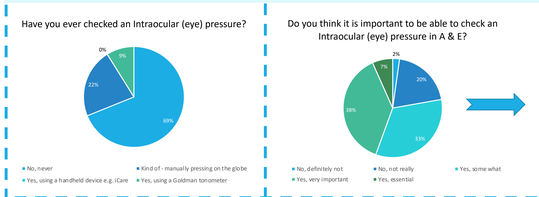
- Total of 45 responses

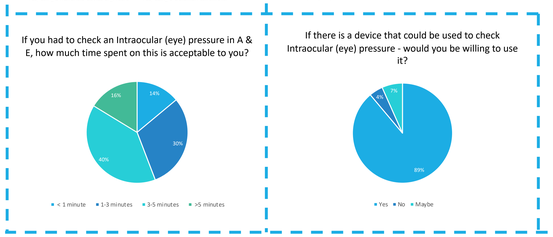






2 Methods & Results: Emergency Department Survey (cont.)





- 63% of respondents did not correctly identify the definition of glaucoma.
- 78% of respondents felt it was important that they were able to check an IOP in ED.
- 89% would be willing to use a device to check IOP in ED.

Discussion

- At least 18% of referrals that we receive could benefit from including an IOP measurement. Specific cases highlight the impact it has on patient care and clinic capacity.
- The results indicate that clinicians in ED could use **more teaching on the diagnosis and pathogenesis of glaucoma.**
- Most clinicians are willing to check an IOP in ED and the majority would be willing to spend 3-5 minutes on this which suggests that **ED clinicians are aware of the importance of IOP.**
- This leaves us wondering **why this facility does not currently exist in ED when there are easy-to-use devices available.**
- The above has led us to hold a teaching session on IOP and how to check it using a handheld device called the iCare.
- The iCare will be left in ED and we will re-analyze the referrals to eye casualty to see if IOP checks have been beneficial.

Conclusion

1. There are referrals to eye casualty that would benefit from an IOP reading.
2. ED clinicians require further teaching on glaucoma but understand the importance of checking IOP and would be willing to do this in ED if there was a device available.
3. We will introduce an IOP checking device and review the impact this has on email referrals to eye casualty.
4. Raised IOP is an emergency and patients presenting with associated symptoms should have early IOP checks in ED.

➔ **A simple IOP check could help preserve a patient's vision and thus their quality of life.**