University Hospital Southampton NHS
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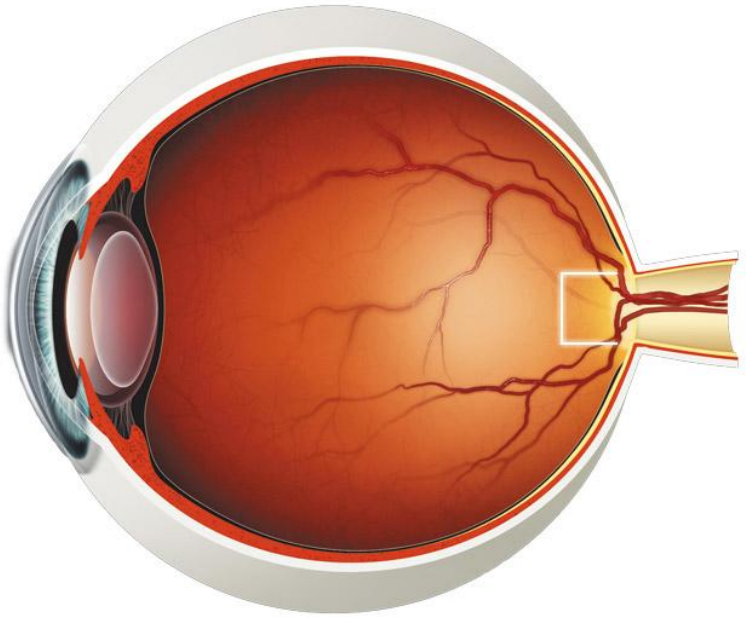

Eye casualty: learning programme for student nurses

Staff Nurse Begoña Jimenez . Eye Casualty, SGH. 2017

Contents

Contact Telephone Numbers

- *Eye Casualty Line:* 02381206592.
- *Eye Short Stay Unit:* 023806595.
- *Eye Outpatients:* 02381208738.
- *Resuscitation team*: 2222
- Emergency security: 3333
- Normal security desk**:** 4122

Introduction.

Welcome to Eye Casualty We hope you enjoy your placement here with us. This pack has background to some of the information which you may need during this placement.

Eye Casualty is located inside the Eye Unit in B level. The Senior Sister is called Samantha Palmer; please do not hesitate to contact her if any issues arise during your time here.

These are the shift hours that we use:

- Early Shift: 07:30 until 15:30
- Late Shift: 12:00 until 20:00
- Long late: 09:30 until 20:00
- Long Early: 07:30 until 18:00
- Nine till Five: 09:00 until 17:00

The Eye Casualty department in Southampton General Hospital treats a variety of ophthalmic problems, and ocular emergencies.

Emergencies are seen with priority in the department. In addition, the unit runs an assessment service for patients who are not true eye emergencies but might need an urgent eye examination. This service runs from 8.30am to 4.30 pm, Monday to Sunday.

During these times, we normally have two doctors and one nurse practitioner seeing emergencies, and patients that come to the department with booking in times.

In addition, we accept walking in patients, which are normally assessed by a nurse practitioner on their arrival.

The Nurse practitioner decides when the patient needs to be seen which will not necessarily be on the same day. If their condition is not very urgent, they are normally given a booking in time to come back to the department. The date and time will depend on the nature of their problem. Also, they could just be advised to visit their gp or local opticians.

After 17:00 pm we have our ophthalmic on call doctors that are normally two, and who can have a list of booked-in patients. When they finish seeing patients in eye casualty, they normally stay within the hospital until 20:00 pm in case any emergencies arise, and then they go home and remain on call on their mobile phones. During the week the doctor on Call over night is normally the SHO, while the weekends are covered by the SPR.

Eye Casualty closes at 19:00 on week days and at 17:00 on weekends. After these times the eye casualty team moves up to the eye short stay unit until 20:00. Overnight, (from 20:00)

the nurse on duty in the Eye short Stay Unit (our eye ward), takes over from our services, and is able to assess urgent patients that attend during her shift.

Finally, in eye casualty we offer a 07:30 till 20:00 telephone service for advice and assessment. This can be used by patients who are unsure whether their problem is urgent or not, or for people that just need some advice and information. After these hours patients can ring the eye short stay unit to discuss any problems with one of the ward nurses.

1. What do we expect of you?

Please note that these are basic and general objectives. More specific and advanced once could be discussed in the learning contract if desired.

First week

- Observe only.
- Attend to the hospital induction for student nurses.
- Spend a morning with the casualty receptionist is mandatory.
- Learn how HICSS works.
- Understand the flow of patients in Eye Casualty.
- Learn to book patients in.
- Start working on your anatomy knowledge about the eye *(see section 12.1),* and ophthalmic medication *(see sec. 10).*

Second week

- Start recording visual acuity of patients under close supervision.
- Start history taking under close supervision.
- Start learning some clinical skills always under supervision.
- Should be able to recognise and escalate ocular emergencies.

Third week

- Pen torch examination of the eye.
- Become familiar with slit lamp.
- Start looking at interesting patients on the slit lamp with the nurse practitioner and the doctor.
- Start working on knowledge about the main conditions of the eye seen and treated in eye casualty. *(see section 12.2)*

Fourth to sixth week

- Should be able to triage on your own under supervision.
- Should be able to assist nurses and doctors with some clinical procedures.
- Expand your knowledge and practice.

2. Learning contract

LEARNING CONTRACT/ACTION PLAN

Name: **Completion Date: ___/___/___** **Planned Review Date: ___/___/___**

Item No.	Learning Outcome/Goal or Follow-up Action *What do I want to be able to do by the end of module*	SMART Objectives: *What will do in order to achieve LO Evidence & how will go about getting it*	Strategies, Standards & Timelines *negotiated with PBS*	Evidence of Progress/ Achievement/ Changes to LO/ goals/ strategies /timelines	Date/achieved Signature	Future Goals/Action Plans

Practice Facilitator Signature: *(Trainee Educator/Mentor)* Date:	Practice Based Supervisor Signature: Date:

LEARNING CONTRACT/ACTION PLAN

Name:

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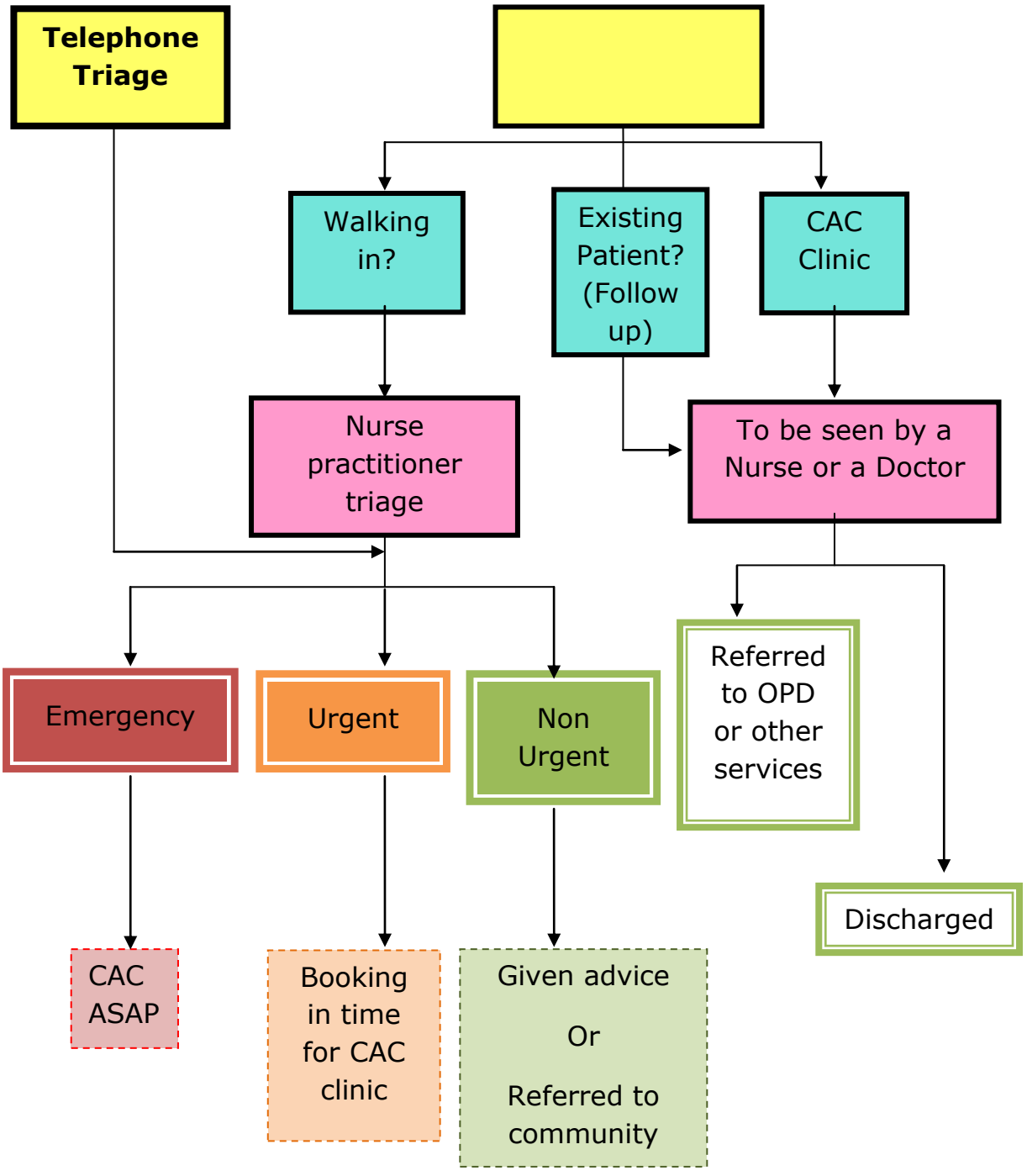
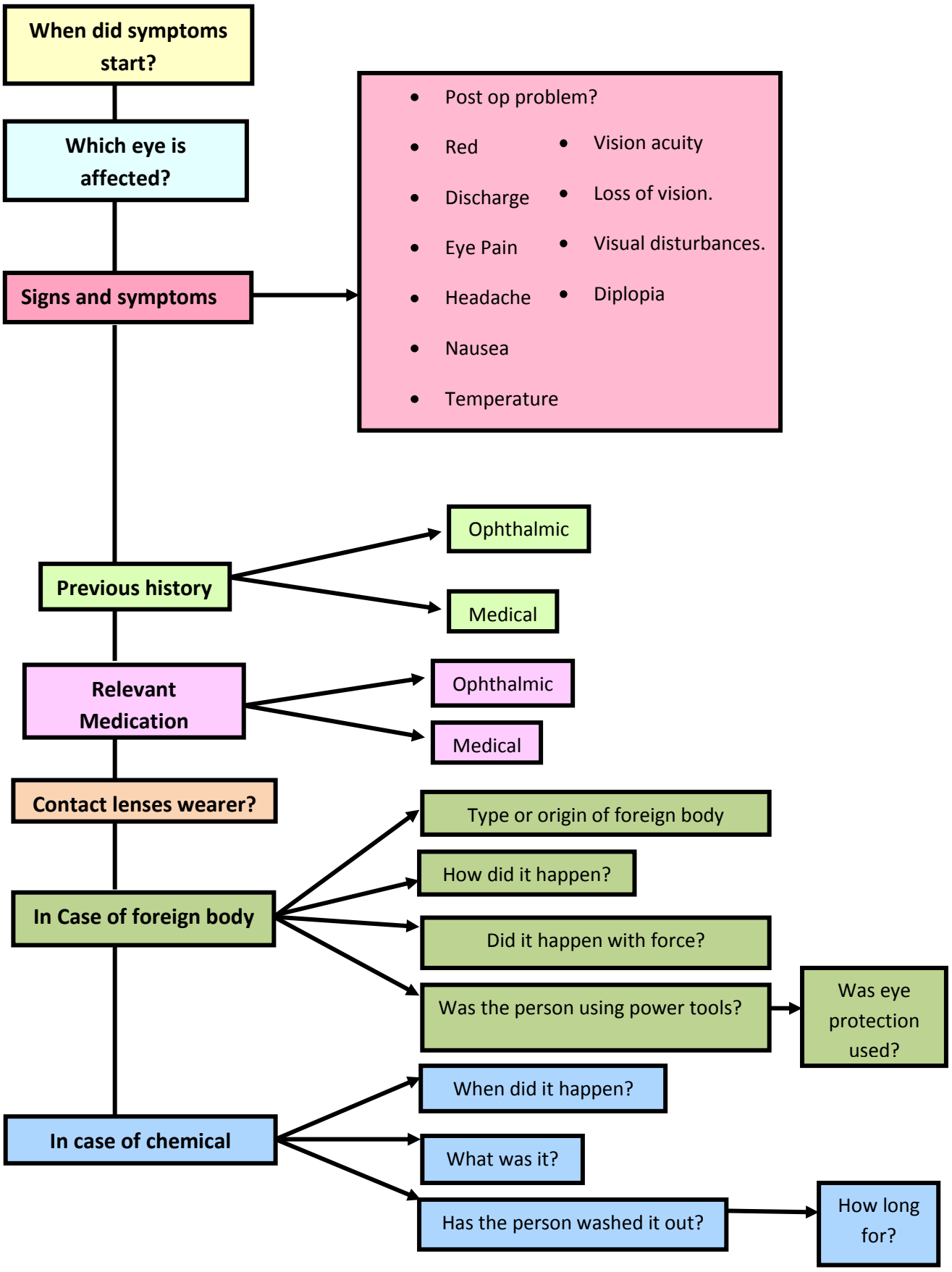
Practice Facilitator Signature: *(Trainee Educator/Mentor)* Date:	Practice Based Supervisor Signature: Date:

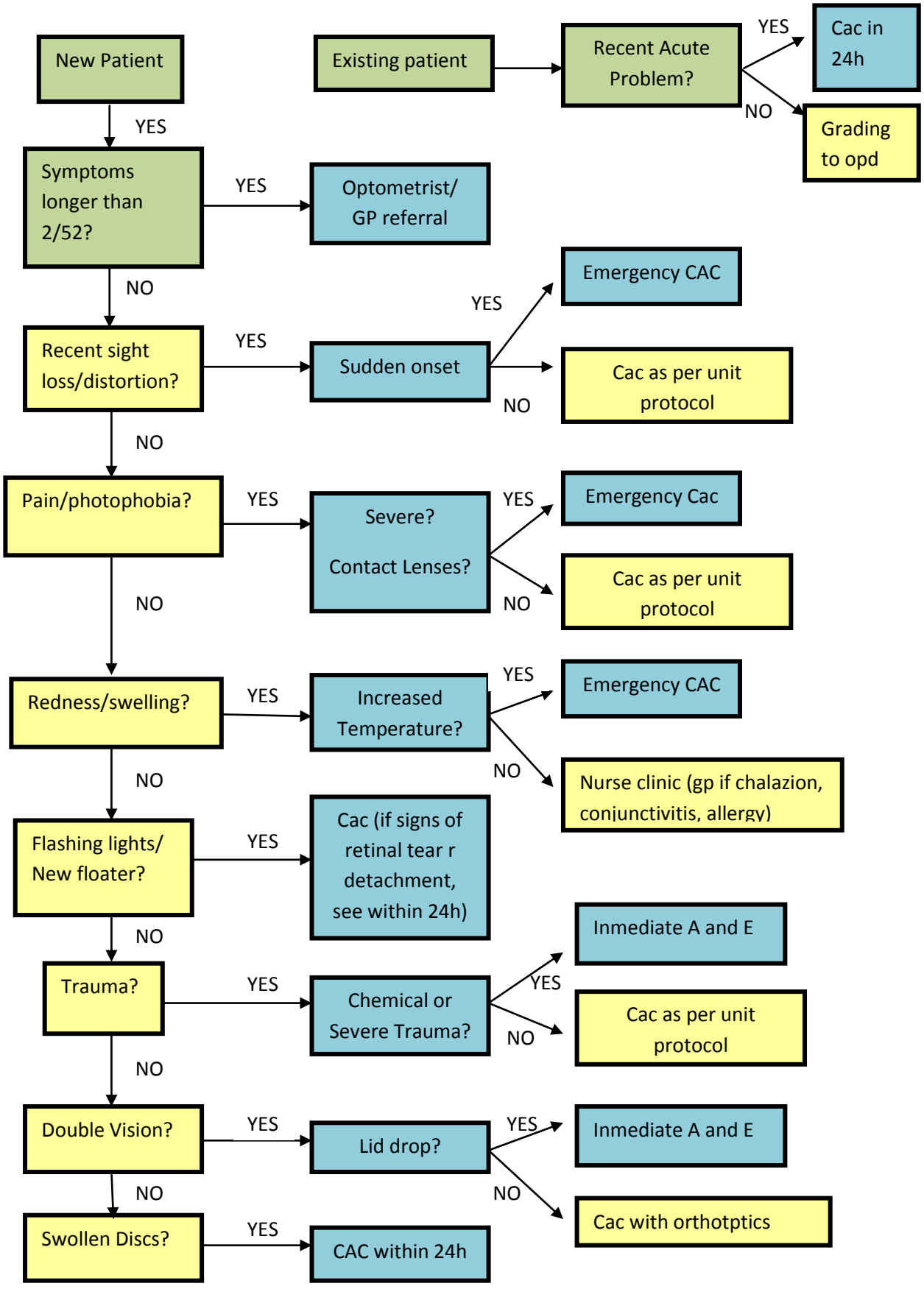
3. Understanding Patients Flow in Eye Casualty.



4. Understanding history taking when triaging.



5. Patients' assessment in Eye Casualty.



Field, D., and Tillotson, J. Eye Emergencies the practitioner's guide. (2008). Cumbria: M&K Update Ltd.

6. The five ocular Emergencies.

Orbital cellulitis.

Orbital cellulitis is an infection of the soft tissues lying within the orbit. 60% of these infections arise from the sinuses[2] or from other neighbouring structures[3].

Other causes may be from infected superficial lessions and injuries of the skin around the orbit; infections of the throat or middle ear, following eye surgery; or blood-borne infections from remote septic foci[2].

This condition is potentially life-threatening, as it can spread to the venous drainage system of the orbit, then to the cavernous sinus in the brain causing meningitis, intracranial infection, septicaemia and death[2].

Signs and symptoms

- Patient feels generally unwell.
- Severe orbital pain.
- Raised temperature.
- Reduced vision.
- Double vision.
- Periorbital swelling.
- Chemosis (swelling of the conjunctiva).
- Ptosis (upper eyelid drooping).
- Proptosis (protrusion of the eye on the affected side).
- Reduced colour vision.
- Possible pupil defect, if very advanced.

Treatment

Emergency admission is normally necessary in order to start the patient on intravenous antibiotic treatment, pain relieve and antipirexia. Patients with orbital cellulitis need daily reviews in Eye Casualty[2].

Sudden visual loss.

Sudden loss of visual acuity should be seen in Eye Casualty as soon as possible. It Is considered an ocular emergency when it has occurred within the last few hours. The problem causing it could be sight threatening. Therefore, the sooner it gets treated, the higher the possibilities of the patient to recover some of the vision back.

The causes of acute vision loss could be related to abnormalities anywhere along the optical and neurologic visual pathway; from malfunction of the retina and optic nerve, to haemorrhages and systemic problems like stroke or Giant cell arteritis[5].

A distinction should be made between central and peripheral vision loss, which could be from scotoma to hemianopia. Also, it is important to establish if the loss of vision has been transient or not, and whether it consists of a veil or a shadow, distorted vision, misty/foggy vision or, if it is a sudden change in the patient's vision acuity[5].

This is very important, as knowing the type of vision loss that the patient is experiencing will help us asses how urgent the problem is, and what might be causing it. For instance; abnormalities of the intracranial visual pathway (like a stroke) usually disturb the visual field rather than the central vision. In addition, transient central loss of vision is frequently due to circulatory changes anywhere along the neurologic visual pathway, from the retina to the occipital cortex (amaurosis fugax, or migraine) [5].

If somebody arrives to eye casualty with sudden visual loss in the last few hours you must inform one of the casualty nurses.

The treatment of visual loss will depend on the cause. Here are some of the possible causes of sudden visual deterioration:

- Amaurosis fugax.
- Central Retinal Artery Occlusion.
- Ischemic Optic Neuropathy.
- Retinal detachment.
- Central Retinal Vein Occlusion.
- Vitreous haemorrhage.
- Hyphaema.
- Stroke and TIA.

- Wet Macular Degeneration.

Chemical injury.

Chemical injury of the conjunctiva and cornea is a true ocular emergency and requires immediate intervention. Chemical injuries to the eye can produce extensive damage to the ocular surface and anterior segment leading to visual impairment and disfigurement. Early recognition and treatment ensures the best possible outcome for this potentially blinding condition[4].

Chemical injuries occur as a result of acid, alkali, or neutral agents. Alkali burns are considered to be potentially the most severe chemical injury as alkalis are absorbed more rapidly into the tissues of the eye itself (Dua et al.2001), continuing to damage the eye for many hours after the original injury. On the other hand, acid substances may cause extremely severe damage on immediate contact with the eye structures, but once rinsed off, the chemicals do not remain in the eye for as long as the alkali causing less severe damage if treated on time[2].

Early irrigation is critical in limiting the duration of chemical exposure. The goal of irrigation is to remove the offending substance and restore the normal ph. It may be necessary to irrigate as much as 20 litres[4].

<u>Immediate action in Eye Casualty.</u>

When a patient walks into Eye Casualty reporting a recent chemical injury, he/she needs to be irrigated immediately, and the nurse in charge needs to be informed. In addition, the patient might miss booking in reception until it is decided it is safe for him or her to do so.

The actions to take after a patient comes in with an eye chemical exposure are as follows:

1. Identify the patient and check for allergies.
2. Explain the procedure to the patient.
3. Check the ph in both eyes with ph indicator: the ph in the eye needs to be 7, if higher or lower, irrigation needs to be started as soon as possible.
4. Test the Ph of the product if the patient has brought it in.

5. Sit the patient in a chair with his head well supported and turned slightly to the affected side.
6. If applicable warm the irrigation fluid.
7. Place protective bib and paper towels around the patient's neck.
8. Place the receiver against the patient's face on the affected side. Ask the patient to hold it if no other help is available.
9. If possible do not use any topical anaesthetic eye drops, as this will prevent us from knowing whether the eye is feeling better or not after the irrigation.
10. Irrigate the eye initially with 300 ml of saline 0.9%. While irrigating, make sure you use the forehead of the patient to support your hand, so if the patient moves your hand will move with the his/her forehead, preventing an eye injury. In addition, ask the patient to look to different directions when irrigating. Always perform single evertion of the lid for irrigation (this is a clinical skill which consists of turning the top eyelid over, in order to irrigate the eye fully and sometimes it is used to remove foreign bodies from under the eye lids). If the patient has had lime plaster or bleach, please use double evertion with the desmarres instrument.
11. After 5 minutes recheck the PH. If the ph is not 7 continue to irrigate until the ph goes back to normal. Note that sometimes irrigation might need to stop before this happens due to patient's discomfort, or if the eye starts to get very irritating and swollen. If this ever happens, please always discuss it with a senior member of the staff before continuing with any further irrigation.
12. Once the ph is normal, ask the patient to go to reception to get booked in, and then he/she will be triaged and seen by a nurse or doctor within the department.

Penetrating injury.

Penetrating injuries to the eye can be caused by sharp objects. The injury could be from microscopic tears, caused, for example , by the point of a dart, to massive, complex lacerations, for example from a shattered grinding wheel or some other large metallic object flying off a moving machine[2].

In addition, when a penetrating injury has occurred, we need to be aware of the possibility of small intra-ocular objects[2]. Also, if a trauma has happened with force, we need to evaluate the possibility of an orbital fracture and/or a head injury. If this is the case, the

patient will possibly have to be seen by the main emergency department before we proceed with the eye examination.

The history of an injury is of critical importance in suggesting possible penetration of the eye by a foreign body which might otherwise be overlooked. For example, when a person uses power tools or a hammer and chisel without eye protection there is a very high risk a penetrating injury might happen. Therefore, history-taking should be careful and accurate and include exactly what the patient was doing around the time of the injury, and always ask whether he/she was using any eye protection[2].

A comprehensive, competent assessment and examination can avoid possible complications, as initially undetected retained intra-ocular foreign bodies may cause severe orbital problems (fulcher et al. 2002).

Possible signs and symptoms of a penetrating injury could be:

- Reduced vision.
- Irregular pupil.
- Hyphaema.
- Subconjunctival haemorrhage.
- Generalised injection.
- Iris prolapse.
- Traumatic mydriasis or RAPD.
- Low intra ocular pressure.
- Pain.

In the suspicion of a penetrating injury an x-ray and/or ct scan should be perform, in other to localised precisely possible foreign bodies[1], and to rule out any orbital fractures.

Once a diagnosis of penetrating injury or intra-ocular foreign body has been made, an emergency admission will be arranged and the foreign body will be removed possibly in theatre. Furthermore, the patient will be started on IV antibiotics, steroid and antibiotic eye drops and possibly mydriatics[2]. Furthermore, if any further investigation is required, the patient might need to be referred to other multidisciplinary teams like, maxilo-facial, ENT, ED etc.

If you suspect a patient you are seeing has a penetrating injury please inform the eye casualty team as soon as possible.

Acute glaucoma

Acute angle closure glaucoma is considered an Eye emergency as it could be sight threatening if left untreated.

An episode of acute glaucoma is a sudden onset of increased intraocular pressure that causes signs and symptoms to the patient. It normally happens in hypermetropic (long sighted) patients, because they usually have a shallow anterior chamber , which predisposes to failure of aqueous humour to pass through the pupil and to crowding of the angle, preventing aqueous from draining appropriately and causing the IOP to raise[1].

Frequently, there is a history of preceding intermittent symptoms. The attacks can resolve spontaneously, but if it becomes established, visual loss can be severe and often permanent[1].

Some symptoms of an acute angle closure episode could be:

- Pain above the eye or on the eyebrow.
- Headache.
- Feeling unwell.
- Nausea and vomiting.
- Loss of vision.
- Haloes around the lights.
- Injection.
- Cloudy cornea.
- Semi-dilated fixed pupil.
- Previous less severe symptoms.

If the patient you are seeing or assessing has symptoms of acute glaucoma, please inform the Eye Casualty team as soon as possible.

The treatment of acute glaucoma needs to be started as soon as possible to avoid any permanent damage.

The treatment will depend on the value of the IOP. If the IOP is lower than 40mmHG, it will be treated with topical eye drops and oral acetazolamide *(please see sec. 12.3 for ophthalmic medication).* If the IOP is higher than 40mmHg IV acetazolamide will be used as well as topical eye drops. If after this primary treatment the IOP is still elevated, the patient might need admitting for IV infusion of mannitol and closer monitoring.

7. Assessment of Visual acuity in Eye Casualty.

Testing visual acuity is one of the most important aids to diagnosis in ophthalmology and is carried out every time a patient visits for eye treatment, in order to assess progress or deterioration. It is not a legal requirement. However, there is a hospital protocol that says we must record the visual acuity of every person attending to eye casualty. In addition, it could be useful to you as a professional if a patient were to try to make a claim against you[2].

Please note that any visual test should be carried out in a private area, the patient should not have any distractions, or should not be interrupted.

Long distance visual assessment

There are many different charts that can be used for visual acuity testing but, in Eye Casualty for long distance vision assessment, we use the logmar chart (in patients that can identify letters and that speak English).

For patients where there is a language barrier, or who cannot read we can use the Sheridan Gardiner, or the Kay pictures test (especially on children).

First of all, the position of the patient is normally 3 metres from the chart. However, this will depend on the type of test and chart used. In addition, and if applicable, patients should be wearing their glasses for distance, varifocals , bifocals or contact lenses for the distance visual test. Please note reading glasses are not accepted for this.

When testing any visual acuity (distance, near, colour vision etc.) it should be done one eye at the time. We can ask the patient to cover one of his eyes or we can also use an occluder. Then we ask the patient to read out the smallest line that they can see with that eye, and we take note of the value.

When testing distance visual acuity you will need to take in account the following things.

- When the visual acuity is lower than 0.2 in the logmar chart, the vision will have to be rechecked with the use of the pinhole occluder. This will help us determine whether the patient has a refractive error or whether his/her vision might be affected by an ophthalmic problem.
- If the patient cannot read the top line we proceed as follows:
    - A hand with outstretched fingers is held in front of the patient and the distance is recorded at which the fingers can be successfully counted (starting at 3 metres).
    - If the patient cannot count fingers then we will ask if he/she can detect any hand movements. This has to be checked in all quadrants of the visual field.
    - If the patient can not perceive any hand movement we will shine a light and ask the patient if he/she can see it.
    - Finally if the patient cannot detect light we record it as: NPL (nil perception of light). Also, please indicate if this is normal for the patient, or whether it is something new. Note that when we record a vision as NPL we are not diagnosing the patient as visually impaired. This will have to be done by a qualified doctor or professional.
    - Please also record if patient has an artificial eye.

Near Vision test.

To test for near vision, we will ask the patient to wear his/her, bifocal or reading glasses, and again we will test one eye at the time.

We will use a near vision test chart and ask the patient to read the first line of different sizes of letters until we get to the smallest one they can read.

Sheridan Gardiner.

This is useful to test distance visual acuity in patients that cannot read letters, but can recognise them by shape. It can be used in children, people with disabilities, and in patients that are not familiar with the English alphabet.

Normally, a card with one letter on it is held at six metres away. The patient with one eye occluded, holding a card is asked to point to the corresponding letter from a choice of six or eight. The nurse will keep reducing the size of the letter until the patient gets to the smallest one they can see.

As with the logmar chart, the pinhole needs to be used when appropriate and the patient needs to be wearing their corrective lenses if applicable.

Ishihara or colour vision test.

Ichihara's test is used to assess the colour vision of the patient. It is helpful when we need to rule out any optic nerve, and neurological abnormalities, and sometimes it helps with the diagnosis of macula disease.

The test should be undertaken in a well-lit room. One eye at a time should be tested, and if reading glasses are used, they should be worn.

It consists of several plates with coloured numbers. The patient should be able to read the numbers in the plates.

Please when you test colour vision on patients in Eye Casualty, make sure you write the results on one of our Ishihara's chart (this one will need to be scanned into the patient's notes later on).

The Amsler grid.

This is used to test macula function.

The Amsler grid is a series of horizontal and vertical lines which form squares, in the centre of which is a black dot. It is used for testing the central visual field at reading distance. The manner in which the patient describes the patterns to be altered might provide clues to the patient's complaint of visual disturbance.

When testing with the Amsler grid, again we test one eye at the time, and the patient needs to wear reading lenses if applicable.

First of all, we ask the patient if they can see the black dot and if, when looking at the dot all four sides of the grid can be identified as straight lines. Then we ask if there are any missing boxes, or if any of the lines are distorted or broken.

If this is the case, we tell the patient to outline this on the chart.

Please make sure the patient is looking at the central dot throughout the test.

8. Pupils check in Eye Casualty.

When checking pupils in Eye Casualty:

- Always make sure you perform the pupils check in a quiet and private environment, with low or dim light, and that you explain to the patient what you are going to do.
- Make sure you have a source of light like a pen torch or an indirect ophthalmoscope.

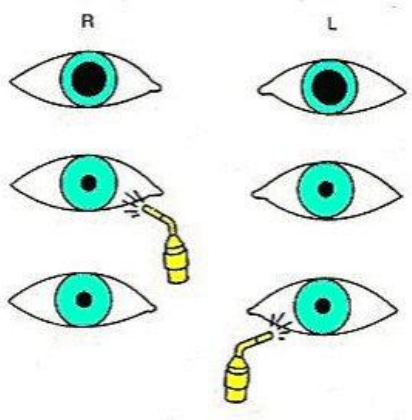
The main pupillary checks that need to be done when assessing a patient are:

Direct pupil reflex

It is done by checking the pupils individually; shining the light in each of them to make sure they are both reacting to the light independently.

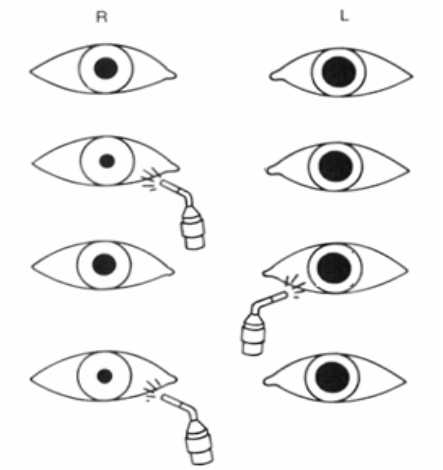
Consensual pupil reflex

When we shine the light in one pupil the other one should constrict at the same time in a similar size even though it has no direct light shining on it.



If one of the pupils does not constrict when the light is being shined on the other one, that is considered an abnormality[2].

RAPD *(relative afferent pupillary defect)* Check



To perform this, we shine direct light in one eye for 3 seconds, and the quickly shift or swing the light to the opposite pupil for 3 seconds and then back to the initial pupil.

When you rapidly move the light from one pupil to the other this one should remain constricted. If the pupil dilates when swinging the light back to it instead of remaining constricted, then the patient has an RAPD[2].

Please if you think a patient has any pupillary abnormalities, do not dilate him and inform the casualty staff as soon as possible. Once the patient has been dilated it will not be possible to check the pupils until the effects of the eye drops have passed, which could delay the diagnosis and treatment.

9. Ophthalmic medication.

Please complete the table below with information about the following ophthalmic medication.

Medication	Indication	Contraindication	Side effects
Benoxinate (oxybuprocaine)			
Proxymethacaine			
Fluorescein			
Tropicamide 1% *(Effect lasts for 4-6 hours)*			
Cyclopentolate 2.5%/0.5% *(Effect lasts for24h)*			
Phenilephrine 2.5% *(Effect lasts for 5-7h)*			
Chloramphenicol Ointment/eyedrop			
Fucithalmic			

Medication	Indication	Contraindication	Side effects
Iopidine			
Pilocarpine			
Diamox			
Mannitol			
Maxidex			
Ofloxacin			

10.Practical visits to other departments.

During your placement in Eye Casualty visit to other departments within the eye unit are encouraged. Please keep a record of them in the following table.

Department	Attended Y/N	Date and Time	Comments
Orthoptics			
Eye Short Stay Unit			
Ophthalmic Theatres			
Artificial Eye Fitter			
Ophthalmic Outpatients			
Imaging Services			

11. Ophthalmic knowledge.

In this section you will be asked to do some theory work about the eye and its main conditions.

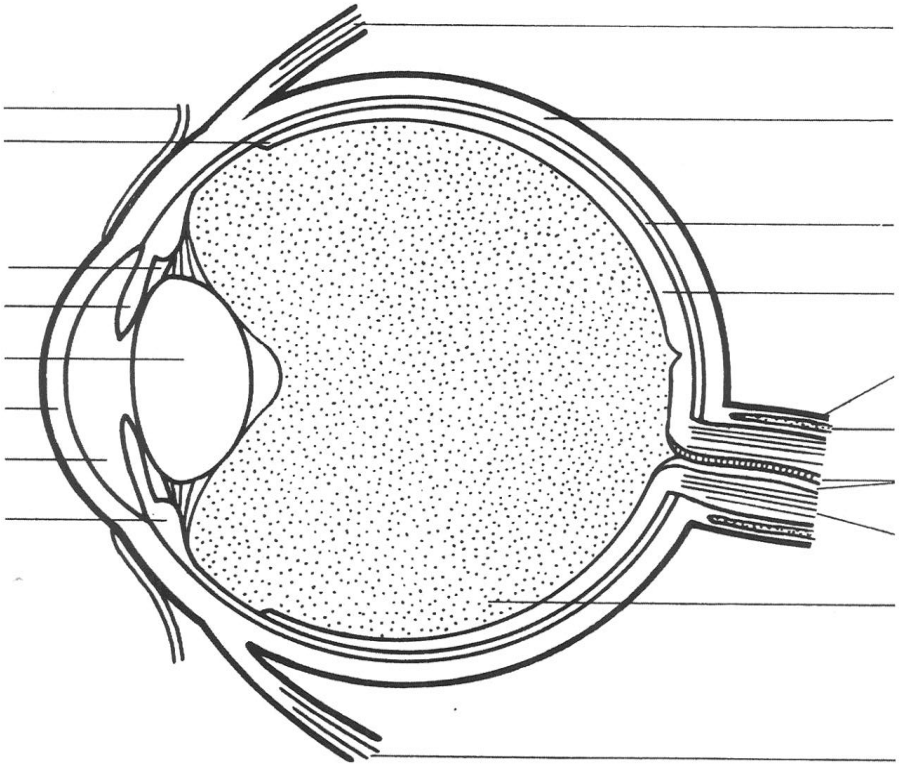
The theory work will be divided in sections and will need to be completed by the student before the deadline proposed by the mentor.

Please note, this exercises are based on the minimum knowledge that you will be expected to learn in your placement in eye casualty

12.1. Anatomy of the eye

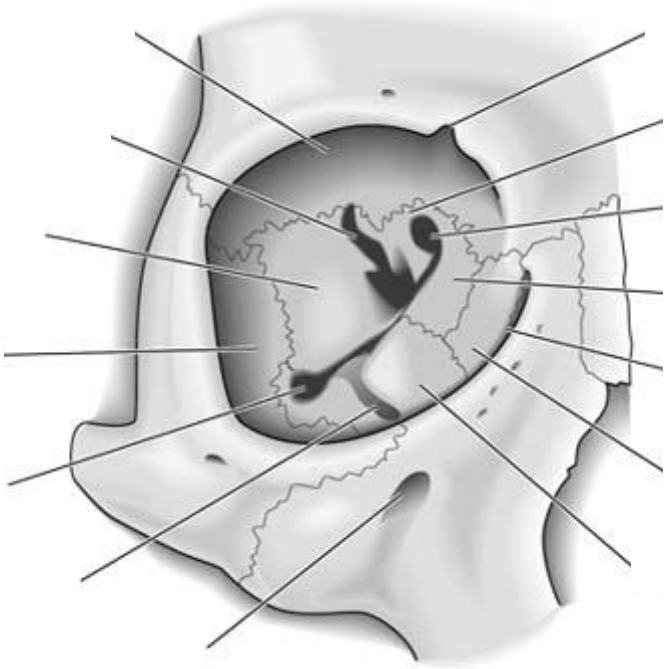
Please answer the following questions in a separate paper. .

The Globe. Please complete the following diagram about Globe.



The Orbital Bones.

- Name the bones that form the orbit, and explain their main function.



The Eye Lids.

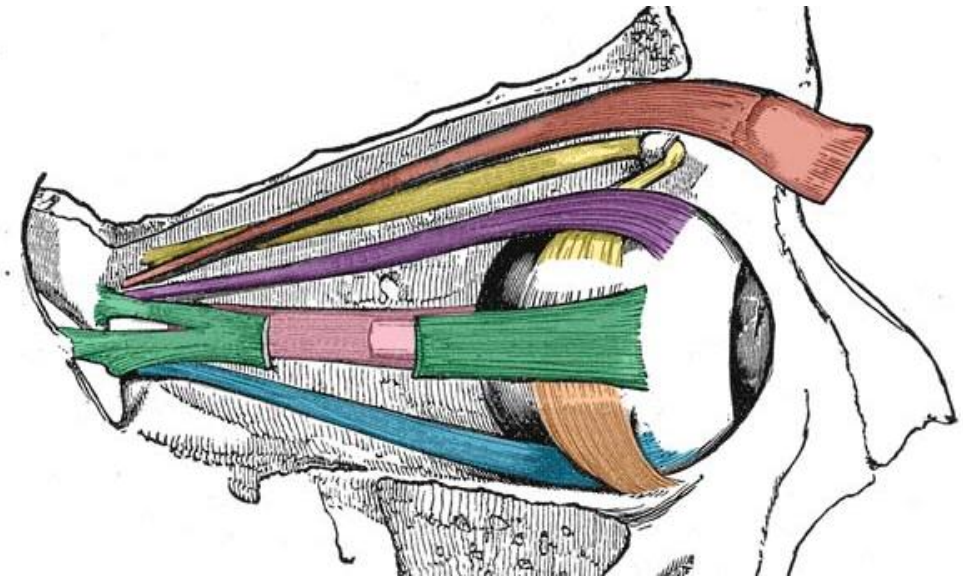
- Explain the functions of the eye lids.
- Name the muscles of the eye lids and explain their function.

The Cornea.

- Name the layers of the cornea.
- Which one is the only layer that can regenerate?
- What is the function of the endothelium?

The Orbital Muscles.

- Name and explain the functions of the extra ocular muscles.



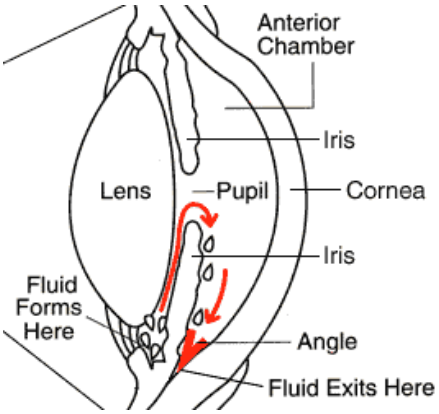
The Conjunctiva

- Explain the functions of the conjunctiva and name the parts of it.

The Tear Film.

- Explain the main functions of the tear film.
- How many layers does the tear film have?

The Anterior Chamber.



- What is the anterior chamber?
- What is the aqueous?
- What is the drainage angle?

The Lens.

- What is the lens and what are its functions?

The Posterior Chamber.

- What is the vitreous?
- What are the functions of the retina?
- How many layers does it have?
- What is the macula? What is it responsible for?

12.2. Main conditions and problems of the eye.

You will be expected to have basic knowledge about the following ophthalmic problems:

- Blepharitis.
- Trichiasis.
- Meibomian Cyst and meibomianitis.
- Ectropion and entropion.
- Dry Eyes.
- Conjunctivitis.

- Subconjunctival haemorrhage.
- Foreign bodies.
- Corneal abrasion.
- Recurrent corneal erosion.
- Bacterial corneal ulcers.
- Marginal Ulcers.
- Dendritic ulcers.
- Herpes Zoster Virus.
- Hyphaema.
- Hypopion.
- Cataracts.
- Glaucoma.
- Posterior Vitreous detachment.
- Retinal tear.
- Retinal detachment.
- Retinal Vein and artery occlusion.
- Papilloedema.
- Iritis.
- Pterygium and pynguecula.
- Episcleritis.
- Nerve palsy.

12. Clinical skills checklist.

During your placement in Eye Casualty you will have to be able to perform the following skills under supervision.

Skill	Date	Signature	Date	Signature	Date	Signature
Vision acuity test (distance)						
Colour Vision Test						
Vision acuity test (Near)						
Sheridan Gardiner						
Kay Pictures						
Eye Lid single Evertion						
Double padding and bandaging						
IOP check with I-care						
Irrigation						
Eye Drops Administration						
Eye Examination with torch						

13. Ophthalmic terminology.

Anterior Chamber: the space between the cornea and iris.

Aphakic Eye: Eye From which the lenses has been removed.

Aqueous Humour: watery fluid, which circulates in the A.C. and drains away at the angle between the cornea and the edge of the iris.

Astigmatism: Irregular shape of the cornea.

Binocular vision: When both eyes see the same image and therefore have three-dimensional vision.

Canthus: The angle formed by the junction of the eyelids. Can be middle canthus (next to the nose), or lateral canthus (outer corner of the eye).

Chemosis: Swelling/ oedema of the conjunctiva.

Cilia: Eye lashes.

Cycloplegia: Paralysis of the ciliary muscle.

Cycloplegic: drop or drug which paralyses the cilliary muscles also dilates the pupil.

Enucleation: Removal of the eye.

Epilation: removal of the eye lashes.

Epiphora: watering of the eye , due to excess tears.

Evisceration: removal of the contents of the eye leaving the sclera.

Exopthalmos: protrusion of the eye.

Fundus; area of retina at the back of the eye including optic disc and macula.

Guttae: latinterm for eye drops often abbreviated as a G.

Hordeolum: a Stye:

Hypermetropia: long sighted.

Iridectomy: removal of part of the irirs, or incision on it.

Keratitis: inflammation or infection of the cornea.

Limbus: Junction of cornea and sclera/conjunctiva.

Miotic: drug used to constrict the pupil.

Proptosis: appearance of the eye ball protruding forward.

Ptosis: drooping of the upper eye lid and sometimes eyebrow.

Refraction: measuring a patient's need for glasses.

Strabismus: squint.

Synechia: the iris sticking to either the lens or the cornea. It normally gives the pupil irregular shape specially after the patient has had dilating eye drops.

Visual Field: area or areas of vision seen without moving head or eyes.

14. References

1. Batterbury, M. and Bowling, B. (2005). *Ophthalmology, an Illustrated Colour Text*. 2nd ed. London: Elsevier, Churchill Livingstone.
2. Field, D., and Tillotson, J. *Eye Emergencies the practitioner's guide.* (2008). Cumbria: M&K Update Ltd.
3. Stollery, R. *Ophthalmic Nursing.* 2nd ed. Oxford: Blackwell Science.
4. Trieff, D. Et al. (2015). Chemical (Alkali and Acid) Injury of the Conjunctiva and Cornea. *American Academy of Ophthalmology.* Avaiable from: http://eyewiki.aao.org/
5. Vaughan,D, Asbury,T, Tabbara, T,F, .1989. General ophthalmology. 1st Edition. United States of America. Pretince-Hall International Inc.