Maine Medical Center Ophthalmology Guidelines

The following document outlines the current process for consulting the Maine Eye Center for Maine Medical Center/Brighton First Care patients. The guidelines and information provided on this document are developed by the department of emergency medicine at Maine Medical Center and the Maine Eye Center. The information is believed, but not guaranteed to be correct. It is intended to be a reference for Maine Medical Center clinicians and is not intended to replace providers' clinical judgment or definitive consultation.

The Maine Eye Center is happy to discuss patients from 8a-10p. For comments or suggestions regarding these guidelines, please contact Jeff Holmes, MD at holmej@mmc.org

Consult Maine Eye Center during 8a-10p, Transfer to Boston (Mass Eye and Ear or New England Eye Center at Tufts) during Off Hours for Emergent Care:

1. Open Globe
2. Retrobulbar hematoma
3. Primary acute angle closure glaucoma

Admit to Internal Medicine/Family Medicine with Optional Opthalmology Consultation:

1. Orbital cellulitis
2. Opthalmia neonatorum (Newborn conjunctivitis)

Immediate Ophthalmologic Consultation; CDU in off hours with Ophthalmology consult in AM:

1. Corneal Ulcer
2. Complicated Hyphema
3. Corneal Perforation
4. Endopthalmitis
5. Severe hyperacute conjunctivitis and gonococcal conjunctivitis (i.e. corneal involvement)
6. Central retinal artery occlusion
7. Severe chemical/thermal injury
8. Central retinal vein occlusion and branch retinal vein occlusion
9. Eyelid laceration

(+/-) Phone consultation with Ophthalmology to Optimize Treatment, Follow Up in at Maine Eye Center Office in AM:

1. Corneal ulcer (small, peripheral ulcer)
2. Mild hyperacute/gonococcal conjunctivitis (severe cases require IV antibiotics)
3. Retinal detachment
4. Corneal foreign body
5. Corneal Abrasion
6. Corneal Laceration
7. Minor chemical/thermal injury
8. Small, uncomplicated hyphema
9. Herpetic Keratitis or eye changes WITH herpetic rash on cranial nerve 5 distribution
10. Vitreous hemorrhage
11. Posterior vitreous detachment
12. Keratitis

Delayed Referral to Maine Eye Center (within one week):

1. Orbital Wall fractures (no entrapment or roof fracture)
2. Traumatic Iritis
3. Scleritis

Follow up Maine Eye Center prn:

1. Corneal Abrasion
2. Conjunctivitis
3. Episcleritis

Consult Maine Eye Center during 8a-10p, Refer to Boston (Mass Eye and Ear or Tufts University Medical Center) During Off Hours:

Diagnosis	Presentation/Considerations/Treatment	Consultation
Open globe	- Surgical exploration and repair - Ct of brain and orbits to rule out intraocular foreign body in most cases - NPO, antiemetic agents, tetanus, elevate HOB, eye shield -Systemic antibiotics within 6 hours of injury	Office Hours 8a-10p Consult Ophthalmologist on call for Maine Eye Center Off Hours 10p – 8a Options include immediate transfer vs CDU AM ophthalmology evaluation and operative management
Retrobulbar hematoma (Isolated trauma only and trauma surgery chooses not to admit)	-Pain, decreased vision, inability to open eyelids due to severe swelling - Proptosis with resistance to retropulsion, tense eyelids - A lateral canthotomy should be done by the emergency physician as a temporizing measure before definitive decompression. - Treatment of increased intraocular pressure includes oral carbonic anhydrase inhibitor, topical beta-blocker, and intravenous (IV) mannitol. -Re-evaluate eye pressures after treatment and monitor for improvement	Office Hours 8a-10p Consult Ophthalmologist on call for Maine Eye Center Off Hours 10p – 8a Options include immediate transfer vs CDU for AM evaluation and operative management (CDU only if canthotomy performed and patient eye pressures improved, otherwise transfer)
Primary acute angle closure glaucoma	- Pain, blurred vision, colored halos around lights, frontal headache, N/V, conjunctival injection; fixed, mid-dilated pupil - Emergent ophthalmologic consultation - Intraocular pressures less than 50 mm Hg can be managed without IV medications - Topical therapy with β-blocker (eg. timolol 0.5%), α_2-agonist (e.g., brimonidine 0.15%), prostaglandin analogs (lantoprost 0.005%), and CAI's (dorzlamide 2%) should be initiated immediately. In urgent cases, three rounds of these medications may be given, with each round being separated by 15 minutes - Topical steroid (prednisolone acetate 1% every 15 minutes for four doses) should be given. - Recheck the IOP and visual acuity in one hour. If IOP does not decrease and vision does not improve, repeat topical medications and give mannitol 1-2 g/kg IV over 45 minutes	Office Hours 8a-10p Consult Ophthalmologist on call for Maine Eye Center Off Hours 10p – 8a Options include immediate transfer vs CDU for AM evaluation and definitive management. • Pressures improved post management appropriate for AM follow up • Transfer for laser treatment if pressures remain >40mm Hg after 3 hours of treatment

Admit to Internal Medicine/Family Medicine/Pediatrics with Optional Ophthalmology Consultation:

Diagnosis	Presentation/Considerations/Treatment	Consultation
Orbital cellulitis	-Red eye, pain, blurred vision, double vision, pain with extraocular movements - Broad spectrum IV antibiotics to cover Gram-positive, gram – negative and anaerobic organisms -Consider inpatient ophthalmology consult - Early surgical drainage of paranasal sinuses by ENT specialist if sinusitis present (more common in adults)	Office Hours 8a-10p If ophthalmology consultation desired, consult Ophthalmologist on call for Maine Eye Center Off Hours 10p – 8a Rarely requires transfer - Options include immediate transfer vs CDU for AM evaluation and definitive management.
Opthalmia neonatorum (Newborn conjunctivitis)	- Purulent, mucopurulent, or mucoid discharge from one or both eyes in the first month of life with diffuse conjunctival injection - Etiologies include Neisseria gonorrheoeae, Chlamydia trachomatis, Staphylococci (including MRSA), streptococci, and Gram-negative species, herpes simplex virus - Perform gram stain and culture - Treatment based on suspected organism - Admit for antibiotics or consider AM office follow up with Maine Eye Center - Consider CDU	Office Hours 8a-10p If ophthalmology consultation desired, consult Ophthalmologist on call for Maine Eye Center Off Hours 10p – 8a Options include admission, CDU or AM office visit

Immediate Ophthalmologic Consultation; CDU in off hours with Ophthalmology consult in AM:

Diagnosis	Presentation/Considerations/Treatment	Consultation
Corneal ulcer	- Large, vision threatening ulcers (> 1.5 mm in diameter) and central ulcers should be referred to ophthalmologist immediately - Consider CDU admission if patient unable to self-administer antibiotics, high likelihood of noncompliance or large corneal ulcer -Initiate broad spectrum ex. Vigamox Q1h	Office Hours 8 – 10 p Consult Ophthalmologist on call for Maine Eye Center Off Hours 10p – 8a Consider CDU or AM office visit
Complicated hyphema - Corneal or scleral rupture - Corneal staining (indicates it is more likely chronic and less emergent) - Hyphema grade III or IV - IOP > 30 - Lens subluxation - Vitreous hemorrhage - Unable to visualize fundus - Higher level of concern with IOP > 40 - Monocular patient	-Consider hospitalization for noncompliant patients, patients with bleeding diathesis or blood dyscrasia, patients with other severe ocular or orbital injuries and patients with concomitant significant IOP elevation and sickle cell - Elevate head of bed, place eye shield, atropine 1% solution b.i.d. to t.i.d. or scopolamine 0.25% b.i.d. to t.i.d. - Use topical steroids (eg. prenisolone acetate 1% q.i.d. to q1h) if any suggestion of iritis (eg. photophobia, deep ache, ciliary flush) - Refer to definitive text/consultation for treatment of increased IOP	Office Hours 8 – 10 p Contact On Call Maine Eye Center Off Hours 10p – 8a Consider CDU or AM office visit
Corneal perforation	- Most often 2nd to infectious breakdown (other causes include trauma, inflammatory conditions, environmental exposures) - Treatment is surgical (or tissue adhesives for non-operative patients) - Emergent Ophthalmology consultation; CDU in off hours	Office Hours 8 – 10 p Consult Ophthalmologist on call for Maine Eye Center Off Hours 10p – 8a Consider CDU or AM office visit. High likelihood of requiring transfer to Tufts
Endopthalmitis	- Patients most at risk are those with recent ocular surgery or injection (other risk factors are severe bacterial keratitis or ulceration) -Likely present with red swollen painful eye post (recent or remote) glaucoma surgery -Usually presents with hypopion (yellow hyphema) -Immediate ophthalmology consultation	Office Hours 8 – 10 p Consult Opthalmologist on call for Maine Eye Center Off Hours 10p – 8a Consider CDU or AM office visit. High likelihood of transfer to Tufts
Severe hyperacute conjunctivitis and gonococcal conjunctivitis (i.e. corneal involvement)	- Excessively purulent appearing eye - Emergent referral to ophthalmology for moderate/severe cases - Ceftriaxone 1 g IM as single dose -Swab culture with gram stain - Outpt treatment after Rocephin IM includes topical antibiotics, saline solution for conjunctival irrigation - Consider testing or treating presumptively for concomitant Chlamydia trachomatis infection with oral doxycycline, tetracycline, or erythromycin or single dose of 1 g of azithromycin	Office Hours 8 – 10 p Consult Ophthalmologist on call for Maine Eye Center Off Hours 10p – 8a Consider CDU or AM office visit
		Office Hours 8 – 10 p

Central retinal artery occlusion	- Severe painless vision loss that occurs over seconds: markedly reduced visual acuity with prominent afferent pupillary defect; on fundoscopic exam, retina appears edematous with pale-grey appearance, may possibly see a fovea "cherry red spot" - Immediate ophthalmic consultation - Ocular massage - Lower IOP after consultation with ophthalmologist -Consider Timoptic and paracentsis -Work up includes STAT ESR, CRP and Carotid US -NOTE: Treatment and disposition are time dependent, symptoms present longer than 90min are unlikely to respond to interventions and are less emergent	Consult Opthalmologist on call for Maine Eye Center Off Hours 10p – 8a Options include TIA workup in CDU plus AM evaluation and definitive management for eye.
Severe chemical/thermal injury	- Based on degree of chemosis, corneal cloudiness and conjunctival blanching - Thorough irrigation with Morgan Lens for chemical burns - Confirm neutral ph for chemical burns after adequate irrigation - Severe chemical injury requires urgent ophthalmologic follow up (based on degree of corneal cloudiness and sclera whitening) - Mild thermal injuries can be left unpatched with antibiotic ointment and seen in 1-2 days - Cyloplegic drop for ciliary body spams and pain - Oral analgesics, tetanus	Office Hours 8 – 10 p Consult Ophthalmologist on call for Maine Eye Center Off Hours 10p – 8a AM office visit at Maine Eye Center
Central retinal vein occlusion and branch retinal vein occlusion	-Painless vision loss with hemorrhage of retinal vessels in a pt with co-morbidities (DM, HTN) - No effective treatment in ED -Check pressure and refer for AM follow up -Urgent follow up	Office Hours 8 – 10 p Consult Opthalmologist on call for Maine Eye Center Off Hours 10p – 8a AM office visit
Eyelid laceration	Refer to ophthalmology/plastic surgery to repair if: 1. Lacerations involving lid margins 2. Lacerations involving the canalicular system. Injury to the canalicular system should be suspected in any laceration involving the medial lower eyelid area 3. Lacerations involving the levator or canthal tendons. 4. Laceration through the orbital septum. Orbital fat protrudes through septal lacerations into the wound. Because eyelids have no subcutaneous fat, the appearance of fat in a lid laceration confirms this diagnosis. These wounds are associated with a high incidence of globe penetration and intraorbital foreign bodies. 5. Lacerations with tissue loss. 6. Full thickness)on lid margin) or involving deeper structures or involving oculopastics or structures involving canaliculus The Emergency Physician can repair: 1. Simple horizontal 2. Oblique partial thickness lid lacs - Close with 6-0 or 7-0 nylon interrupted; remove in 3-5 days	Office Hours 8 – 10 p Consult Opthalmologist on call for Maine Eye Center Off Hours 10p – 8a

(+/-) Phone consultation with Ophthalmology to Optimize Treatment, Follow Up in at Maine Eye Center Office in AM:

Diagnosis	Presentation/Considerations/Treatment	Consultation
Corneal ulcer (Small peripheral ulcers)	- Pain, photophobia, tearing, red eye - An ulcer exists if there is stromal loss with an overlying epithelilial defect that stains with fluorescein - Broad spectrum antibiotics - Next day follow up	Office Hours 8 – 10 p Consult Ophthalmologist on call for Maine Eye Center Off Hours 10p – 8a Options include CDU for AM evaluation or AM office visit
Mild hyperacute/gonococcal conjunctivitis (severe cases require IV antibiotics)	- Red eye, copious discharge that accumulates quickly - Patients should be questioned about urethral or vaginal discharge or other symptoms of STD's. - Ceftriaxone 1 g IM as single dose -Swab culture with gram stain - Outpatient treatment after Rocephin IM includes topical erythromycin ointment, saline solution for conjunctival irrigation - Consider testing or treating presumptively for concomitant Chlamydia trachomatis infection with oral doxycycline, tetracycline, or erythromycin or single dose of 1 g of azithromycin	Office Hours 8 – 10 p Consult Ophthalmologist on call for Maine Eye Center Off Hours 10p – 8a AM office visit at Maine Eye Center
Retinal detachment	-Floaters and flashers -Potential field loss - Use ultrasound/fundoscopic exam to diagnose - Keep NPO after midnight for **Early AM** office follow up	Office Hours 8 – 10 p Consult Ophthalmologist on call for Maine Eye Center Off Hours 10p – 8a Options include immediate transfer for macula threatening detachments vs NPO with early AM office visit
Corneal foreign body	-Attempt to first remove with moistened cotton swab, then tip of 25 gauge needle -Antibiotic ointment or drops - Cycloplegic agent prn for ocular discomfort if significant photophobia -Emergent referral if any corneal laceration, positive seidel test, evidence of corneal ulcer or infiltrate, deeply embedded foreign body, hypopyon or significant anterior chamber reaction - Referral if not removed or residual rust ring - 24-48 hour referral for all other retained FB's not removed - Simple foreign bodies successfully removed in ED may not need ophthalmology referral	Office Hours 8 – 10 p Consult Ophthalmologist on call for Maine Eye Center Off Hours 10p – 8a Consider AM office visit
Corneal abrasion	- Large abrasions in visual axis should be examined the next day - Small peripheral abrasions can be followed up 2-5 days prn	Office Hours 8 – 10 p Consult Ophthalmologist on call for Maine Eye Center

		Off Hours 10p – 8a Consider AM office visit
Corneal laceration	- R/o perforated globe - Urgent ophthalmologic consultation for partial thickness - Cover with metal eye shield - Partial thickness lacerations treat with cycloplegic agents, topical antibiotics, tetanus - NPO after midnight	Office Hours 8 – 10 p Consult Ophthalmologist on call for Maine Eye Center Off Hours 10p – 8a Consider AM office visit at Maine Eye Center
Minor chemical/thermal Injury	- Thorough irrigation with Morgan Lens for chemical burns - Confirm neutral ph for chemical burns after adequate irrigation - Severe chemical injury requires urgent ophthalmologic follow up - Mild thermal injuries can be left unpatched with antibiotic ointment and seen in 1-2 days - Cyloplegic drop for ciliary body spams and pain - Oral analgesics, tetanus	Office Hours 8 – 10 p Consult Ophthalmologist on call for Maine Eye Center Off Hours 10p – 8a Consider CDU or AM office visit at Maine Eye Center
Small, uncomplicated hyphema	- If traumatic, screen for other significant signs of trauma (corneal laceration/abrasion, perforated globe) - Cycloplegic to help minimize pain and discomfort - Prednisolone acetate 1% QID - Protective eye shield	Office Hours 8 – 10 p Consult Ophthalmologist on call for Maine Eye Center Off Hours 10p – 8a Consider AM office visit
Herpetic Keratitis OR eye changes WITH herpetic rash on cranial nerve 5 distribution	- Dermatomal pain, paresthesias, skin rash or discomfort - May be preceded by headache, fever, malaise, blurred vision, eye pain and red eye - Initiate oral antiviral - Viroptic drops or vidarabine ointment - 24 hour follow up with ophthalmologist - Severe cases may require admission for IV antiretroviral therapy - Follow up Maine Eye Center in AM	Office Hours 8 – 10 p Consult Ophthalmologist on call for Maine Eye Center or refer for follow up Off Hours 10p-8a Consider CDU or AM office visit
Vitreous hemorrhage	- Sudden, painless loss of vision or sudden appearance of black spots, cobwebs or haze in vision - Partial to complete obstructed view to fundus - Screen for retinal detachment with ultrasound - No emergent treatment	Office Hours 8 – 10 p Contact Ophthalmologist on Call for Maine Eye Center or refer for follow up Off Hours 10p – 8a Consider CDU or AM office visit
Posterior vitreous detachment	-May present as “Flashers/floaters” - Use ultrasound/fundoscopic exam to r/o retinal detachment *- Patients with a new posterior vitreous detachment should have prompt evaluation (24-48 hours) by an ophthalmologist to rule out these surgically amenable complications.*	Office Hours 8 – 10 p Contact Opthalmologist on Call for Maine Eye Center or refer for follow up Off Hours 10p – 8a AM office visit

	- No specific treatment is indicated for posterior vitreous detachment unless it is accompanied by a retinal break, vitreous hemorrhage, or retinal detachment.	
Keratitis	- If patient wears contact lens, instruct the patient to remove and temporarily discontinue wearing - If infectious etiology suspected, thorough exam by ophthalmologist to r/o corneal ulcer - Next day ophthalmology follow up	Office Hours 8 – 10 p Contact Opthalmologist on Call for Maine Eye Center or refer for follow up Off Hours 10p – 8a Consider CDU or AM office visit

Delayed Referral to Maine Eye Center (within one week):

Diagnosis	Presentation/Considerations/Treatment	Consultation
Orbital Wall fractures (no entrapment or roof fracture)	- Consult neurosurgery if roof fracture present or fracture extends into optic canal - 1-2 weeks with ophthalmology referral to look for persistent double vision or enopthalmos after edema has subsided - 1-2 weeks ophthalmology referral to check for accessory damage from blunt trauma such as angle recession and retinal detachment - If fracture involves infected sinus, treatment consists of nasal decongestants, broad-spectrum oral antibiotics - Patients with orbital floor and medial orbital wall fractures should avoid blowing their noses and performing Valsalva maneuver to limit the extent of emphysema. - Surgical repair is only for persistent diplopia or cosmetic concerns and is generally not performed until swelling subsides in 7 to 10 days	Office Hours 8a-10p If ophthalmology consultation desired, consult Ophthalmologist on call for Maine Eye Center Off Hours 10p – 8a Delayed referral to Maine Eye Center
Traumatic Iritis	- Photophobia, redness, history of trauma - Conjunctival injection, perilimbal flush - Anterior chamber cell and flare - Long-acting cycloplegic agent for pain - Topcial steroid (e.g. Prednisolone 1%) for inflammation	Office Hours 8a-10p If ophthalmology consultation desired, consult Ophthalmologist on call for Maine Eye Center Delayed referral to Maine Eye Center Off Hours 10p – 8a Consider delayed referral to Maine Eye Center
Scleritis	- Severe and boring eye pain (most prominent eye feature), which may radiate to the forehead, brow, or jaw, and may awaken the patient at night - Refer for outpatient workup - Oral NSAID	Office Hours 8a-10p If ophthalmology consultation desired, consult Ophthalmologist on call for Maine Eye Center Delayed referral to Maine Eye Center Off Hours 10p – 8a Delayed referral to Maine Eye Center

Follow up prn with Maine Eye Center:

Diagnosis	Presentation/Considerations/Treatment	Consultation
Corneal abrasion	- Topical antibiotics, cycloplegia for severe discomfort; +/- topical NSAID - Contact lens wearers should get anti-pseudomonal coverage, avoid contact wearing - No patch, no topical anesthetics - Small abrasions do not require follow up, larger abrasions f/u with ophthalmology prn	Office Hours 8a-10p If ophthalmology consultation desired, consult Ophthalmologist on call for Maine Eye Center Follow up prn with Maine Eye Center Off Hours 10p – 8a Follow up prn with Maine Eye Center
Conjunctivitis	- Red eye, discharge, eyelids sticking or crusting, foreign body sensation - Consider topical antibiotics if purulent white-yellow discharge of mild to moderate degree -	Office Hours 8a-10p If ophthalmology consultation desired, consult Ophthalmologist on call for Maine Eye Center Follow up prn with Maine Eye Center Off Hours 10p – 8a Follow up prn with Maine Eye Center
Episcleritis	- Almost always benign, resolves spontaneously 1-2 weeks, 20% reoccur - Often no therapy required, but may respond to oral or topical anti-inflammatory meds	Office Hours 8a-10p If ophthalmology consultation desired, consult Ophthalmologist on call for Maine Eye Center Follow up prn with Maine Eye Center Off Hours 10p – 8a Follow up prn with Maine Eye Center

References

1. Marx, John. Rosen;s Emergency Medicine, Mosby Elsevier, 7th edition.
2. Chern, Kenneth C. Emergency Opthalmology, A Rapid Treatment Guide. McGraw Hill, 2002.
3. Gerstenblith, Adam. The Wills Eye Manual. Office and Emergency Room Diagnosis and Treatment of Eye Disease. Lippincott Williams and Wilkins, 6th edition.